D^0

$I(J^P) = \frac{1}{2}(0^-)$

D^0 MASS

The fit includes $D^\pm$, D^0, $D_s^\pm$, $D^{*\pm}$, D^{*0}, $D_s^{*\pm}$, $D_1(2420)^0$, $D_2^*(2460)^0$, and $D_{s1}(2536)^\pm$ mass and mass difference measurements.

Given the recent addition of much more precise measurements, we have omitted all those masses published up through 1990. See any Review before 2015 for those earlier results.

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1864.84 ±0.05 OUR FIT					
1864.84 ±0.05 OUR AVERAGE					
1864.845±0.025±0.057	63k	[1] TOMARADZE	14		$D^0 \to K^- 2\pi^+ \pi^-$
1864.75 ±0.15 ±0.11		AAIJ	13V	LHCB	$D^0 \to K^+ 2K^- \pi^+$
1864.841±0.048±0.063	4.3k	[2] LEES	13S	BABR	$e^+ e^-$ at $\Upsilon(4S)$
1865.30 ±0.33 ±0.23	0.1k	ANASHIN	10A	KEDR	$e^+ e^-$ at $\psi(3770)$
1864.847±0.150±0.095	0.3k	CAWLFIELD	07	CLEO	$D^0 \to K_S^0 \phi$

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration. The largest source of error in the TOMARADZE 14 value is from the uncertainties in the K^- and K_S^0 masses. The systematic error given above is the addition in quadrature of $\pm 0.022 \pm 0.053$ MeV, where the second error is from those mass uncertainties.

[2] The largest source of error in the LEES 13S value is from the uncertainty of the K^+ mass. The quoted systematic error is in fact $\pm 0.043 + 3\ (m_{K^+} - 493.677)$, in MeV.

$m_{D^\pm} - m_{D^0}$

The fit includes $D^\pm$, D^0, $D_s^\pm$, $D^{*\pm}$, D^{*0}, $D_s^{*\pm}$, $D_1(2420)^0$, $D_2^*(2460)^0$, and $D_{s1}(2536)^\pm$ mass and mass difference measurements.

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
4.822±0.015 OUR FIT				
4.76 ±0.12 ±0.07	AAIJ	13V	LHCB	$D^+ \to K^+ K^- \pi^+$

D^0 MEAN LIFE

Measurements with an error $> 10 \times 10^{-15}$ s have been omitted from the average.

VALUE (10^{-15} s)	EVTS	DOCUMENT ID		TECN	COMMENT
410.3± 1.0 OUR AVERAGE					
410.5± 1.1± 0.8	171k	[1] ABUDINEN	21A	BEL2	$e^+ e^-$ at $\Upsilon(4S)$
409.6± 1.1± 1.5	210k	LINK	02F	FOCS	γ nucleus, $\approx$ 180 GeV
407.9± 6.0± 4.3	10k	KUSHNIR...	01	SELX	$K^- \pi^+$, $K^- \pi^+ \pi^+ \pi^-$
413 ± 3 ± 4	35k	AITALA	99E	E791	$K^- \pi^+$
408.5± 4.1 $^{+3.5}_{-3.4}$	25k	BONVICINI	99	CLE2	$e^+ e^- \approx \Upsilon(4S)$
413 ± 4 ± 3	16k	FRABETTI	94D	E687	$K^- \pi^+$, $K^- \pi^+ \pi^+ \pi^-$

• • • We do not use the following data for averages, fits, limits, etc. • • •

424	±11	± 7	5118	FRABETTI	91	E687	$K^-\pi^+$, $K^-\pi^+\pi^+\pi^-$
417	±18	±15	890	ALVAREZ	90	NA14	$K^-\pi^+$, $K^-\pi^+\pi^+\pi^-$
388	$^{+23}_{-21}$		641	[2] BARLAG	90C	ACCM	π^- Cu 230 GeV
480	±40	±30	776	ALBRECHT	88I	ARG	e^+e^- 10 GeV
422	± 8	±10	4212	RAAB	88	E691	Photoproduction
420	±50		90	BARLAG	87B	ACCM	K^- and π^- 200 GeV

[1] ABUDINEN 21A determines the lifetime ratio $\tau(D^+)/\tau(D^0) = 2.510 \pm 0.013 \pm 0.007$.
[2] BARLAG 90C estimate systematic error to be negligible.

See the related review(s):

D^0 — $\overline{D}^0$ Mixing

$|m_{D_1^0} - m_{D_2^0}| = x\,\Gamma$

The D_1^0 and D_2^0 are the mass eigenstates of the D^0 meson, as described in the note on "D^0-$\overline{D}^0$ Mixing,' above. The experiments usually present $x \equiv \Delta m/\Gamma$. Then $\Delta m = x\,\Gamma = x\,\hbar/\tau$.

"OUR EVALUATION" comes from CPV allowing averages provided by the Heavy Flavor Averaging Group, see the note on "D^0-$\overline{D}^0$ Mixing."

VALUE (10^{10} $\hbar$ s^{-1})	CL%	DOCUMENT ID		TECN	COMMENT
0.997±0.116 OUR EVALUATION					
0.92 ±0.12 OUR AVERAGE					
0.97 $^{+0.14}_{-0.13}$		[1] AAIJ	21AB	LHCB	pp at 13 TeV, $D^0 \to K_S^0\pi^+\pi^-$
0.66 $^{+0.41}_{-0.37}$		[2] AAIJ	19X	LHCB	pp at 7, 8 TeV, $D^0 \to K_S^0\pi^+\pi^-$
		[3] AAIJ	18K	LHCB	pp at 7, 8, 13 TeV
−2.10 ±1.29 ±0.41		[4] AAIJ	16V	LHCB	pp at 7 TeV
3.7 ±2.9 ±1.5		[5] LEES	16D	BABR	e^+e^-, 10.6 GeV
		[6] KO	14	BELL	$e^+e^- \to \Upsilon(nS)$
1.37 ±0.46 $^{+0.18}_{-0.28}$		[7] PENG	14	BELL	$e^+e^- \to \Upsilon(nS)$
		[8] AALTONEN	13AE	CDF	$p\overline{p}$ at 1.96 TeV
0.39 ±0.56 ±0.35		[9] DEL-AMO-SA...	10D	BABR	e^+e^-, 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
		[10] AAIJ	17AO	LHCB	Repl. by AAIJ 18K
		[11] AAIJ	13CE	LHCB	Repl. by AAIJ 17AO
		[12] AAIJ	13N	LHCB	Repl. by AAIJ 13CE
6.4 $^{+1.4}_{-1.7}$ ±1.0		[13] AUBERT	09AN	BABR	e^+e^- at 10.58 GeV
−2 $^{+7}_{-6}$		[14] LOWREY	09	CLEO	e^+e^- at $\psi(3770)$
1.98 ±0.73 $^{+0.32}_{-0.41}$		[15] ZHANG	07B	BELL	Repl. by PENG 14
<7	95	[16] ZHANG	06	BELL	e^+e^-

-11 to $+22$		[15] ASNER	05	CLEO	$e^+e^- \approx$ 10 GeV
$<$ 11	90	BITENC	05	BELL	
$<$ 30	90	CAWLFIELD	05	CLEO	
$<$ 7	95	[16] LI	05A	BELL	See ZHANG 06
$<$ 22	95	[17] LINK	05H	FOCS	γ nucleus
$<$ 23	95	AUBERT	04Q	BABR	
$<$ 11	95	[16] AUBERT	03Z	BABR	e^+e^-, 10.6 GeV
$<$ 7	95	[18] GODANG	00	CLE2	e^+e^-
$<$ 32	90	[19,20] AITALA	98	E791	π^- nucleus, 500 GeV
$<$ 24	90	[21] AITALA	96C	E791	π^- nucleus, 500 GeV
$<$ 21	90	[20,22] ANJOS	88C	E691	Photoproduction

[1] AAIJ 21AB measurement allows for CP violation (none seen).

[2] AAIJ 19X D^0 come from D^{*+} and $\overline{B} \to D^0\mu^- X$ decays (and c.c.). Measurement allows for CP violation (none seen).

[3] The result was established with D^0 from prompt and secondary D^*. Based on 5 fb^{-1} of data collected at $\sqrt{s}$ = 7, 8, 13 TeV. Assumes no CP violation. Reported $x'^2 = (3.9 \pm 2.7) \times 10^{-5}$ and $y' = (5.28 \pm 0.52) \times 10^{-3}$, where $x' = x\cos(\delta) + y\sin(\delta)$, $y' = y$

[4] Model-independent measurement of the charm mixing parameters in the decay $D^0 \to K^0_S\pi^+\pi^-$ using 1.0 fb^{-1} of LHCb data at $\sqrt{s}$ = 7 TeV.

[5] Time-dependent amplitude analysis of $D^0 \to \pi^+\pi^-\pi^0$.

[6] Based on 976 fb^{-1} of data collected at Υ(nS) resonances. Assumes no CP violation. Reported $x'^2 = (0.09 \pm 0.22) \times 10^{-3}$ and $y' = (4.6 \pm 3.4) \times 10^{-3}$, where $x' = x\cos(\delta) + y\sin(\delta)$, $y' = y\cos(\delta) - x\sin(\delta)$ and δ is the strong phase between $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$.

[7] The time-dependent Dalitz-plot analysis of $D^0 \to K^0_S\pi^+\pi^-$ is emplored. Decay-time information and interference on the Dalitz plot are used to distinguish doubly Cabibbo-suppressed decays from mixing and to measure the relative phase between $D^0 \to K^{*+}\pi^-$ and $\overline{D}^0 \to K^{*+}\pi^-$. This value allows CP violation and is sensitive to the sign of Δm.

[8] Based on 9.6 fb^{-1} of data collected at the Tevatron. Assumes no CP violation. Reported $x'^2 = (0.08 \pm 0.18) \times 10^{-3}$ and $y' = (4.3 \pm 4.3) \times 10^{-3}$, where $x' = x\cos(\delta) + y\sin(\delta)$, $y' = y\cos(\delta) - x\sin(\delta)$ and δ is the strong phase between the $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$.

[9] DEL-AMO-SANCHEZ 10D uses 540,800$\pm$800 $K^0_S\pi^+\pi^-$ and 79,900$\pm$300 $K^0_S K^+K^-$ events in a time-dependent amplitude analysis of the D^0 and $\overline{D}^0$ Dalitz plots. No evidence was found for CP violation, and the values here assume no such violation.

[10] The result was established with D^0 from prompt and secondary D^*. Based on 3 fb^{-1} of data collected at $\sqrt{s}$ = 7, 8 TeV. Assumes no CP violation. Reported $x'^2 = (3.6 \pm 4.3) \times 10^{-5}$ and $y' = (5.23 \pm 0.84) \times 10^{-3}$, where $x' = x\cos(\delta) + y\sin(\delta)$, $y' = y\cos(\delta) - x\sin(\delta)$ and δ is the strong phase between the $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$.

[11] Based on 3 fb^{-1} of data collected at $\sqrt{s}$ = 7, 8 TeV. Assumes no CP violation. Reported $x'^2 = (5.5 \pm 4.9) \times 10^{-4}$ and $y' = (4.8 \pm 1.0) \times 10^{-3}$, where $x' = x\cos(\delta) + y\sin(\delta)$, $y' = y\cos(\delta) - x\sin(\delta)$ and δ is the strong phase between the $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$.

[12] Based on 1 fb^{-1} of data collected at $\sqrt{s}$ = 7 TeV in 2011. Assumes no CP violation. Reported $x'^2 = (-0.9 \pm 1.3) \times 10^{-4}$ and $y' = (7.2 \pm 2.4) \times 10^{-3}$, where $x' = x\cos(\delta) + y\sin(\delta)$, $y' = y\cos(\delta) - x\sin(\delta)$ and δ is the strong phase between the $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$.

[13] The AUBERT 09AN values are inferred from the branching ratio $\Gamma(D^0 \to K^+\pi^-\pi^0$ via $\overline{D}^0)/\Gamma(D^0 \to K^-\pi^+\pi^0)$ given near the end of this Listings. Mixing is distinguished from DCS decays using decay-time information. Interference between mixing and DCS is allowed. The phase between $D^0 \to K^+\pi^-\pi^0$ and $\overline{D}^0 \to K^+\pi^-\pi^0$ is assumed to be small. The width difference here is y'', which is not the same as y_{CP} in the note on D^0–$\overline{D}^0$ mixing.

[14] LOWREY 09 uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$. See below for coherence factors and average relative strong phases for both $D^0 \to K^-\pi^+\pi^0$ and $D^0 \to K^-\pi^-2\pi^+$. A fit that includes external measurements of charm mixing parameters gets $\Delta m = (2.34 \pm 0.61) \times 10^{10}\ \hbar\,s^{-1}$.

[15] The ASNER 05 and ZHANG 07B values are from the time-dependent Dalitz-plot analysis of $D^0 \to K^0_S\pi^+\pi^-$. Decay-time information and interference on the Dalitz plot are used to distinguish doubly Cabibbo-suppressed decays from mixing and to measure the relative phase between $D^0 \to K^{*+}\pi^-$ and $\overline{D}^0 \to K^{*+}\pi^-$. This value allows *CP* violation and is sensitive to the sign of Δm.

[16] The AUBERT 03Z, LI 05A, and ZHANG 06 limits are inferred from the D^0-$\overline{D}^0$ mixing ratio $\Gamma(K^+\pi^-$ (via $\overline{D}^0))/\Gamma(K^-\pi^+)$ given near the end of this D^0 Listings. Decay-time information is used to distinguish DCS decays from D^0-$\overline{D}^0$ mixing. The limit allows interference between the DCS and mixing ratios, and also allows *CP* violation. AUBERT 03Z assumes the strong phase between $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$ amplitudes is small; if an arbitrary phase is allowed, the limit degrades by 20%. The LI 05A and ZHANG 06 limits are valid for an arbitrary strong phase.

[17] This LINK 05H limit is inferred from the D^0-$\overline{D}^0$ mixing ratio $\Gamma(K^+\pi^-$ (via $\overline{D}^0))/\Gamma(K^-\pi^+)$ given near the end of this D^0 Listings. Decay-time information is used to distinguish DCS decays from D^0-$\overline{D}^0$ mixing. The limit allows interference between the DCS and mixing ratios, and also allows *CP* violation. The strong phase between $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$ is assumed to be small. If an arbitrary relative strong phase is allowed, the limit degrades by 25%.

[18] This GODANG 00 limit is inferred from the D^0-$\overline{D}^0$ mixing ratio $\Gamma(K^+\pi^-$ (via $\overline{D}^0))/\Gamma(K^-\pi^+)$ given near the end of this D^0 Listings. Decay-time information is used to distinguish DCS decays from D^0-$\overline{D}^0$ mixing. The limit allows interference between the DCS and mixing ratios, and also allows *CP* violation. The strong phase between $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$ is assumed to be small. If an arbitrary relative strong phase is allowed, the limit degrades by a factor of two.

[19] AITALA 98 allows interference between the doubly Cabibbo-suppressed and mixing amplitudes, and also allows *CP* violation in this term, but assumes that A_D=A_R=0. See the note on "D^0-$\overline{D}^0$ Mixing," above.

[20] This limit is inferred from R_M for $f = K^+\pi^-$ and $f = K^+\pi^-\pi^+\pi^-$. See the note on "D^0-$\overline{D}^0$ Mixing," above. Decay-time information is used to distinguish doubly Cabibbo-suppressed decays from D^0-$\overline{D}^0$ mixing.

[21] This limit is inferred from R_M for $f = K^+\ell^-\overline{\nu}_\ell$. See the note on "$D^0$-$\overline{D}^0$ Mixing," above.

[22] ANJOS 88C assumes that $y = 0$. See the note on "D^0-$\overline{D}^0$ Mixing," above. Without this assumption, the limit degrades by about a factor of two.

$(\Gamma_{D^0_1} - \Gamma_{D^0_2})/\Gamma = 2y$

The D^0_1 and D^0_2 are the mass eigenstates of the D^0 meson, as described in the note on "D^0-$\overline{D}^0$ Mixing," above.

Due to the strong phase difference between $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$, we exclude from the average those measurements of y' that are inferred from the D^0-$\overline{D}^0$ mixing ratio $\Gamma(K^+\pi^-$ via $\overline{D}^0)$ / $\Gamma(K^+\pi^-)$ given near the end of this D^0 Listings.

Some early results have been omitted. See our 2006 *Review* (Journal of Physics **G33** 1 (2006)).

"OUR EVALUATION" comes from CPV allowing averages provided by the Heavy Flavor Averaging Group, see the note on "D^0-$\overline{D}^0$ Mixing."

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.23± 0.11 OUR EVALUATION					
1.06± 0.16 OUR AVERAGE Error includes scale factor of 1.1.					
$0.92^{+0.30}_{-0.28}$	30.6M	[1] AAIJ	21AB	LHCB	pp at 13 TeV
$1.92 \pm 1.82^{+1.29}_{-1.24}$	91k	[2] NAYAK	20	BELL	$D^0 \to K^0_S \omega$
$1.14 \pm 0.26 \pm 0.18$		[3] AAIJ	19	LHCB	pp at 7, 8 TeV
1.48 ± 0.74	2.3M	[4] AAIJ	19X	LHCB	$D^0 \to K^0_S \pi^+\pi^-$
		[5] AAIJ	18K	LHCB	pp at 7, 8, 13 TeV
$0.06 \pm 0.92 \pm 0.26$		[6] AAIJ	16V	LHCB	pp at 7 TeV
$0.4 \pm 1.8 \pm 1.0$		[7] LEES	16D	BABR	e^+e^-, 10.6 GeV
$2.22 \pm 0.44 \pm 0.18$		[8] STARIC	16	BELL	$e^+e^- \to \Upsilon$(nS)
$-4.0 \pm 2.6 \pm 1.4$		[9] ABLIKIM	15D	BES3	e^+e^- at $\psi(3770)$
		[10] KO	14	BELL	$e^+e^- \to \Upsilon$(nS)
$0.60 \pm 0.30^{+0.10}_{-0.17}$		[11] PENG	14	BELL	$e^+e^- \to \Upsilon$(nS)
		[12] AALTONEN	13AE	CDF	$p\overline{p}$ at 1.96 TeV
$1.44 \pm 0.36 \pm 0.24$		[13] LEES	13	BABR	$e^+e^- \to \Upsilon(4S)$
$0.55 \pm 0.63 \pm 0.41$		[14] AAIJ	12K	LHCB	pp at 7 TeV
$1.14 \pm 0.40 \pm 0.30$		[15] DEL-AMO-SA..	10D	BABR	e^+e^-, 10.6 GeV
$0.22 \pm 1.22 \pm 1.04$		[16] ZUPANC	09	BELL	$e^+e^- \approx \Upsilon(4S)$
$-1.0 \pm 2.0^{+1.4}_{-1.6}$	18k	[17] ABE	02I	BELL	$e^+e^- \approx \Upsilon(4S)$
$-2.4 \pm 5.0 \pm 2.8$	3393	[18] CSORNA	02	CLE2	$e^+e^- \approx \Upsilon(4S)$
$6.84 \pm 2.78 \pm 1.48$	10k	[17] LINK	00	FOCS	γ nucleus
$+1.6 \pm 5.8 \pm 2.1$		[17] AITALA	99E	E791	$K^-\pi^+$, K^+K^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
		[19] AAIJ	17AO	LHCB	Repl. by AAIJ 18K
		[20] AAIJ	13CE	LHCB	Repl. by AAIJ 17AO
		[21] AAIJ	13N	LHCB	Repl. by AAIJ 13CE
$2.32 \pm 0.44 \pm 0.36$		[22] AUBERT	09AI	BABR	See LEES 13
$-0.12^{+1.10}_{-1.28} \pm 0.68$		[23] AUBERT	09AN	BABR	e^+e^- at 10.58 GeV
$1.4^{+4.8}_{-5.4}$		[24] LOWREY	09	CLEO	e^+e^- at $\psi(3770)$
1.70 ± 1.52	12.7 ± 0.3k	[25] AALTONEN	08E	CDF	$p\overline{p}$, $\sqrt{s} = 1.96$ TeV
$2.06 \pm 0.66 \pm 0.38$		[26] AUBERT	08U	BABR	See AUBERT 09AI
$1.94 \pm 0.88 \pm 0.62$	4030 ± 90	[25] AUBERT	07W	BABR	$e^+e^- \approx 10.6$ GeV
$2.62 \pm 0.64 \pm 0.50$	160k	[27] STARIC	07	BELL	Repl. by STARIC 16

$0.74 \pm 0.50^{+0.20}_{-0.31}$	534k	[28] ZHANG	07B	BELL	Repl. by PENG 14
-0.7 ± 4.9	4k±88	[25,29] ZHANG	06	BELL	e^+e^-
$-3.0 {}^{+5.0}_{-4.8} {}^{+1.6}_{-0.8}$		[28] ASNER	05	CLEO	$e^+e^- \approx$ 10 GeV
-0.3 ± 5.7		[25,29] LI	05A	BELL	See ZHANG 06
$-5.2 {}^{+18.4}_{-16.8}$		[25,29] LINK	05H	FOCS	γ nucleus
$1.6 \pm 0.8 {}^{+1.0}_{-0.8}$	450k	[30] AUBERT	03P	BABR	See AUBERT 08U
$1.6 {}^{+6.2}_{-12.8}$		[25,29] AUBERT	03Z	BABR	e^+e^-, 10.6 GeV
$-5.0 {}^{+2.8}_{-3.2} \pm 0.6$		[25] GODANG	00	CLE2	e^+e^-

[1] AAIJ 21AB analysis of $D^0 \rightarrow K^0_S \pi^+\pi^-$ events allows for *CP* violation (none seen).

[2] NAYAK 20 reports $(1.92 \pm 1.82 \pm 1.24^{+0.34}_{-0.00}) \times 10^{-2}$ where the last uncertainty is due to possible presence of *CP*-even decays in the data sample. Extracts y_{CP}=$(\Gamma_{CP+} - \Gamma_{CP-})$ / $(\Gamma_{CP+} + \Gamma_{CP-})$ in $D^0 \rightarrow K^0_S \omega$ versus $\overline{D}^0 \rightarrow K^0_S \omega$, by measuring the decay lifetime of $D^0 \rightarrow K^0_S \omega$ with $\omega \rightarrow \pi^+\pi^-\pi^0$ versus $D^0 \rightarrow K^-\pi^+$. We list $2y_{CP} = 2y$ $(= \Delta\Gamma/\Gamma)$ in the absence of *CP* violation.

[3] Based on 3 fb^{-1} of data collected at $\sqrt{s}$ = 7, 8 TeV. Measures the lifetime difference between $D^0 \rightarrow K^-K^+$ and $D^0 \rightarrow \pi^-\pi^+$ (*CP* even) decays and $D^0 \rightarrow K^-\pi^+$ (*CP* mixed) decays, or y_{CP}=$(\Gamma_{CP+} - \Gamma_{CP-})$ / $(\Gamma_{CP+} + \Gamma_{CP-})$. The D^0 mesons are required to originate from semimuonic decays of B mesons. We list $2y_{CP} = \Delta\Gamma/\Gamma$.

[4] AAIJ 19X D^0 come from D^{*+} and $\overline{B} \rightarrow D^0\mu^- X$ decays (and c.c.) in pp collisions at 7 and 8 TeV. Measurement allows for *CP* violation (none seen).

[5] The result was established with D^0 from prompt and secondary D^*. Based on 5 fb^{-1} of data collected at $\sqrt{s}$ = 7, 8, 13 TeV. Assumes no *CP* violation. Reported $x'^2 = (3.9 \pm 2.7) \times 10^{-5}$ and $y' = (5.28 \pm 0.52) \times 10^{-3}$, where $x' = x \cos(\delta) + y \sin(\delta)$, $y' = y \cos(\delta) - x \sin(\delta)$ and δ is the strong phase between the $D^0 \rightarrow K^+\pi^-$ and $\overline{D}^0 \rightarrow K^+\pi^-$.

[6] Model-independent measurement of the charm mixing parameters in the decay $D^0 \rightarrow K^0_S \pi^+\pi^-$ using 1.0 fb^{-1} of LHCb data at $\sqrt{s}$ = 7 TeV.

[7] Time-dependent amplitude analysis of $D^0 \rightarrow \pi^+\pi^-\pi^0$.

[8] An improved measurement of $\overline{D}^0 - D^0$ mixing and a search for *CP* violation in D^0 decays to *CP*-even final states K^+K^- and $\pi^+\pi^-$ using the final Belle data sample of 976 fb^{-1}.

[9] ABLIKIM 15D uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$.

[10] Based on 976 fb^{-1} of data collected at Y(nS) resonances. Assumes no *CP* violation. Reported $x'^2 = (0.09 \pm 0.22) \times 10^{-3}$ and $y' = (4.6 \pm 3.4) \times 10^{-3}$, where $x' = \mathrm{x} \cos(\delta) + \mathrm{y} \sin(\delta)$, $y' = \mathrm{y} \cos(\delta) - \mathrm{x} \sin(\delta)$ and δ is the strong phase between $D^0 \rightarrow K^+\pi^-$ and $\overline{D}^0 \rightarrow K^+\pi^-$.

[11] The time-dependent Dalitz-plot analysis of $D^0 \rightarrow K^0_S \pi^+\pi^-$ is emplored. Decay-time information and interference on the Dalitz plot are used to distinguish doubly Cabibbo-suppressed decays from mixing and to measure the relative phase between $D^0 \rightarrow K^{*+}\pi^-$ and $\overline{D}^0 \rightarrow K^{*+}\pi^-$. This value allows *CP* violation and is sensitive to the sign of Δm.

[12] Based on 9.6 fb^{-1} of data collected at the Tevatron. Assumes no *CP* violation. Reported $x'^2 = (0.08 \pm 0.18) \times 10^{-3}$ and $y' = (4.3 \pm 4.3) \times 10^{-3}$, where $x' = x \cos(\delta) + y \sin(\delta)$, $y' = y \cos(\delta) - x \sin(\delta)$ and δ is the strong phase between the $D^0 \rightarrow K^+\pi^-$ and $\overline{D}^0 \rightarrow K^+\pi^-$.

[13] Obtained $y_{CP} = (0.72 \pm 0.18 \pm 0.12)\%$ based on three effective D^0 lifetimes measured in $K^{\mp}\pi^{\pm}$, $K^- K^+$, and $\pi^-\pi^+$. We list $2y_{CP} = \Delta\Gamma/\Gamma$.

[14] Compared the lifetimes of D^0 decay to the CP eigenstate $K^+ K^-$ with D^0 decay to $\pi^+ K^-$. The values here assume no CP violation.

[15] DEL-AMO-SANCHEZ 10D uses 540,800$\pm$800 $K^0_S \pi^+\pi^-$ and 79,900$\pm$300 $K^0_S K^+ K^-$ events in a time-dependent amplitude analyses of the D^0 and $\overline{D}^0$ Dalitz plots. No evidence was found for CP violation, and the values here assume no such violation.

[16] ZUPANC 09 uses a method based on measuring the mean decay time of $D^0 \to K^0_S K^+ K^-$ events for different $K^+ K^-$ mass intervals.

[17] LINK 00, AITALA 99E, and ABE 02I measure the lifetime difference between $D^0 \to K^- K^+$ (CP even) decays and $D^0 \to K^-\pi^+$ (CP mixed) decays, or y_{CP}= $[\Gamma(CP+)-\Gamma(CP-)]/[\Gamma(CP+)+\Gamma(CP-)]$. We list $2y_{CP}$=$\Delta\Gamma/\Gamma$.

[18] CSORNA 02 measures the lifetime difference between $D^0 \to K^- K^+$ and $\pi^-\pi^+$ (CP even) decays and $D^0 \to K^-\pi^+$ (CP mixed) decays, or y_{CP}= $[\Gamma(CP+)-\Gamma(CP-)]/[\Gamma(CP+)+\Gamma(CP-)]$. We list $2y_{CP}$=$\Delta\Gamma/\Gamma$.

[19] The result was established with D^0 from prompt and secondary D^*. Based on 3 fb^{-1} of data collected at $\sqrt{s}$ = 7, 8 TeV. Assumes no CP violation. Reported $x'^2 = (3.6 \pm 4.3) \times 10^{-5}$ and $y' = (5.23 \pm 0.84) \times 10^{-3}$, where $x' = x \cos(\delta) + y \sin(\delta)$, $y' = y \cos(\delta) - x \sin(\delta)$ and δ is the strong phase between the $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$.

[20] Based on 3 fb^{-1} of data collected at $\sqrt{s}$ = 7, 8 TeV. Assumes no CP violation. Reported $x'^2 = (5.5 \pm 4.9) \times 10^{-4}$ and $y' = (4.8 \pm 1.0) \times 10^{-3}$, where $x' = x \cos(\delta) + y \sin(\delta)$, $y' = y \cos(\delta) - x \sin(\delta)$ and δ is the strong phase between the $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$.

[21] Based on 1 fb^{-1} of data collected at $\sqrt{s}$ = 7 TeV in 2011. Assumes no CP violation. Reported $x'^2 = (-0.9 \pm 1.3) \times 10^{-4}$ and $y' = (7.2 \pm 2.4) \times 10^{-3}$, where $x' = x \cos(\delta) + y \sin(\delta)$, $y' = y \cos(\delta) - x \sin(\delta)$ and δ is the strong phase between the $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$.

[22] This combines the $y_{CP} = (\tau_{K\pi}/\tau_{KK})-1$ using untagged $K^-\pi^+$ and $K^- K^+$ events of AUBERT 09AI with the disjoint y_{CP} using tagged $K^-\pi^+$, $K^- K^+$, and $\pi^-\pi^+$ events of AUBERT 08U.

[23] The AUBERT 09AN values are inferred from the branching ratio $\Gamma\big(D^0 \to K^+\pi^-\pi^0$ via $\overline{D}^0\big)/\Gamma\big(D^0 \to K^-\pi^+\pi^0\big)$ given near the end of this Listings. Mixing is distinguished from DCS decays using decay-time information. Interference between mixing and DCS is allowed. The phase between $D^0 \to K^+\pi^-\pi^0$ and $\overline{D}^0 \to K^+\pi^-\pi^0$ is assumed to be small. The width difference here is y'', which is not the same as y_{CP} in the note on D^0–$\overline{D}^0$ mixing.

[24] LOWREY 09 uses quantum correlations in $e^+ e^- \to D^0\overline{D}^0$ at the $\psi(3770)$. See below for coherence factors and average relative strong phases for both $D^0 \to K^-\pi^+\pi^0$ and $D^0 \to K^-\pi^-2\pi^+$. A fit that includes external measurements of charm mixing parameters gets $2y = (1.62 \pm 0.32) \times 10^{-2}$.

[25] The GODANG 00, AUBERT 03Z, LINK 05H, LI 05A, ZHANG 06, AUBERT 07W, and AALTONEN 08E limits are inferred from the D^0-$\overline{D}^0$ mixing ratio $\Gamma(K^+\pi^-$ (via $\overline{D}^0))/\Gamma(K^-\pi^+)$ given near the end of this D^0 Listings. Decay-time information is used to distinguish DCS decays from D^0-$\overline{D}^0$ mixing. The limits allow interference between the DCS and mixing ratios, and all except AUBERT 07W and AALTONEN 08E also allow CP violation. The phase between $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$ is assumed to be small. This is a measurement of y' and is not the same as the y_{CP} of our note above on "D^0-$\overline{D}^0$ Mixing."

[26] This value combines the results of AUBERT 08U and AUBERT 03P.

[27] STARIC 07 compares the lifetimes of D^0 decay to the CP eigenstates K^+K^- and $\pi^+\pi^-$ with D^0 decay to $K^-\pi^+$.
[28] The ASNER 05 and ZHANG 07B values are from the time-dependent Dalitz-plot analysis of $D^0 \rightarrow K^0_S\pi^+\pi^-$. Decay-time information and interference on the Dalitz plot are used to distinguish doubly Cabibbo-suppressed decays from mixing and to measure the relative phase between $D^0 \rightarrow K^{*+}\pi^-$ and $\overline{D}^0 \rightarrow K^{*+}\pi^-$. This limit allows CP violation.
[29] The ranges of AUBERT 03Z, LINK 05H, LI 05A, and ZHANG 06 measurements are for 95% confidence level.
[30] AUBERT 03P measures $Y \equiv 2\,\tau^0\,/\,(\tau^+ + \tau^-) - 1$, where τ^0 is the $D^0 \rightarrow K^-\pi^+$ (and $\overline{D}^0 \rightarrow K^+\pi^-$) lifetime, and τ^+ and τ^- are the D^0 and $\overline{D}^0$ lifetimes to CP-even states (here K^-K^+ and $\pi^-\pi^+$). In the limit of CP conservation, $Y = y \equiv \Delta\Gamma\,/\,2\,\Gamma$ (we list $2y = \Delta\Gamma/\Gamma$). AUBERT 03P also uses $\tau^+ - \tau^-$ to get $\Delta Y = -0.008 \pm 0.006 \pm 0.002$.

|q/p|

The mass eigenstates D^0_1 and D^0_2 are related to the $C = \pm1$ states by $|D_{1,2}> = p\,|D^0> + q\,|\overline{D}^0>$. See the note on "$D^0$–$\overline{D}^0$ Mixing" above.

"OUR EVALUATION" comes from CPV allowing averages provided by the Heavy Flavor Averaging Group. This would include as-yet-unpublished results, see the note on "D^0-$\overline{D}^0$ Mixing."

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.995±0.016 OUR EVALUATION		HFLAV fit; see the note on "D^0-$\overline{D}^0$ Mixing."			
0.99 ±0.05 OUR AVERAGE					
0.996±0.052	30.6M	[1] AAIJ	21AB	LHCB	pp at 13 TeV
$1.05\ ^{+0.22}_{-0.17}$	2.3M	[2] AAIJ	19X	LHCB	pp at 7, 8 TeV
		[3] AAIJ	18K	LHCB	pp at 7, 8, 13 TeV
$0.90\ ^{+0.16}_{-0.15}\ ^{+0.08}_{-0.06}$		[4] PENG	14	BELL	$e^+e^- \rightarrow \Upsilon$(nS)
• • • We do not use the following data for averages, fits, limits, etc. • • •					
		[5] AAIJ	13CE	LHCB	Repl. by AAIJ 18K
$0.86\ ^{+0.30}_{-0.29}\ ^{+0.10}_{-0.08}$		[6] ZHANG	07B	BELL	Repl. by PENG 14

[1] AAIJ 21AB result comes form analysis of $D^0 \rightarrow K^0_S\pi^+\pi^-$ events.
[2] AAIJ 19X measurement comes form analysis of $D^0 \rightarrow K^0_S\pi^+\pi^-$ decays. D^0 come from D^{*+} and $\overline{B} \rightarrow D^0\mu^-X$ decays (and c.c.) in pp collisions at 7 and 8 TeV.
[3] Based on 5 fb^{-1} of data collected at $\sqrt{s}$ = 7, 8, 13 TeV. Allowing for CP violation, the direct CP violation in mixing is reported $1.00 < |q/p| < 1.35$ at the 68.3% CL for the $D^0 \rightarrow K^+\pi^-$ and $\overline{D}^0 \rightarrow K^+\pi^-$.
[4] The time-dependent Dalitz-plot analysis of $D^0 \rightarrow K^0_S\pi^+\pi^-$ is employed. Decay-time information and interference on the Dalitz plot are used to distinguish doubly Cabibbo-suppressed decays from mixing and to measure the relative phase between $D^0 \rightarrow K^{*+}\pi^-$ and $\overline{D}^0 \rightarrow K^{*+}\pi^-$. This value allows CP violation and is sensitive to the sign of Δm.
[5] Based on 3 fb^{-1} of data collected at $\sqrt{s}$ = 7, 8 TeV. Allowing for CP violation, the direct CP violation in mixing is reported $0.75 < |q/p| < 1.24$ at the 68.3% CL for the $D^0 \rightarrow K^+\pi^-$ and $\overline{D}^0 \rightarrow K^+\pi^-$.
[6] The phase of p/q is $(-14^{+16}_{-18} \pm 5)^\circ$. The ZHANG 07B value is from the time-dependent Dalitz-plot analysis of $D^0 \rightarrow K^0_S\pi^+\pi^-$. Decay-time information and interference on the Dalitz plot are used to distinguish doubly Cabibbo-suppressed decays from mixing and to measure the relative phase between $D^0 \rightarrow K^{*+}\pi^-$ and $\overline{D}^0 \rightarrow K^{*+}\pi^-$. This value allows CP violation.

A_Γ

A_Γ is the decay-rate asymmetry for CP-even final states $A_\Gamma = (\overline{\tau}_+ - \tau_+) / (\overline{\tau}_+ + \tau_+)$. See the note on "$D^0$–$\overline{D}^0$ Mixing" above.

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
0.089±0.113 OUR EVALUATION				
0.09 ±0.17 OUR AVERAGE Error includes scale factor of 1.5. See the ideogram below.				
0.23 ±0.15 ±0.03		[1] AAIJ 21AI	LHCB	$D^0 \to K^+ K^-$
0.40 ±0.28 ±0.04		[1] AAIJ 21AI	LHCB	$D^0 \to \pi^+ \pi^-$
−0.44 ±0.23 ±0.06	21M	[2] AAIJ 20	LHCB	$D^0 \to K^+ K^-$
0.25 ±0.43 ±0.07	7M	[3] AAIJ 20	LHCB	$D^0 \to \pi^+ \pi^-$
−0.3 ±2.0 ±0.7		[4] STARIC 16	BELL	$e^+ e^- \to \Upsilon$(nS)
−1.2 ±1.2	1.8M	[5] AALTONEN 14Q	CDF	$p\overline{p}$, $\sqrt{s}$ = 1.96 TeV
0.9 ±2.6 ±0.6	0.7M	LEES 13	BABR	$e^+ e^- \to \Upsilon(4S)$
−5.9 ±5.9 ±2.1		[6] AAIJ 12K	LHCB	pp at 7 TeV, 2010 data.
• • • We do not use the following data for averages, fits, limits, etc. • • •				
−0.30 ±0.32 ±0.10	9.6M	[6] AAIJ 17AK	LHCB	Repl. by AAIJ 20
0.46 ±0.58 ±0.12	3.0M	[7] AAIJ 17AK	LHCB	Repl. by AAIJ 20
−1.34 ±0.77 $^{+0.26}_{-0.34}$	2.3M	[8] AAIJ 15AA	LHCB	Repl. by AAIJ 20
−0.92 ±1.45 $^{+0.25}_{-0.33}$	0.8M	[9] AAIJ 15AA	LHCB	Repl. by AAIJ 20
−0.35 ±0.62 ±0.12		[6] AAIJ 14AL	LHCB	Repl. by AAIJ 17AK
0.33 ±1.06 ±0.14		[7] AAIJ 14AL	LHCB	Repl. by AAIJ 17AK
2.6 ±3.6 ±0.8		AUBERT 08U	BABR	See LEES 13
0.1 ±3.0 ±2.5		STARIC 07	BELL	Repl. by STARIC 16
8 ±6 ±2		AUBERT 03P	BABR	$e^+ e^- \approx \Upsilon(4S)$

[1] Requires D^0 to originate from $D^*(2010)^+ \to D^0 \pi^+$. AAIJ 21AI measures the parameter $\Delta Y_f \simeq -A^f_\Gamma$ up to 1% corrections from y^f_{CP}.

[2] Measured using $D^0 \to K^+ K^-$ decays, combines measurements with D^0 either from partially reconstructed semileptonic B hadron decays or from $D^{*+} \to D^0 \pi^+$.

[3] Measured using $D^0 \to \pi^+ \pi^-$ decays, combines measurements with D^0 either from partially reconstructed semileptonic B hadron decays or from $D^{*+} \to D^0 \pi^+$.

[4] An improved measurement of $\overline{D}^0 - D^0$ mixing and a search for CP violation in D^0 decays to CP-even final states $K^+ K^-$ and $\pi^+ \pi^-$ using the final Belle data sample of 976 fb^{-1}.

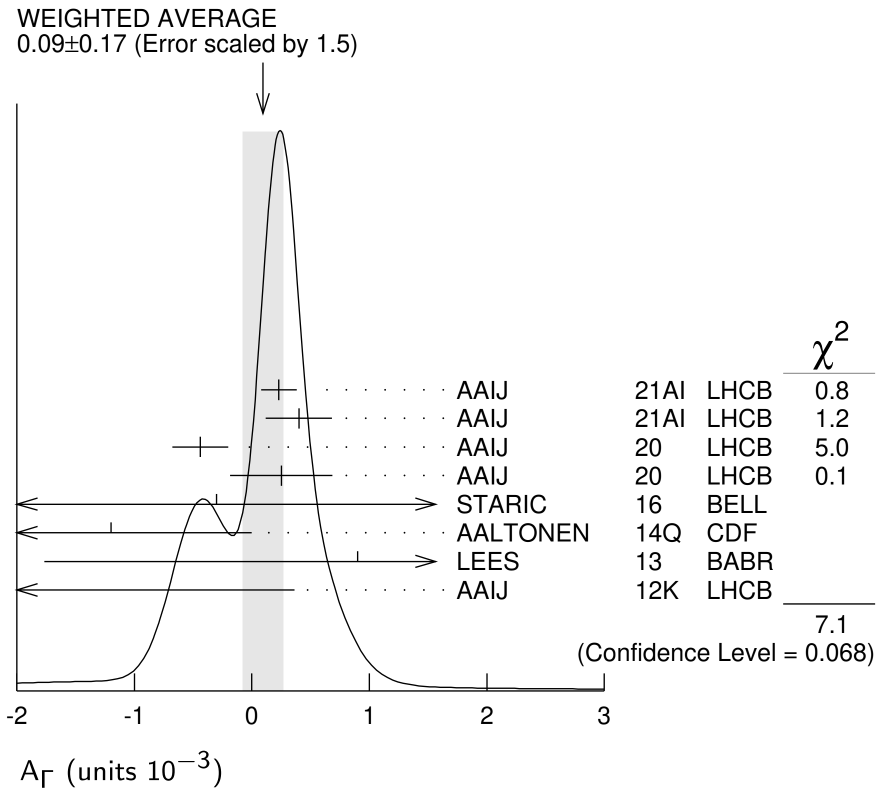
[5] Combined result from $D^0 \to K^+ K^-$ and $D^0 \to \pi^+ \pi^-$, with D^0 from $D^{*+} \to D^0 \pi^+$ (and cc).

[6] Measured using $D^{*+} \to D^0 \pi^+$, $D^0 \to K^+ K^-$ decays (and cc).

[7] Measured using $D^{*+} \to D^0 \pi^+$, $D^0 \to \pi^+ \pi^-$ decays (and cc).

[8] Measured using $D^0 \to K^+ K^-$ decays, with D^0 from partially reconstructed semileptonic B hadron decays.

[9] Measured using $D^0 \to \pi^+ \pi^-$ decays, with D^0 from partially reconstructed semileptonic B hadron decays.



$\phi^{K^0_S\pi\pi}$

Parametrizes *CP* violation in the interference between D^0 mixing and decay. The mass eigenstates D^0_1 and D^0_2 are related to the $C = \pm1$ states by $|D_{1,2}> = \mathrm{p}\,|D^0> + \mathrm{q}\,|\overline{D}^0>$. In the absence of *CP* violation in the decay, and using the usual phase convention where *CP* conservation implies q/p is real, $\phi^{K^0_S\pi\pi}$ is identical to the decay-mode-independent parameter $\phi = \arg(\mathrm{q/p})$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.02 $^{+0.04}_{-0.05}$ OUR AVERAGE					
$0.056^{+0.047}_{-0.051}$	30.6M	[1] AAIJ	21AB	LHCB	pp at 13 TeV
$-0.09\ ^{+0.11}_{-0.16}$	2.3M	[2] AAIJ	19X	LHCB	pp at 7, 8 TeV
$-0.10\ \pm0.19\ ^{+0.07}_{-0.09}$	1.2M	[3] PENG	14	BELL	e^+e^- at $\Upsilon(4S, 5S)$

[1] AAIJ 21AB result comes form analysis of $D^0 \rightarrow K^0_S\pi^+\pi^-$ events.

[2] AAIJ 19X result comes form analysis of $D^0 \rightarrow K^0_S\pi^+\pi^-$ events. D^0 come from D^{*+} and $\overline{B} \rightarrow D^0\mu^- X$ decays (and c.c.) in pp collisions at 7 and 8 TeV.

[3] PENG 14 reports $-0.10 \pm 0.19 \pm 0.05^{+0.05}_{-0.07}$ value where the last uncertainty is due to the amplitude model. We have added the systematic uncertainties in quadrature.

cos δ

δ is the $D^0 \to K^+\pi^-$ relative strong phase.

VALUE	DOCUMENT ID		TECN	COMMENT
0.97±0.11 OUR AVERAGE				
$1.02 \pm 0.11 \pm 0.06$	[1] ABLIKIM	14C	BES3	$e^+e^- \to D^0\overline{D}^0$, 3.77 GeV
$0.81^{+0.22}_{-0.18}{}^{+0.07}_{-0.05}$	[2] ASNER	12	CLEO	$e^+e^- \to D^0\overline{D}^0$, 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$1.03^{+0.31}_{-0.17} \pm 0.06$	[3] ASNER	08	CLEO	Repl. by ASNER 12

[1] Uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$ to measure the asymmetry of the branching fraction of $D^0 \to K^-\pi^+$ in CP-odd and CP-even eigenstates to be $(12.7 \pm 1.3 \pm 0.7)\%$. A fit that includes external measurements of charm mixing parameters finds the value quoted above.

[2] Uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$, where decay rates of CP-tagged $K\pi$ final states depend on the strong phases between the decays of $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$. The measurements obtained $\sin(\delta) = -0.01 \pm 0.41 \pm 0.04$ and $|\delta| = (10^{+28}_{-53}{}^{+13}_{-00})^\circ$ as well. A fit that includes external measurements of charm mixing parameters finds $\cos(\delta) = 1.15^{+0.19}_{-0.17}{}^{+0.00}_{-0.08}$, $\sin(\delta) = 0.56^{+0.32}_{-0.31}{}^{+0.21}_{-0.20}$, and $|\delta| = (18^{+11}_{-17})^\circ$.

[3] ASNER 08 uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$, where decay rates of CP-tagged $K\pi$ final states depend on $\cos\delta$ because of interfering amplitudes. The above measurement implies $|\delta| < 75^\circ$ with a confidence level of 95%. A fit that includes external measurements of charm mixing parameters finds $\cos\delta = 1.10 \pm 0.35 \pm 0.07$. See also the note on "$D^0$– $\overline{D}^0$ Mixing" p. 783 in our 2008 Review (PDG 08).

$D^0 \to K^-\pi^+\pi^0$ COHERENCE FACTOR $R_{K\pi\pi^0}$

See the note on 'D^0-$\overline{D}^0$ Mixing' for the definition. $R_{K\pi\pi^0}$ can have any value between 0 and 1. A value near 1 indicates the decay is dominated by a few intermediate states with limited interference.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.792±0.033 OUR AVERAGE					
0.78 ± 0.04	62.4k	[1] ABLIKIM	21AA	BES3	$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$
0.82 ± 0.06		[1,2,3] EVANS	16		$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.82 ± 0.07		[1,3] LIBBY	14		Repl. by EVANS 16
$0.78 \; {}^{+0.11}_{-0.25}$		[4] LOWREY	09	CLEO	Repl. by LIBBY 14

[1] Uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of CP-tagged $K^-\pi^+\pi^0$ final states depend on $R_{K\pi\pi^0}$ and $\delta^{K\pi\pi^0}$.

[2] A combined fit with a recent LHCb $D^0\overline{D}^0$ mixing results in AAIJ 16F is also reported to be 0.81 ± 0.06.

[3] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

[4] LOWREY 09 uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of CP-tagged $K^-\pi^+\pi^0$ final states depend on $R_{K\pi\pi^0}$ and $\delta^{K\pi\pi^0}$. A fit that includes external measurements of charm mixing parameters gets $R_{K\pi\pi^0} = 0.84 \pm 0.07$.

$D^0 \to K^-\pi^+\pi^0$ AVERAGE RELATIVE STRONG PHASE $\delta^{K\pi\pi^0}$

The quoted value of δ is based on the same sign CP phase of D^0 and $\overline{D}^0$ convention.

VALUE (°)	EVTS	DOCUMENT ID		TECN	COMMENT
198±10 OUR AVERAGE					
196^{+14}_{-15}	62.4k	[1] ABLIKIM	21AA	BES3	$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$
199^{+13}_{-14}		[1,2,3] EVANS	16		$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
164^{+20}_{-14}		[1,3] LIBBY	14		Repl. by EVANS 16
239^{+32}_{-28}		[4] LOWREY	09	CLEO	Repl. by LIBBY 14

[1] Uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of CP-tagged $K^-\pi^+\pi^0$ final states depend on $R_{K\pi\pi^0}$ and $\delta^{K\pi\pi^0}$.

[2] A combined fit with a recent LHCB $D^0\overline{D}^0$ mixing results in AAIJ 16F is also reported to be 198^{+14}_{-15} degree.

[3] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

[4] LOWREY 09 uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of CP-tagged $K^-\pi^+\pi^0$ final states depend on $R_{K\pi\pi^0}$ and $\delta^{K\pi\pi^0}$. A fit that includes external measurements of charm mixing parameters gets $\delta^{K\pi\pi^0} = (227^{+14}_{-17})^\circ$.

$D^0 \to K^-\pi^-2\pi^+$ COHERENCE FACTOR $R_{K3\pi}$

See the note on 'D^0-$\overline{D}^0$ Mixing' for the definition. $R_{K3\pi}$ can have any value between 0 and 1. A value near 1 indicates the decay is dominated by a few intermediate states with limited interference.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$0.52^{+0.10}_{-0.09}$ OUR AVERAGE					
$0.52^{+0.12}_{-0.10}$	8.6k	[1] ABLIKIM	21AA	BES3	$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$
$0.53^{+0.18}_{-0.21}$		[1,2,3] EVANS	16		$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$, pp at 7,8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.458\pm0.010\pm0.023$	0.9M,3k	[4] AAIJ	18AI	LHCB	amplitude models
$0.32^{+0.20}_{-0.28}$		[1,3] LIBBY	14		Repl. by EVANS 16
$0.36^{+0.24}_{-0.30}$		[5] LOWREY	09	CLEO	Repl. by LIBBY 14

[1] Uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of CP-tagged $K^-\pi^-2\pi^+$ final states depend on $R_{K3\pi}$ and $\delta^{K3\pi}$.

[2] A combined fit with a recent LHCB $D^0\overline{D}^0$ mixing results in AAIJ 16F is also reported, to be $0.43^{+0.17}_{-0.13}$.

[3] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

[4] Calculated from amplitude models to $D^0 \to K^-\pi^-2\pi^+$ and $D^0 \to K^+\pi^+2\pi^-$ and cc. Reports $0.458 \pm 0.010 \pm 0.012 \pm 0.020$ value where the 3rd uncertainty is the model uncertainty. We combined both systematic uncertainties in quadrature. Because of the

importance of model independence in the practical use of the coherence factor, we do not include model-derived results in the average.

[5] LOWREY 09 uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of CP-tagged $K^-\pi^-2\pi^+$ final states depend on $R_{K3\pi}$ and $\delta^{K3\pi}$. A fit that includes external measurements of charm mixing parameters gets $R_{K3\pi} = 0.33^{+0.26}_{-0.23}$.

$D^0 \to K^-\pi^-2\pi^+$ AVERAGE RELATIVE STRONG PHASE $\delta^{K3\pi}$

The quoted value of δ is based on the same sign CP phase of D^0 and $\overline{D}^0$ convention.

VALUE (°)	EVTS	DOCUMENT ID		TECN	COMMENT
149^{+26}_{-16} OUR AVERAGE	Error includes scale factor of 1.4.				
167^{+31}_{-19}	8.6k	[1] ABLIKIM	21AA	BES3	$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$
125^{+22}_{-14}		[1,2,3] EVANS	16		$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
255^{+21}_{-78}		[1,3] LIBBY	14		Repl. by EVANS 16
118^{+62}_{-53}		[4] LOWREY	09	CLEO	Repl. by LIBBY 14

[1] Uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of CP-tagged $K^-\pi^-2\pi^+$ final states depend on $R_{K3\pi}$ and $\delta^{K3\pi}$.

[2] A combined fit with a recent LHCb $D^0\overline{D}^0$ mixing results in AAIJ 16F is also reported to be $(128^{+28}_{-17})°$.

[3] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

[4] LOWREY 09 uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$, where the decay rates of CP-tagged $K^-\pi^-2\pi^+$ final states depend on $R_{K3\pi}$ and $\delta^{K3\pi}$. A fit that includes external measurements of charm mixing parameters gets $\delta^{K3\pi} = (114^{+26}_{-23})°$.

$D^0 \to K^-\pi^-2\pi^+$, $R_{K3\pi}$ (y cos$\delta^{K3\pi}$ − x sin$\delta^{K3\pi}$)

VALUE (10^{-3} TeV^{-1})	EVTS	DOCUMENT ID		TECN	COMMENT
−3.0±0.7	42.5k	[1] AAIJ	16F	LHCB	pp at 7, 8 TeV

[1] From a time-dependent analysis of D mixing in $D^0 \to K^+\pi^-\pi^+\pi^-$. This result uses external constraints on $R_M = 1/2\ (x^2 + y^2)$. Without such constraints, AAIJ 16F measure $(0.3 \pm 1.8) \times 10^{-3}$, with a large correlation coefficient to R_M.

$D^0 \to K^0_S K^+\pi^-$ COHERENCE FACTOR $R_{K^0_S K\pi}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.70±0.08	[1] INSLER	12	CLEO	$e^+e^- \to D^0\overline{D}^0$ at 3.77 GeV

[1] Uses quantum correlations in $e^+e^- \to D^0\overline{D}^0$ at the $\psi(3770)$, where the signal side D decays to $K^0_S K\pi$ and the tag-side D decays to $K\pi$, $K\pi\pi\pi$, $K\pi\pi^0$, and 10 additional CP-even, CP-odd, and mixed CP modes involving K^0_S or K^0_L.

$D^0 \rightarrow K^0_S K^+ \pi^-$ AVERAGE RELATIVE STRONG PHASE $\delta^{K^0_S K \pi}$

The quoted value of δ is based on the same sign CP phase of D^0 and $\overline{D}^0$ convention.

VALUE (°)	DOCUMENT ID		TECN	COMMENT
0.1±15.7	[1] INSLER	12	CLEO	$e^+ e^- \rightarrow D^0 \overline{D}^0$ at 3.77 GeV

[1] Uses quantum correlations in $e^+ e^- \rightarrow D^0 \overline{D}^0$ at the $\psi(3770)$, where the signal side D decays to $K^0_S K \pi$ and the tag-side D decays to $K\pi$, $K\pi\pi\pi$, $K\pi\pi^0$, and 10 additional CP-even, CP-odd, and mixed CP modes involving K^0_S or K^0_L.

$D^0 \rightarrow K^* K$ COHERENCE FACTOR $R_{K^* K}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.94±0.12	[1] INSLER	12	CLEO	$e^+ e^- \rightarrow D^0 \overline{D}^0$ at 3.77 GeV

[1] Uses quantum correlations in $e^+ e^- \rightarrow D^0 \overline{D}^0$ at the $\psi(3770)$, where the signal side D decays to $K^0_S K \pi$ and the tag-side D decays to $K\pi$, $K\pi\pi\pi$, $K\pi\pi^0$., and 10 additional CP-even, CP-odd, and mixed CP modes involving K^0_S or K^0_L.

$D^0 \rightarrow K^* K$ AVERAGE RELATIVE STRONG PHASE $\delta^{K^* K}$

The quoted value of δ is based on the same sign CP phase of D^0 and $\overline{D}^0$ convention.

VALUE (°)	DOCUMENT ID		TECN	COMMENT
−16.6±18.4	[1] INSLER	12	CLEO	$e^+ e^- \rightarrow D^0 \overline{D}^0$ at 3.77 GeV

[1] Uses quantum correlations in $e^+ e^- \rightarrow D^0 \overline{D}^0$ at the $\psi(3770)$, where the signal side D decays to $K^0_S K \pi$ and the tag-side D decays to $K\pi$, $K\pi\pi\pi$, $K\pi\pi^0$, and 10 additional CP-even, CP-odd, and mixed CP modes involving K^0_S or K^0_L.

D^0 DECAY MODES

Most decay modes (other than the semileptonic modes) that involve a neutral K meson are now given as K^0_S modes, not as $\overline{K}^0$ modes. Nearly always it is a K^0_S that is measured, and interference between Cabibbo-allowed and doubly Cabibbo-suppressed modes can invalidate the assumption that $2\,\Gamma(K^0_S) = \Gamma(\overline{K}^0)$.

	Mode		Fraction (Γ_i/Γ)	Scale factor/ Confidence level
	Topological modes			
Γ_1	0-prongs	[a]	(15 ± 6) %	
Γ_2	2-prongs		(71 ± 6) %	
Γ_3	4-prongs	[b]	(14.6 ± 0.5) %	
Γ_4	6-prongs	[c]	(6.5 ± 1.3) $\times 10^{-4}$	
	Inclusive modes			
Γ_5	e^+ anything	[d]	(6.49 ± 0.11) %	
Γ_6	μ^+ anything		(6.8 ± 0.6) %	
Γ_7	K^- anything		(54.7 ± 2.8) %	S=1.3
Γ_8	$\overline{K}^0$ anything + K^0 anything		(47 ± 4) %	
Γ_9	K^+ anything		(3.4 ± 0.4) %	
Γ_{10}	$K^*(892)^-$ anything		(15 ± 9) %	

Γ_{11}	$\overline{K}^*(892)^0$ anything		(9 ± 4) %		
Γ_{12}	$K^*(892)^+$ anything		< 3.6 %	CL=90%	
Γ_{13}	$K^*(892)^0$ anything		(2.8 ± 1.3) %		
Γ_{14}	η anything		(9.5 ± 0.9) %		
Γ_{15}	η' anything		(2.48 ± 0.27) %		
Γ_{16}	ϕ anything		(1.08 ± 0.04) %		
Γ_{17}	invisibles		< 9.4 $\times 10^{-5}$	CL=90%	

Semileptonic modes

Γ_{18}	$K^- \ell^+ \nu_\ell$				
Γ_{19}	$K^- e^+ \nu_e$		(3.549± 0.026) %		S=1.2
Γ_{20}	$K^- \mu^+ \nu_\mu$		(3.41 ± 0.04) %		
Γ_{21}	$K^*(892)^- e^+ \nu_e$		(2.15 ± 0.16) %		
Γ_{22}	$K^*(892)^- \mu^+ \nu_\mu$		(1.89 ± 0.24) %		
Γ_{23}	$K^- \pi^0 e^+ \nu_e$		(1.6 $^{+1.3}_{-0.5}$) %		
Γ_{24}	$\overline{K}^0 \pi^- e^+ \nu_e$		(1.44 ± 0.04) %		
Γ_{25}	$(\overline{K}^0 \pi^-)_{S-wave} e^+ \nu_e$		(7.9 ± 1.7) $\times 10^{-4}$		
Γ_{26}	$K^- \pi^+ \pi^- e^+ \nu_e$		(2.8 $^{+1.4}_{-1.1}$) $\times 10^{-4}$		
Γ_{27}	$K_1(1270)^- e^+ \nu_e$		(1.01 ± 0.18) $\times 10^{-3}$		
Γ_{28}	$K^- \pi^+ \pi^- \mu^+ \nu_\mu$		< 1.3 $\times 10^{-3}$	CL=90%	
Γ_{29}	$(\overline{K}^*(892)\pi)^- \mu^+ \nu_\mu$		< 1.5 $\times 10^{-3}$	CL=90%	
Γ_{30}	$\pi^- e^+ \nu_e$		(2.91 ± 0.04) $\times 10^{-3}$		
Γ_{31}	$\pi^- \mu^+ \nu_\mu$		(2.67 ± 0.12) $\times 10^{-3}$		S=1.3
Γ_{32}	$\pi^- \pi^0 e^+ \nu_e$		(1.45 ± 0.07) $\times 10^{-3}$		
Γ_{33}	$\rho^- e^+ \nu_e$		(1.50 ± 0.12) $\times 10^{-3}$		S=1.9
Γ_{34}	$\rho^- \mu^+ \nu_\mu$		(1.35 ± 0.13) $\times 10^{-3}$		
Γ_{35}	$a(980)^- e^+ \nu_e$, $a^- \to \eta\pi^-$		(1.33 $^{+0.34}_{-0.30}$) $\times 10^{-4}$		
Γ_{36}	$b_1(1235)^- e^+ \nu_e$, $b_1^- \to \omega\pi^-$		< 1.12 $\times 10^{-4}$	CL=90%	

Hadronic modes with one $\overline{K}$

Γ_{37}	$K^- \pi^+$		(3.947± 0.030) %		S=1.2
Γ_{38}	$K^0_S \pi^0$		(1.240± 0.022) %		
Γ_{39}	$K^0_L \pi^0$		(10.0 ± 0.7) $\times 10^{-3}$		
Γ_{40}	$K^0_S \pi^+ \pi^-$	[e]	(2.80 ± 0.18) %		S=1.1
Γ_{41}	$K^0_S \rho^0$		(6.3 $^{+0.6}_{-0.8}$) $\times 10^{-3}$		
Γ_{42}	$K^0_S \omega$, $\omega \to \pi^+\pi^-$		(2.0 ± 0.6) $\times 10^{-4}$		
Γ_{43}	$K^0_S (\pi^+\pi^-)_{S-wave}$		(3.3 ± 0.8) $\times 10^{-3}$		
Γ_{44}	$K^0_S f_0(980)$, $f_0 \to \pi^+\pi^-$		(1.20 $^{+0.40}_{-0.23}$) $\times 10^{-3}$		
Γ_{45}	$K^0_S f_0(1370)$, $f_0 \to \pi^+\pi^-$		(2.8 $^{+0.9}_{-1.3}$) $\times 10^{-3}$		
Γ_{46}	$K^0_S f_2(1270)$, $f_2 \to \pi^+\pi^-$		(9 $^{+10}_{-6}$) $\times 10^{-5}$		

Γ_{47}	$K^*(892)^-\pi^+$, $K^{*-} \to K^0_S\pi^-$		$(1.64 {}^{+0.14}_{-0.17})$ %	
Γ_{48}	$K^*_0(1430)^-\pi^+$, $K^{*-}_0 \to K^0_S\pi^-$		$(2.67 {}^{+0.40}_{-0.33}) \times 10^{-3}$	
Γ_{49}	$K^*_2(1430)^-\pi^+$, $K^{*-}_2 \to K^0_S\pi^-$		$(3.4 {}^{+1.9}_{-1.0}) \times 10^{-4}$	
Γ_{50}	$K^*(1680)^-\pi^+$, $K^{*-} \to K^0_S\pi^-$		$(4.4 \pm 3.5) \times 10^{-4}$	
Γ_{51}	$K^*(892)^+\pi^-$, $K^{*+} \to K^0_S\pi^+$	[f]	$(1.13 {}^{+0.60}_{-0.34}) \times 10^{-4}$	
Γ_{52}	$K^*_0(1430)^+\pi^-$, $K^{*+}_0 \to K^0_S\pi^+$	[f]	$< 1.4 \times 10^{-5}$	CL=95%
Γ_{53}	$K^*_2(1430)^+\pi^-$, $K^{*+}_2 \to K^0_S\pi^+$	[f]	$< 3.4 \times 10^{-5}$	CL=95%
Γ_{54}	$K^0_S\pi^+\pi^-$ nonresonant		$(2.5 {}^{+6.0}_{-1.6}) \times 10^{-4}$	
Γ_{55}	$K^-\pi^+\pi^0$	[e]	(14.4 ± 0.5) %	S=2.0
Γ_{56}	$K^-\rho^+$		(11.2 ± 0.7) %	
Γ_{57}	$K^-\rho(1700)^+$, $\rho^+ \to \pi^+\pi^0$		$(8.2 \pm 1.8) \times 10^{-3}$	
Γ_{58}	$K^*(892)^-\pi^+$, $K^*(892)^- \to K^-\pi^0$		$(2.31 {}^{+0.40}_{-0.20})$ %	
Γ_{59}	$\overline{K}^*(892)^0\pi^0$, $\overline{K}^*(892)^0 \to K^-\pi^+$		(1.95 ± 0.24) %	
Γ_{60}	$K^*_0(1430)^-\pi^+$, $K^{*-}_0 \to K^-\pi^0$		$(4.8 \pm 2.2) \times 10^{-3}$	
Γ_{61}	$\overline{K}^*_0(1430)^0\pi^0$, $\overline{K}^{*0}_0 \to K^-\pi^+$		$(5.9 {}^{+5.0}_{-1.6}) \times 10^{-3}$	
Γ_{62}	$K^*(1680)^-\pi^+$, $K^{*-} \to K^-\pi^0$		$(1.9 \pm 0.7) \times 10^{-3}$	
Γ_{63}	$K^-\pi^+\pi^0$ nonresonant		$(1.15 {}^{+0.60}_{-0.20})$ %	
Γ_{64}	$K^0_S 2\pi^0$		$(9.1 \pm 1.1) \times 10^{-3}$	S=2.2
Γ_{65}	$K^0_S(2\pi^0)_{S-wave}$		$(2.6 \pm 0.7) \times 10^{-3}$	
Γ_{66}	$\overline{K}^*(892)^0\pi^0$, $\overline{K}^{*0} \to K^0_S\pi^0$		$(8.1 \pm 0.7) \times 10^{-3}$	
Γ_{67}	$\overline{K}^*(1430)^0\pi^0$, $\overline{K}^{*0} \to K^0_S\pi^0$		$(4 \pm 23) \times 10^{-5}$	
Γ_{68}	$\overline{K}^*(1680)^0\pi^0$, $\overline{K}^{*0} \to K^0_S\pi^0$		$(1.0 \pm 0.4) \times 10^{-3}$	
Γ_{69}	$K^0_S f_2(1270)$, $f_2 \to 2\pi^0$		$(2.3 \pm 1.1) \times 10^{-4}$	
Γ_{70}	$2K^0_S$, one $K^0_S \to 2\pi^0$		$(3.2 \pm 1.1) \times 10^{-4}$	
Γ_{71}	$K^0_S 2\pi^0$ nonresonant			
Γ_{72}	$K^- 2\pi^+\pi^-$	[e]	(8.22 ± 0.14) %	S=1.1
Γ_{73}	$K^-\pi^+\rho^0$ total		(6.87 ± 0.31) %	
Γ_{74}	$K^-\pi^+\rho^0$ 3-body		$(6.1 \pm 1.6) \times 10^{-3}$	

Γ_{75}	$\overline{K}^*(892)^0 \rho^0$, $\overline{K}^{*0} \to K^- \pi^+$		(1.01 ± 0.05) %	
Γ_{76}	$\overline{K}^*(892)^0 \rho^0$ transverse, $\overline{K}^{*0} \to K^- \pi^+$		(1.2 ± 0.4) %	
Γ_{77}	$K^- a_1(1260)^+$, $a_1^+ \to \rho^0 \pi^+$		(4.32 ± 0.32) %	
Γ_{78}	$K_1(1270)^- \pi^+$, $K_1^- \to K^- \pi^+ \pi^-$ total		$(3.9 \pm 0.4) \times 10^{-3}$	
Γ_{79}	$\overline{K}^*(892)^0 \pi^+ \pi^-$ total, $\overline{K}^*(892)^0 \to K^- \pi^+$			
Γ_{80}	$\overline{K}^*(892)^0 \pi^+ \pi^-$ 3-body, $\overline{K}^{*0} \to K^- \pi^+$			
Γ_{81}	$K_1(1270)^- \pi^+$, $K_1^- \to \overline{K}^*(892)^0 \pi^-$, $\overline{K}^{*0} \to K^- \pi^+$		$(6.6 \pm 2.3) \times 10^{-4}$	
Γ_{82}	$K^- 2\pi^+ \pi^-$ nonresonant		(1.81 ± 0.07) %	
Γ_{83}	$K^0_S \pi^+ \pi^- \pi^0$	[g]	(5.2 ± 0.6) %	
Γ_{84}	$K^0_S \eta$, $\eta \to \pi^+ \pi^- \pi^0$		$(1.17 \pm 0.03) \times 10^{-3}$	
Γ_{85}	$K^0_S \omega$, $\omega \to \pi^+ \pi^- \pi^0$		$(9.9 \pm 0.6) \times 10^{-3}$	
Γ_{86}	$K^- \pi^+ 2\pi^0$		(8.86 ± 0.23) %	
Γ_{87}	$K^- 2\pi^+ \pi^- \pi^0$		(4.3 ± 0.4) %	
Γ_{88}	$\overline{K}^*(892)^0 \pi^+ \pi^- \pi^0$, $\overline{K}^{*0} \to K^- \pi^+$		(1.3 ± 0.6) %	
Γ_{89}	$K^- \pi^+ \omega$, $\omega \to \pi^+ \pi^- \pi^0$		(2.8 ± 0.5) %	
Γ_{90}	$\overline{K}^*(892)^0 \omega$, $\overline{K}^{*0} \to K^- \pi^+$, $\omega \to \pi^+ \pi^- \pi^0$		$(6.5 \pm 3.0) \times 10^{-3}$	
Γ_{91}	$K^0_S \eta \pi^0$		(1.01 ± 0.05) %	
Γ_{92}	$K^0_S a_0(980)$, $a_0 \to \eta \pi^0$		(1.20 ± 0.28) %	
Γ_{93}	$\overline{K}^*(892)^0 \eta$, $\overline{K}^{*0} \to K^0_S \pi^0$		$(2.9 \pm 0.7) \times 10^{-3}$	
Γ_{94}	$K^- \pi^+ \eta$		(1.88 ± 0.05) %	S=1.4
Γ_{95}	$K^*(892)^0 \eta$, $K^{*0} \to K^- \pi^+$		$(8.9 ^{+0.8}_{-0.6}) \times 10^{-3}$	
Γ_{96}	$a_0(980)^+ K^-$, $a_0^+ \to \eta \pi^+$		$(7.4 ^{+0.9}_{-0.7}) \times 10^{-3}$	
Γ_{97}	$K_2^*(1980)^- \pi^+$, $K_2^{*-} \to K^- \eta$		$(2.2 ^{+1.7}_{-1.9}) \times 10^{-4}$	
Γ_{98}	$K^- \pi^+ \pi^0 \eta$		$(4.49 \pm 0.27) \times 10^{-3}$	
Γ_{99}	$K^0_S \pi^+ \pi^- \eta$		$(2.80 \pm 0.21) \times 10^{-3}$	
Γ_{100}	$K^0_S 2\pi^0 \eta$		$(1.76 \pm 0.26) \times 10^{-3}$	
Γ_{101}	$K^0_S 2\pi^+ 2\pi^-$		$(2.66 \pm 0.30) \times 10^{-3}$	
Γ_{102}	$K^0_S \rho^0 \pi^+ \pi^-$, no $K^*(892)^-$		$(1.1 \pm 0.7) \times 10^{-3}$	
Γ_{103}	$K^*(892)^- 2\pi^+ \pi^-$, $K^*(892)^- \to K^0_S \pi^-$, no ρ^0		$(5 \pm 7) \times 10^{-4}$	

Γ_{104}	$K^*(892)^- \rho^0 \pi^+$, $K^*(892)^- \to K^0_S \pi^-$	$(1.6 \pm 0.6) \times 10^{-3}$	
Γ_{105}	$K^0_S 2\pi^+ 2\pi^-$ nonresonant	$< 1.2 \times 10^{-3}$	CL=90%
Γ_{106}	$\overline{K}^0 \pi^+ \pi^- 2\pi^0 (\pi^0)$		
Γ_{107}	$K^- 3\pi^+ 2\pi^-$	$(2.2 \pm 0.6) \times 10^{-4}$	

Fractions of some of the following modes with resonances have already appeared above as submodes of particular charged-particle modes. These nine modes below are all corrected for unseen decays of the resonances.

Γ_{108}	$K^0_S \eta$	$(5.09 \pm 0.13) \times 10^{-3}$	
Γ_{109}	$K^0_S \omega$	(1.11 ± 0.06) %	
Γ_{110}	$K^0_S \eta'(958)$	$(9.49 \pm 0.32) \times 10^{-3}$	
Γ_{111}	$\overline{K}^*(892)^0 \pi^+ \pi^- \pi^0$	(1.9 ± 0.9) %	
Γ_{112}	$\overline{K}^*(892)^0 \eta$	(1.41 ± 0.12) %	
Γ_{113}	$K^- \pi^+ \omega$	(3.1 ± 0.6) %	
Γ_{114}	$\overline{K}^*(892)^0 \omega$	(1.1 ± 0.5) %	
Γ_{115}	$K^- \pi^+ \eta'(958)$	$(6.43 \pm 0.34) \times 10^{-3}$	
Γ_{116}	$K^0_S \eta'(958) \pi^0$	$(2.52 \pm 0.27) \times 10^{-3}$	
Γ_{117}	$\overline{K}^*(892)^0 \eta'(958)$	$< 1.0 \times 10^{-3}$	CL=90%

Hadronic modes with three *K*'s

Γ_{118}	$K^0_S K^+ K^-$	$(4.42 \pm 0.32) \times 10^{-3}$	
Γ_{119}	$K^0_S a_0(980)^0$, $a^0_0 \to K^+ K^-$	$(2.9 \pm 0.4) \times 10^{-3}$	
Γ_{120}	$K^- a_0(980)^+$, $a^+_0 \to K^+ K^0_S$	$(5.9 \pm 1.8) \times 10^{-4}$	
Γ_{121}	$K^+ a_0(980)^-$, $a^-_0 \to K^- K^0_S$	$< 1.1 \times 10^{-4}$	CL=95%
Γ_{122}	$K^0_S f_0(980)$, $f_0 \to K^+ K^-$	$< 9 \times 10^{-5}$	CL=95%
Γ_{123}	$K^0_S \phi$, $\phi \to K^+ K^-$	$(2.03 \pm 0.15) \times 10^{-3}$	
Γ_{124}	$K^0_S f_0(1370)$, $f_0 \to K^+ K^-$	$(1.7 \pm 1.1) \times 10^{-4}$	
Γ_{125}	$3K^0_S$	$(7.5 \pm 0.7) \times 10^{-4}$	S=1.4
Γ_{126}	$K^+ 2K^- \pi^+$	$(2.25 \pm 0.32) \times 10^{-4}$	
Γ_{127}	$K^+ K^- \overline{K}^*(892)^0$, $\overline{K}^{*0} \to K^- \pi^+$	$(4.5 \pm 1.8) \times 10^{-5}$	
Γ_{128}	$K^- \pi^+ \phi$, $\phi \to K^+ K^-$	$(4.0 \pm 1.7) \times 10^{-5}$	
Γ_{129}	$\phi \overline{K}^*(892)^0$, $\phi \to K^+ K^-$, $\overline{K}^{*0} \to K^- \pi^+$	$(1.08 \pm 0.21) \times 10^{-4}$	
Γ_{130}	$K^+ 2K^- \pi^+$ nonresonant	$(3.4 \pm 1.5) \times 10^{-5}$	
Γ_{131}	$2K^0_S K^\pm \pi^\mp$	$(5.9 \pm 1.3) \times 10^{-4}$	

Pionic modes

Γ_{132}	$\pi^+ \pi^-$	$(1.454 \pm 0.024) \times 10^{-3}$	S=1.4
Γ_{133}	$2\pi^0$	$(8.26 \pm 0.25) \times 10^{-4}$	
Γ_{134}	$\pi^+ \pi^- \pi^0$	(1.49 ± 0.06) %	S=2.1
Γ_{135}	$\rho^+ \pi^-$	(1.01 ± 0.04) %	
Γ_{136}	$\rho^0 \pi^0$	$(3.86 \pm 0.23) \times 10^{-3}$	
Γ_{137}	$\rho^- \pi^+$	$(5.15 \pm 0.25) \times 10^{-3}$	

Γ_{138}	$\rho(1450)^+\pi^-$, $\rho^+ \to \pi^+\pi^0$	$(1.6 \pm 2.1) \times 10^{-5}$
Γ_{139}	$\rho(1450)^0\pi^0$, $\rho^0 \to \pi^+\pi^-$	$(4.5 \pm 2.0) \times 10^{-5}$
Γ_{140}	$\rho(1450)^-\pi^+$, $\rho^- \to \pi^-\pi^0$	$(2.7 \pm 0.4) \times 10^{-4}$
Γ_{141}	$\rho(1700)^+\pi^-$, $\rho^+ \to \pi^+\pi^0$	$(6.1 \pm 1.5) \times 10^{-4}$
Γ_{142}	$\rho(1700)^0\pi^0$, $\rho^0 \to \pi^+\pi^-$	$(7.4 \pm 1.8) \times 10^{-4}$
Γ_{143}	$\rho(1700)^-\pi^+$, $\rho^- \to \pi^-\pi^0$	$(4.8 \pm 1.1) \times 10^{-4}$
Γ_{144}	$f_0(980)\pi^0$, $f_0 \to \pi^+\pi^-$	$(3.7 \pm 0.9) \times 10^{-5}$
Γ_{145}	$f_0(500)\pi^0$, $f_0 \to \pi^+\pi^-$	$(1.22 \pm 0.22) \times 10^{-4}$
Γ_{146}	$f_0(1370)\pi^0$, $f_0 \to \pi^+\pi^-$	$(5.5 \pm 2.1) \times 10^{-5}$
Γ_{147}	$f_0(1500)\pi^0$, $f_0 \to \pi^+\pi^-$	$(5.8 \pm 1.6) \times 10^{-5}$
Γ_{148}	$f_0(1710)\pi^0$, $f_0 \to \pi^+\pi^-$	$(4.6 \pm 1.6) \times 10^{-5}$
Γ_{149}	$f_2(1270)\pi^0$, $f_2 \to \pi^+\pi^-$	$(1.97 \pm 0.21) \times 10^{-4}$
Γ_{150}	$\pi^+\pi^-\pi^0$ nonresonant	$(1.3 \pm 0.4) \times 10^{-4}$
Γ_{151}	$3\pi^0$	$(2.0 \pm 0.5) \times 10^{-4}$
Γ_{152}	$2\pi^+2\pi^-$	$(7.56 \pm 0.20) \times 10^{-3}$
Γ_{153}	$a_1(1260)^+\pi^-$, $a_1^+ \to 2\pi^+\pi^-$ total	$(4.53 \pm 0.31) \times 10^{-3}$
Γ_{154}	$a_1(1260)^+\pi^-$, $a_1^+ \to \rho^0\pi^+$ *S*-wave	$(3.13 \pm 0.21) \times 10^{-3}$
Γ_{155}	$a_1(1260)^+\pi^-$, $a_1^+ \to \rho^0\pi^+$ *D*-wave	$(1.9 \pm 0.5) \times 10^{-4}$
Γ_{156}	$a_1(1260)^+\pi^-$, $a_1^+ \to \sigma\pi^+$	$(6.4 \pm 0.7) \times 10^{-4}$
Γ_{157}	$a_1(1260)^-\pi^+$, $a_1^- \to \rho^0\pi^-$ *S*-wave	$(2.3 \pm 0.9) \times 10^{-4}$
Γ_{158}	$a_1(1260)^-\pi^+$, $a_1^- \to \sigma\pi^-$	$(6.0 \pm 3.4) \times 10^{-5}$
Γ_{159}	$\pi(1300)^+\pi^-$, $\pi(1300)^+ \to \sigma\pi^+$	$(5.1 \pm 2.7) \times 10^{-4}$
Γ_{160}	$\pi(1300)^-\pi^+$, $\pi(1300)^- \to \sigma\pi^-$	$(2.3 \pm 2.2) \times 10^{-4}$
Γ_{161}	$a_1(1640)^+\pi^-$, $a_1^+ \to \rho^0\pi^+$ *D*-wave	$(3.2 \pm 1.6) \times 10^{-4}$
Γ_{162}	$a_1(1640)^+\pi^-$, $a_1^+ \to \sigma\pi^+$	$(1.8 \pm 1.4) \times 10^{-4}$
Γ_{163}	$\pi_2(1670)^+\pi^-$, $\pi_2^+ \to f_2(1270)^0\pi^+$, $f_2^0 \to \pi^+\pi^-$	$(2.0 \pm 0.9) \times 10^{-4}$
Γ_{164}	$\pi_2(1670)^+\pi^-$, $\pi_2^+ \to \sigma\pi^+$	$(2.6 \pm 1.0) \times 10^{-4}$
Γ_{165}	$2\rho^0$ total	$(1.85 \pm 0.13) \times 10^{-3}$
Γ_{166}	$2\rho^0$, parallel helicities	$(8.3 \pm 3.2) \times 10^{-5}$
Γ_{167}	$2\rho^0$, perpendicular helicities	$(4.8 \pm 0.6) \times 10^{-4}$
Γ_{168}	$2\rho^0$, longitudinal helicities	$(1.27 \pm 0.10) \times 10^{-3}$
Γ_{169}	$2\rho(770)^0$, *S*-wave	$(1.8 \pm 1.3) \times 10^{-4}$
Γ_{170}	$2\rho(770)^0$, *P*-wave	$(5.3 \pm 1.3) \times 10^{-4}$
Γ_{171}	$2\rho(770)^0$, *D*-wave	$(6.2 \pm 3.0) \times 10^{-4}$

Γ_{172}	Resonant $(\pi^+\pi^-)\pi^+\pi^-$ 3-body total		$(1.51 \pm 0.12) \times 10^{-3}$	
Γ_{173}	$\sigma\pi^+\pi^-$		$(6.2 \pm 0.9) \times 10^{-4}$	
Γ_{174}	$\sigma\rho(770)^0$		$(5.0 \pm 2.5) \times 10^{-4}$	
Γ_{175}	$f_0(980)\pi^+\pi^-$, $f_0 \to \pi^+\pi^-$		$(1.8 \pm 0.5) \times 10^{-4}$	
Γ_{176}	$f_2(1270)\pi^+\pi^-$, $f_2 \to \pi^+\pi^-$		$(3.7 \pm 0.6) \times 10^{-4}$	
Γ_{177}	$2f_2(1270)$, $f_2 \to \pi^+\pi^-$		$(1.6 \pm 1.8) \times 10^{-4}$	
Γ_{178}	$f_0(1370)\sigma$, $f_0 \to \pi^+\pi^-$		$(1.6 \pm 0.5) \times 10^{-3}$	
Γ_{179}	$\pi^+\pi^-2\pi^0$		(1.02 ± 0.09) %	
Γ_{180}	$\eta\pi^0$	[h]	$(6.3 \pm 0.6) \times 10^{-4}$	S=1.1
Γ_{181}	$\omega\pi^0$	[h]	$(1.17 \pm 0.35) \times 10^{-4}$	
Γ_{182}	$\omega\eta$		$(1.98 \pm 0.18) \times 10^{-3}$	S=1.1
Γ_{183}	$2\pi^+2\pi^-\pi^0$		$(4.2 \pm 0.5) \times 10^{-3}$	
Γ_{184}	$\eta\pi^+\pi^-$	[h]	$(1.16 \pm 0.07) \times 10^{-3}$	
Γ_{185}	$\omega\pi^+\pi^-$	[h]	$(1.33 \pm 0.20) \times 10^{-3}$	
Γ_{186}	$\omega\pi^0\pi^0$		$< 1.10 \times 10^{-3}$	CL=90%
Γ_{187}	$\eta 2\pi^0$		$(3.8 \pm 1.3) \times 10^{-4}$	
Γ_{188}	$\pi^+\pi^-\pi^0\eta$		$(3.23 \pm 0.22) \times 10^{-3}$	
Γ_{189}	$3\pi^+3\pi^-$		$(4.3 \pm 1.2) \times 10^{-4}$	
Γ_{190}	$\eta'(958)\pi^0$		$(9.2 \pm 1.0) \times 10^{-4}$	
Γ_{191}	$\eta'(958)\pi^+\pi^-$		$(4.5 \pm 1.7) \times 10^{-4}$	
Γ_{192}	2η		$(2.11 \pm 0.19) \times 10^{-3}$	S=2.2
Γ_{193}	$2\eta\pi^0$		$(7.3 \pm 2.2) \times 10^{-4}$	
Γ_{194}	3η		$< 1.3 \times 10^{-4}$	CL=90%
Γ_{195}	$\eta\eta'(958)$		$(1.01 \pm 0.19) \times 10^{-3}$	

Hadronic modes with a $K\overline{K}$ pair

Γ_{196}	K^+K^-		$(4.08 \pm 0.06) \times 10^{-3}$	S=1.6
Γ_{197}	$2K^0_S$		$(1.41 \pm 0.05) \times 10^{-4}$	S=1.1
Γ_{198}	$K^0_S K^-\pi^+$		$(3.3 \pm 0.5) \times 10^{-3}$	S=1.1
Γ_{199}	$\overline{K}^*(892)^0 K^0_S$, $\overline{K}^{*0} \to K^-\pi^+$		$(8.2 \pm 1.6) \times 10^{-5}$	
Γ_{200}	$K^*(892)^+ K^-$, $K^{*+} \to K^0_S\pi^+$		$(1.89 \pm 0.30) \times 10^{-3}$	
Γ_{201}	$\overline{K}^*(1410)^0 K^0_S$, $\overline{K}^{*0} \to K^-\pi^+$		$(1.3 \pm 1.9) \times 10^{-4}$	
Γ_{202}	$K^*(1410)^+ K^-$, $K^{*+} \to K^0_S\pi^+$		$(3.2 \pm 1.9) \times 10^{-4}$	
Γ_{203}	$(K^-\pi^+)_{S-wave} K^0_S$		$(6.0 \pm 2.9) \times 10^{-4}$	
Γ_{204}	$(K^0_S\pi^+)_{S-wave} K^-$		$(3.9 \pm 1.0) \times 10^{-4}$	
Γ_{205}	$a_0(980)^-\pi^+$, $a_0^- \to K^0_S K^-$		$(1.3 \pm 1.4) \times 10^{-4}$	

Γ_{206}	$a_0(1450)^-\pi^+$, $a_0^- \to K_S^0 K^-$	$(2.5 \pm 2.0) \times 10^{-5}$	
Γ_{207}	$a_2(1320)^-\pi^+$, $a_2^- \to K_S^0 K^-$	$(5 \pm 5) \times 10^{-6}$	
Γ_{208}	$\rho(1450)^-\pi^+$, $\rho^- \to K_S^0 K^-$	$(4.6 \pm 2.5) \times 10^{-5}$	
Γ_{209}	$K_S^0 K^+ \pi^-$	$(2.17 \pm 0.34) \times 10^{-3}$	S=1.1
Γ_{210}	$K^*(892)^0 K_S^0$, $K^{*0} \to K^+\pi^-$	$(1.12 \pm 0.21) \times 10^{-4}$	
Γ_{211}	$K^*(892)^- K^+$, $K^{*-} \to K_S^0 \pi^-$	$(6.2 \pm 1.0) \times 10^{-4}$	
Γ_{212}	$K^*(1410)^0 K_S^0$, $K^{*0} \to K^+\pi^+$	$(5 \pm 8) \times 10^{-5}$	
Γ_{213}	$K^*(1410)^- K^+$, $K^{*-} \to K_S^0 \pi^-$	$(2.6 \pm 2.0) \times 10^{-4}$	
Γ_{214}	$(K^+\pi^-)_{S-wave} K_S^0$	$(3.7 \pm 1.9) \times 10^{-4}$	
Γ_{215}	$(K_S^0\pi^-)_{S-wave} K^+$	$(1.4 \pm 0.6) \times 10^{-4}$	
Γ_{216}	$a_0(980)^+\pi^-$, $a_0^+ \to K_S^0 K^+$	$(6 \pm 4) \times 10^{-4}$	
Γ_{217}	$a_0(1450)^+\pi^-$, $a_0^+ \to K_S^0 K^+$	$(3.2 \pm 2.5) \times 10^{-5}$	
Γ_{218}	$\rho(1700)^+\pi^-$, $\rho^+ \to K_S^0 K^+$	$(1.1 \pm 0.6) \times 10^{-5}$	
Γ_{219}	$K^+ K^- \pi^0$	$(3.42 \pm 0.14) \times 10^{-3}$	
Γ_{220}	$K^*(892)^+ K^-$, $K^*(892)^+ \to K^+\pi^0$	$(1.52 \pm 0.07) \times 10^{-3}$	
Γ_{221}	$K^*(892)^- K^+$, $K^*(892)^- \to K^-\pi^0$	$(5.4 \pm 0.4) \times 10^{-4}$	
Γ_{222}	$(K^+\pi^0)_{S-wave} K^-$	$(2.43 \pm 0.18) \times 10^{-3}$	
Γ_{223}	$(K^-\pi^0)_{S-wave} K^+$	$(1.3 \pm 0.5) \times 10^{-4}$	
Γ_{224}	$f_0(980)\pi^0$, $f_0 \to K^+K^-$	$(3.6 \pm 0.6) \times 10^{-4}$	
Γ_{225}	$\phi\pi^0$, $\phi \to K^+K^-$	$(6.6 \pm 0.4) \times 10^{-4}$	
Γ_{226}	$K^+K^-\pi^0$ nonresonant		
Γ_{227}	$2K_S^0\pi^0$	$< 5.9 \times 10^{-4}$	
Γ_{228}	$K^+K^-\eta$	$(5.9 \pm 1.9) \times 10^{-5}$	
Γ_{229}	$\phi(1020)\eta$	$(1.84 \pm 0.12) \times 10^{-4}$	
Γ_{230}	$K^+K^-\eta$ nonresonant	$(9.9 \, ^{+0.9}_{-0.8}) \times 10^{-5}$	
Γ_{231}	$2K_S^0\eta$	$(1.3 \pm 0.6) \times 10^{-4}$	
Γ_{232}	$K^+K^-\pi^0\pi^0$	$(6.9 \pm 0.8) \times 10^{-4}$	
Γ_{233}	$K^+K^-\pi^+\pi^-$	$(2.47 \pm 0.11) \times 10^{-3}$	
Γ_{234}	$\phi(\pi^+\pi^-)_{S-wave}$, $\phi \to K^+K^-$	$(10 \pm 5) \times 10^{-5}$	
Γ_{235}	$(\phi\rho^0)_{S-wave}$, $\phi \to K^+K^-$	$(6.9 \pm 0.6) \times 10^{-4}$	
Γ_{236}	$(\phi\rho^0)_{P-wave}$, $\phi \to K^+K^-$	$(4.0 \pm 1.9) \times 10^{-5}$	
Γ_{237}	$(\phi\rho^0)_{D-wave}$, $\phi \to K^+K^-$	$(4.2 \pm 1.4) \times 10^{-5}$	

Γ_{238}	$K^*(892)^0 \overline{K}^*(892)^0$, $K^{*0} \rightarrow K^{\pm}\pi^{\mp}$	
Γ_{239}	$K^+ K^- \rho^0$ 3-body	
Γ_{240}	$f_0(980)\pi^+\pi^-$, $f_0 \rightarrow K^+ K^-$	
Γ_{241}	$(K^*(892)^0 \overline{K}^*(892)^0)_{S-wave}$, $K^{*0} \rightarrow K^{\pm}\pi^{\mp}$	$(2.24 \pm 0.13) \times 10^{-4}$
Γ_{242}	$(K^*(892)^0 \overline{K}^*(892)^0)_{P-wave}$, $K^* \rightarrow K^{\pm}\pi^{\mp}$	$(1.20 \pm 0.08) \times 10^{-4}$
Γ_{243}	$(K^*(892)^0 \overline{K}^*(892)^0)_{D-wave}$, $K^* \rightarrow K^{\pm}\pi^{\mp}$	$(4.7 \pm 0.4) \times 10^{-5}$
Γ_{244}	$K^*(892)^0 K^{\mp}\pi^{\pm}$ 3-body, $K^{*0} \rightarrow K^{\pm}\pi^{\mp}$	
Γ_{245}	$K^*(892)^0 (K^-\pi^+)_{S-wave}$ 3-body, $K^{*0} \rightarrow K^+\pi^-$	$(1.4 \pm 0.6) \times 10^{-4}$
Γ_{246}	$(K^-\pi^+)_{P-wave}$, $(K^+\pi^-)_{S-wave}$	
Γ_{247}	$K_1(1270)^{\pm} K^{\mp}$, $K_1^{\pm} \rightarrow K^{\pm}\pi^+\pi^-$	
Γ_{248}	$K_1(1270)^+ K^-$, $K_1^+ \rightarrow K^{*0}\pi^+$	$(1.4 \pm 0.9) \times 10^{-4}$
Γ_{249}	$K_1(1270)^+ K^-$, $K_1^+ \rightarrow K^*(1430)^0\pi^+$, $K^{*0} \rightarrow K^+\pi^-$	$(1.5 \pm 0.5) \times 10^{-4}$
Γ_{250}	$K_1(1270)^+ K^-$, $K_1^+ \rightarrow \rho^0 K^+$	$(2.2 \pm 0.6) \times 10^{-4}$
Γ_{251}	$K_1(1270)^+ K^-$, $K_1^+ \rightarrow \omega(782) K^+$, $\omega \rightarrow \pi^+\pi^-$	$(1.5 \pm 1.2) \times 10^{-5}$
Γ_{252}	$K_1(1270)^- K^+$, $K_1^- \rightarrow \overline{K}^{*0}\pi^-$	
Γ_{253}	$K_1(1270)^- K^+$, $K_1^- \rightarrow \rho^0 K^-$	$(1.3 \pm 0.4) \times 10^{-4}$
Γ_{254}	$K_1(1400)^{\pm} K^{\mp}$, $K_1^{\pm} \rightarrow K^{\pm}\pi^+\pi^-$	
Γ_{255}	$K_1(1400)^+ K^-$, $K_1^+ \rightarrow K^*(892)^0\pi^+$, $K^{*0} \rightarrow K^+\pi^-$	$(4.6 \pm 0.4) \times 10^{-4}$
Γ_{256}	$K^*(1410)^+ K^-$, $K^{*+} \rightarrow K^{*0}\pi^+$	
Γ_{257}	$K^*(1410)^- K^+$, $K^{*-} \rightarrow \overline{K}^{*0}\pi^-$	$(7.0 \pm 1.1) \times 10^{-5}$
Γ_{258}	$K_1(1680)^+ K^-$, $K_1^+ \rightarrow K^{*0}\pi^+$, $K^{*0} \rightarrow K^+\pi^-$	$(8.9 \pm 3.2) \times 10^{-5}$
Γ_{259}	$K^+ K^- \pi^+\pi^-$ non-resonant	$(2.7 \pm 0.6) \times 10^{-4}$
Γ_{260}	$2K^0_S \pi^+\pi^-$	$(5.3 \pm 0.9) \times 10^{-4}$

Γ_{261}	$K_S^0 K^- \pi^+ \pi^0$		$(1.32 \pm 0.16) \times 10^{-3}$	
Γ_{262}	$K_S^0 K^+ \pi^- \pi^0$		$(6.5 \pm 0.7) \times 10^{-4}$	
Γ_{263}	$K_S^0 K^- 2\pi^+ \pi^-$		$< 1.4 \times 10^{-4}$	CL=90%
Γ_{264}	$K^+ K^- \pi^+ \pi^- \pi^0$		$(3.1 \pm 2.0) \times 10^{-3}$	

Other $K\overline{K}X$ modes. They include all decay modes of the ϕ, η, and ω.

Γ_{265}	$\phi\pi^0$		$(1.17 \pm 0.04) \times 10^{-3}$	
Γ_{266}	$\phi\eta$		$(1.8 \pm 0.5) \times 10^{-4}$	
Γ_{267}	$\phi\omega$		$(6.5 \pm 1.0) \times 10^{-4}$	

Radiative modes

Γ_{268}	$\rho^0\gamma$		$(1.82 \pm 0.32) \times 10^{-5}$	
Γ_{269}	$\omega\gamma$		$< 2.4 \times 10^{-4}$	CL=90%
Γ_{270}	$\phi\gamma$		$(2.81 \pm 0.19) \times 10^{-5}$	
Γ_{271}	$\overline{K}^*(892)^0\gamma$		$(4.1 \pm 0.7) \times 10^{-4}$	

Doubly Cabibbo suppressed (DC) modes or $\Delta C = 2$ forbidden via mixing ($C2M$) modes

Γ_{272}	$K^+ \ell^- \overline{\nu}_\ell$ via $\overline{D}^0$		$< 2.2 \times 10^{-5}$	CL=90%
Γ_{273}	K^+ or $K^*(892)^+ e^- \overline{\nu}_e$ via $\overline{D}^0$		$< 6 \times 10^{-5}$	CL=90%
Γ_{274}	$K^+ \pi^-$	DC	$(1.50 \pm 0.07) \times 10^{-4}$	S=3.0
Γ_{275}	$K^+ \pi^-$ via DCS		$(1.363 \pm 0.025) \times 10^{-4}$	
Γ_{276}	$K^+ \pi^-$ via $\overline{D}^0$		$< 1.6 \times 10^{-5}$	CL=95%
Γ_{277}	$K_S^0 \pi^+ \pi^-$ in $D^0 \to \overline{D}^0$		$< 1.8 \times 10^{-4}$	CL=95%
Γ_{278}	$K^*(892)^+ \pi^-$, $K^{*+} \to K_S^0 \pi^+$	DC	$(1.13 {}^{+0.60}_{-0.34}) \times 10^{-4}$	
Γ_{279}	$K_0^*(1430)^+ \pi^-$, $K_0^{*+} \to K_S^0 \pi^+$	DC	$< 1.4 \times 10^{-5}$	
Γ_{280}	$K_2^*(1430)^+ \pi^-$, $K_2^{*+} \to K_S^0 \pi^+$	DC	$< 3.4 \times 10^{-5}$	
Γ_{281}	$K^+ \pi^- \pi^0$	DC	$(3.05 \pm 0.15) \times 10^{-4}$	
Γ_{282}	$K^+ \pi^- \pi^0$ via $\overline{D}^0$		$(7.6 {}^{+0.5}_{-0.6}) \times 10^{-4}$	
Γ_{283}	$K^+ \pi^+ 2\pi^-$ via DCS		$(2.49 \pm 0.07) \times 10^{-4}$	
Γ_{284}	$K^+ \pi^+ 2\pi^-$	DC	$(2.65 \pm 0.06) \times 10^{-4}$	
Γ_{285}	$K^+ \pi^+ 2\pi^-$ via $\overline{D}^0$		$(7.9 \pm 3.0) \times 10^{-6}$	
Γ_{286}	$K^+ \pi^-$ or $K^+ \pi^+ 2\pi^-$ via $\overline{D}^0$			
Γ_{287}	μ^- anything via $\overline{D}^0$		$< 4 \times 10^{-4}$	CL=90%

$\Delta C = 1$ weak neutral current (*C1*) modes, Lepton Family number (*LF*) violating modes, Lepton (*L*) or Baryon (*B*) number violating modes

Γ_{288}	$\gamma\gamma$	*C1*		< 8.5	$\times 10^{-7}$	CL=90%
Γ_{289}	e^+e^-	*C1*		< 7.9	$\times 10^{-8}$	CL=90%
Γ_{290}	$\mu^+\mu^-$	*C1*		< 6.2	$\times 10^{-9}$	CL=90%
Γ_{291}	$\pi^0 e^+e^-$	*C1*		< 4	$\times 10^{-6}$	CL=90%
Γ_{292}	$\pi^0 \mu^+\mu^-$	*C1*		< 1.8	$\times 10^{-4}$	CL=90%
Γ_{293}	ηe^+e^-	*C1*		< 3	$\times 10^{-6}$	CL=90%
Γ_{294}	$\eta \mu^+\mu^-$	*C1*		< 5.3	$\times 10^{-4}$	CL=90%
Γ_{295}	$\pi^+\pi^- e^+e^-$	*C1*		< 7	$\times 10^{-6}$	CL=90%
Γ_{296}	$\rho^0 e^+e^-$	*C1*		< 1.0	$\times 10^{-4}$	CL=90%
Γ_{297}	$\pi^+\pi^-\mu^+\mu^-$	*C1*		(9.6 ± 1.2)	$\times 10^{-7}$	
Γ_{298}	$\pi^+\pi^-\mu^+\mu^-$ (non-res)			< 5.5	$\times 10^{-7}$	CL=90%
Γ_{299}	$\rho^0 \mu^+\mu^-$	*C1*		< 2.2	$\times 10^{-5}$	CL=90%
Γ_{300}	ωe^+e^-	*C1*		< 6	$\times 10^{-6}$	CL=90%
Γ_{301}	$\omega \mu^+\mu^-$	*C1*		< 8.3	$\times 10^{-4}$	CL=90%
Γ_{302}	$K^-K^+e^+e^-$	*C1*		< 1.1	$\times 10^{-5}$	CL=90%
Γ_{303}	ϕe^+e^-	*C1*		< 5.2	$\times 10^{-5}$	CL=90%
Γ_{304}	$K^-K^+\mu^+\mu^-$	*C1*		(1.54 ± 0.32)	$\times 10^{-7}$	
Γ_{305}	$K^-K^+\mu^+\mu^-$ (non-res)			< 3.3	$\times 10^{-5}$	CL=90%
Γ_{306}	$\phi \mu^+\mu^-$	*C1*		< 3.1	$\times 10^{-5}$	CL=90%
Γ_{307}	$\overline{K}^0 e^+e^-$		[i]	< 2.4	$\times 10^{-5}$	CL=90%
Γ_{308}	$\overline{K}^0 \mu^+\mu^-$		[i]	< 2.6	$\times 10^{-4}$	CL=90%
Γ_{309}	$K^-\pi^+e^+e^-$					
Γ_{310}	$K^-\pi^+e^+e^-$, 675 < m_{ee} < 875 MeV			(4.0 ± 0.5)	$\times 10^{-6}$	
Γ_{311}	$K^-\pi^+e^+e^-$, 1.005 < m_{ee} < 1.035 GeV			< 5	$\times 10^{-7}$	CL=90%
Γ_{312}	$\overline{K}^*(892)^0 e^+e^-$		[i]	< 4.7	$\times 10^{-5}$	CL=90%
Γ_{313}	$K^-\pi^+\mu^+\mu^-$	*C1*		< 3.59	$\times 10^{-4}$	CL=90%
Γ_{314}	$K^-\pi^+\mu^+\mu^-$, 675 < $m_{\mu\mu}$ < 875 MeV			(4.2 ± 0.4)	$\times 10^{-6}$	
Γ_{315}	$\overline{K}^*(892)^0 \mu^+\mu^-$		[i]	< 2.4	$\times 10^{-5}$	CL=90%
Γ_{316}	$\pi^+\pi^-\pi^0\mu^+\mu^-$	*C1*		< 8.1	$\times 10^{-4}$	CL=90%
Γ_{317}	$\mu^\pm e^\mp$	*LF*	[j]	< 1.3	$\times 10^{-8}$	CL=90%
Γ_{318}	$\pi^0 e^\pm\mu^\mp$	*LF*	[j]	< 8.0	$\times 10^{-7}$	CL=90%
Γ_{319}	$\eta e^\pm\mu^\mp$	*LF*	[j]	< 2.25	$\times 10^{-6}$	CL=90%
Γ_{320}	$\pi^+\pi^- e^\pm\mu^\mp$	*LF*	[j]	< 1.71	$\times 10^{-6}$	CL=90%
Γ_{321}	$\rho^0 e^\pm\mu^\mp$	*LF*	[j]	< 5.0	$\times 10^{-7}$	CL=90%
Γ_{322}	$\omega e^\pm\mu^\mp$	*LF*	[j]	< 1.71	$\times 10^{-6}$	CL=90%
Γ_{323}	$K^-K^+e^\pm\mu^\mp$	*LF*	[j]	< 1.00	$\times 10^{-6}$	CL=90%
Γ_{324}	$\phi e^\pm\mu^\mp$	*LF*	[j]	< 5.1	$\times 10^{-7}$	CL=90%
Γ_{325}	$\overline{K}^0 e^\pm\mu^\mp$	*LF*	[j]	< 1.74	$\times 10^{-6}$	CL=90%

Γ_{326}	$K^- \pi^+ e^\pm \mu^\mp$	LF	[j]	< 1.90	$\times 10^{-6}$	CL=90%
Γ_{327}	$\overline{K}^*(892)^0 e^\pm \mu^\mp$	LF	[j]	< 1.25	$\times 10^{-6}$	CL=90%
Γ_{328}	$2\pi^- 2e^+$	L		< 9.1	$\times 10^{-7}$	CL=90%
Γ_{329}	$2\pi^- 2\mu^+$	L		< 1.52	$\times 10^{-6}$	CL=90%
Γ_{330}	$K^- \pi^- 2e^+$	L		< 5.0	$\times 10^{-7}$	CL=90%
Γ_{331}	$K^- \pi^- 2\mu^+$	L		< 5.3	$\times 10^{-7}$	CL=90%
Γ_{332}	$2K^- 2e^+$	L		< 3.4	$\times 10^{-7}$	CL=90%
Γ_{333}	$2K^- 2\mu^+$	L		< 1.0	$\times 10^{-7}$	CL=90%
Γ_{334}	$\pi^- \pi^- e^+ \mu^+$	L		< 3.06	$\times 10^{-6}$	CL=90%
Γ_{335}	$K^- \pi^- e^+ \mu^+$	L		< 2.10	$\times 10^{-6}$	CL=90%
Γ_{336}	$2K^- e^+ \mu^+$	L		< 5.8	$\times 10^{-7}$	CL=90%
Γ_{337}	$p e^-$	L,B	[k]	< 1.0	$\times 10^{-5}$	CL=90%
Γ_{338}	$\overline{p} e^+$	L,B	[l]	< 1.1	$\times 10^{-5}$	CL=90%

Γ_{339}	Unaccounted decay modes	(35.0 ± 1.2) %	S=1.1

[a] This value is obtained by subtracting the branching fractions for 2-, 4- and 6-prongs from unity.

[b] This is the sum of our $K^- 2\pi^+ \pi^-$, $K^- 2\pi^+ \pi^- \pi^0$, $\overline{K}^0 2\pi^+ 2\pi^-$, $K^+ 2K^- \pi^+$, $2\pi^+ 2\pi^-$, $2\pi^+ 2\pi^- \pi^0$, $K^+ K^- \pi^+ \pi^-$, and $K^+ K^- \pi^+ \pi^- \pi^0$, branching fractions.

[c] This is the sum of our $K^- 3\pi^+ 2\pi^-$ and $3\pi^+ 3\pi^-$ branching fractions.

[d] The branching fractions for the $K^- e^+ \nu_e$, $K^*(892)^- e^+ \nu_e$, $\pi^- e^+ \nu_e$, and $\rho^- e^+ \nu_e$ modes add up to 6.17 ± 0.17 %.

[e] The branching fraction for this mode may differ from the sum of the submodes that contribute to it, due to interference effects. See the relevant papers.

[f] This is a doubly Cabibbo-suppressed mode.

[g] Submodes of the $D^0 \to K^0_S \pi^+ \pi^- \pi^0$ mode with a K^* and/or ρ were studied by COFFMAN 92B, but with only 140 events. With nothing new for 18 years, we refer to our 2008 edition, Physics Letters **B667** 1 (2008), for those results.

[h] This branching fraction includes all the decay modes of the resonance in the final state.

[i] This mode is not a useful test for a ΔC=1 weak neutral current because both quarks must change flavor in this decay.

[j] The value is for the sum of the charge states or particle/antiparticle states indicated.

[k] This limit is for either D^0 or $\overline{D}^0$ to $p e^-$.

[l] This limit is for either D^0 or $\overline{D}^0$ to $\overline{p} e^+$.

CONSTRAINED FIT INFORMATION

An overall fit to 66 branching ratios uses 129 measurements and one constraint to determine 33 parameters. The overall fit has a $\chi^2 = 144.1$ for 97 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\left<\delta x_i \delta x_j\right>/(\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i/\Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

	x_{6}	x_{19}	x_{20}	x_{21}	x_{30}	x_{31}	x_{37}	x_{38}	x_{40}	x_{55}
x_{19}	0									
x_{20}	6	0								
x_{21}	0	0	0							
x_{30}	0	0	0	0						
x_{31}	0	0	0	0	0					
x_{37}	0	4	0	1	4	0				
x_{38}	0	1	0	1	1	0	15			
x_{40}	0	0	0	14	0	0	5	8		
x_{55}	0	1	0	0	1	0	22	3	1	
x_{72}	0	2	0	0	2	0	46	7	2	10
x_{83}	0	0	0	5	0	0	2	3	37	0
x_{87}	0	0	0	0	0	0	8	1	0	2
x_{94}	0	0	0	0	0	0	6	1	0	1
x_{108}	0	0	0	0	0	0	5	1	0	1
x_{109}	0	0	0	1	0	0	0	0	4	0
x_{110}	0	0	0	2	0	0	9	2	12	2
x_{125}	0	0	0	3	0	0	1	2	21	0
x_{132}	0	1	0	0	2	0	42	6	2	9
x_{133}	0	0	0	0	0	0	7	1	0	1
x_{134}	0	1	0	0	1	0	19	3	1	81
x_{152}	0	1	0	0	1	0	30	4	2	6
x_{180}	0	0	0	0	0	0	4	1	0	1
x_{190}	0	0	0	0	0	0	4	1	0	1
x_{192}	0	0	0	0	0	0	2	0	0	0
x_{195}	0	0	0	0	0	0	2	0	0	0
x_{196}	0	2	0	0	2	0	49	7	3	11
x_{197}	0	0	0	1	0	0	7	47	4	2
x_{198}	0	0	0	5	0	0	3	3	34	1
x_{209}	0	0	0	5	0	0	3	3	34	1
x_{270}	0	0	0	0	0	0	11	2	1	2
x_{274}	0	1	0	0	1	0	16	3	1	3
x_{339}	−48	−3	−6	−18	−1	−1	−24	−8	−39	−50

x_{83}	1									
x_{87}	12	0								
x_{94}	3	0	0							
x_{108}	2	0	0	0						
x_{109}	0	12	0	0	0					
x_{110}	4	4	1	0	0	1				
x_{125}	1	8	0	0	0	1	2			
x_{132}	19	1	3	2	2	0	4	0		
x_{133}	3	0	1	0	0	0	1	0	3	
x_{134}	8	0	2	1	1	0	2	0	8	1
x_{152}	46	1	6	2	2	0	3	0	12	2
x_{180}	2	0	0	0	0	0	0	0	2	0
x_{190}	2	0	0	0	0	0	0	0	1	0
x_{192}	1	0	0	0	0	0	0	0	1	0
x_{195}	1	0	0	0	0	0	0	0	1	0
x_{196}	22	1	4	3	3	0	4	1	20	3
x_{197}	3	1	1	0	0	0	1	1	3	0
x_{198}	1	13	0	0	0	2	4	7	1	0
x_{209}	1	13	0	0	0	2	4	7	1	0
x_{270}	5	0	1	1	1	0	1	0	4	1
x_{274}	7	0	1	1	1	0	2	0	7	1
x_{339}	−23	−57	−36	−5	−2	−12	−9	−9	−10	−2
	x_{72}	x_{83}	x_{87}	x_{94}	x_{108}	x_{109}	x_{110}	x_{125}	x_{132}	x_{133}

x_{152}	6									
x_{180}	1	1								
x_{190}	1	1	0							
x_{192}	0	0	0	0						
x_{195}	0	1	0	0	0					
x_{196}	9	14	2	2	1	1				
x_{197}	1	2	0	0	0	0	3			
x_{198}	0	1	0	0	0	0	1	1		
x_{209}	0	1	0	0	0	0	1	1	100	
x_{270}	2	3	0	0	0	0	18	1	0	0
x_{274}	3	5	1	1	0	0	8	1	0	0
x_{339}	−42	−13	−1	−2	−2	−2	−12	−4	−19	−19
	x_{134}	x_{152}	x_{180}	x_{190}	x_{192}	x_{195}	x_{196}	x_{197}	x_{198}	x_{209}

x_{274}	2	
x_{339}	−3	−4
	x_{270}	x_{274}

CONSTRAINED FIT INFORMATION

An overall fit to 3 branching ratios uses 3 measurements and one constraint to determine 4 parameters. The overall fit has a $\chi^2 =$ 0.0 for 0 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\left\langle\delta x_i \delta x_j\right\rangle/(\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i/\Gamma_{\rm total}$. The fit constrains the x_i whose labels appear in this array to sum to one.

x_2	−100		
x_3	−46	39	
x_4	0	0	0
	x_1	x_2	x_3

D^0 BRANCHING RATIOS

Some older now obsolete results have been omitted from these Listings.

——— Topological modes ———

Γ(0-prongs)/$\Gamma_{\rm total}$ Γ_1/Γ

This value is obtained by subtracting the branching fractions for 2-, 4-, and 6-prongs from unity.

VALUE	*DOCUMENT ID*
0.15±0.06 OUR FIT	

Γ(4-prongs)/Γ(2-prongs) Γ_3/Γ_2

VALUE	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.207±0.016 OUR FIT					
0.207±0.016±0.004	226	ONENGUT	05	CHRS	ν_μ emulsion, $\overline{E}_\nu \approx$ 27 GeV

Γ(4-prongs)/$\Gamma_{\rm total}$ Γ_3/Γ

This is the sum of our $K^- 2\pi^+ \pi^-$, $K^- 2\pi^+ \pi^- \pi^0$, $\overline{K}^0 2\pi^+ 2\pi^-$, $K^+ 2K^- \pi^+$, $2\pi^+ 2\pi^-$, $2\pi^+ 2\pi^- \pi^0$, $K^+ K^- \pi^+ \pi^-$, and $K^+ K^- \pi^+ \pi^- \pi^0$ branching fractions.

VALUE	*DOCUMENT ID*	
0.146±0.005 OUR FIT		
0.146±0.005	PDG	19

Γ(6-prongs)/$\Gamma_{\rm total}$ Γ_4/Γ

This is the sum of our $K^- 3\pi^+ 2\pi^-$ and $3\pi^+ 3\pi^-$ branching fractions.

VALUE (units 10^{-4})	*DOCUMENT ID*	
6.5±1.3 OUR FIT		
6.5±1.3	PDG	19

Inclusive modes

$\Gamma(e^+ \text{anything})/\Gamma_{total}$ — Γ_5/Γ

The branching fractions for the $K^- e^+ \nu_e$, $K^*(892)^- e^+ \nu_e$, $\pi^- e^+ \nu_e$, and $\rho^- e^+ \nu_e$ modes add up to 6.17 ± 0.17 %.

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
6.49±0.11 OUR AVERAGE					
6.46±0.09±0.11	6584 ± 96	[1] ASNER	10	CLEO	$e^+ e^-$ at 3774 MeV
6.3 ±0.7 ±0.4	290 ± 32	ABLIKIM	07G	BES2	$e^+ e^- \approx \psi(3770)$
6.46±0.17±0.13	2246 ± 57	ADAM	06A	CLEO	See ASNER 10
6.9 ±0.3 ±0.5	1670	ALBRECHT	96C	ARG	$e^+ e^- \approx$ 10 GeV
6.64±0.18±0.29	4609	KUBOTA	96B	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[1] Using the D^+ and D^0 lifetimes, ASNER 10 finds that the ratio of the D^+ and D^0 semileptonic widths is 0.985 ± 0.015 ± 0.024.

$\Gamma(\mu^+ \text{anything})/\Gamma_{total}$ — Γ_6/Γ

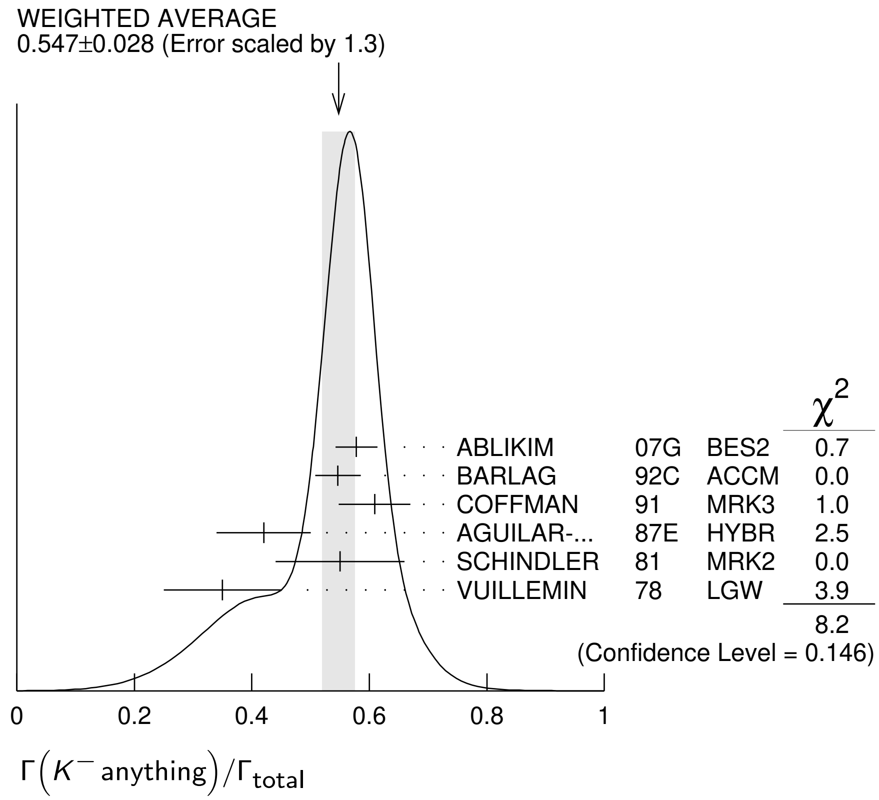
VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
6.8±0.6 OUR FIT					
6.4±0.8 OUR AVERAGE					
6.8±1.5±0.8	79 ± 10	[1] ABLIKIM	08L	BES2	$e^+ e^- \approx \psi(3772)$
6.5±1.2±0.3	36	KAYIS-TOPAK...	05	CHRS	ν_μ emulsion
6.0±0.7±1.2	310	ALBRECHT	96C	ARG	$e^+ e^- \approx$ 10 GeV

[1] ABLIKIM 08L finds the ratio of $D^+ \to \mu^+ X$ and $D^0 \to \mu^+ X$ branching fractions to be 2.59 ± 0.70 ± 0.25, in accord with the ratio of D^+ and D^0 lifetimes, 2.54 ± 0.02.

$\Gamma(K^- \text{anything})/\Gamma_{total}$ — Γ_7/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.547±0.028 OUR AVERAGE Error includes scale factor of 1.3. See the ideogram below.					
0.578±0.016±0.032	2098 ± 59	ABLIKIM	07G	BES2	$e^+ e^- \approx \psi(3770)$
$0.546^{+0.039}_{-0.038}$		[1] BARLAG	92C	ACCM	π^- Cu 230 GeV
0.609±0.032±0.052		COFFMAN	91	MRK3	$e^+ e^-$ 3.77 GeV
0.42 ±0.08		AGUILAR-...	87E	HYBR	πp, $p p$ 360, 400 GeV
0.55 ±0.11	121	SCHINDLER	81	MRK2	$e^+ e^-$ 3.771 GeV
0.35 ±0.10	19	VUILLEMIN	78	LGW	$e^+ e^-$ 3.772 GeV

[1] BARLAG 92C computes the branching fraction using topological normalization.



$\left[\Gamma(\overline{K}^0 \text{anything}) + \Gamma(K^0 \text{anything})\right]/\Gamma_{\text{total}}$ Γ_8/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.47 ±0.04 OUR AVERAGE					
0.476±0.048±0.030	250 ± 25	ABLIKIM	06U	BES2	e^+e^- at 3773 MeV
0.455±0.050±0.032		COFFMAN	91	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^+ \text{anything})/\Gamma_{\text{total}}$ Γ_9/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.034±0.004 OUR AVERAGE					
0.035±0.007±0.003	119 ± 23	ABLIKIM	07G	BES2	$e^+e^- \approx \psi(3770)$
$0.034^{+0.007}_{-0.005}$		[1] BARLAG	92C	ACCM	π^- Cu 230 GeV
0.028±0.009±0.004		COFFMAN	91	MRK3	e^+e^- 3.77 GeV
$0.03\ ^{+0.05}_{-0.02}$		AGUILAR-...	87E	HYBR	πp, pp 360, 400 GeV
0.08 ±0.03	25	SCHINDLER	81	MRK2	e^+e^- 3.771 GeV

[1] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(K^*(892)^- \text{anything})/\Gamma_{\text{total}}$ Γ_{10}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.153±0.083±0.019	28 ± 15	ABLIKIM	06U	BES2	e^+e^- at 3773 MeV

$\Gamma(\overline{K}^*(892)^0 \text{anything})/\Gamma_{\text{total}}$ Γ_{11}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.087±0.040±0.012	96 ± 44	ABLIKIM	05P	BES	$e^+e^- \approx$ 3773 MeV

$\Gamma(K^*(892)^+ \text{anything})/\Gamma_{total}$ Γ_{12}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.036	90	ABLIKIM	06U	BES2	e^+e^- at 3773 MeV

$\Gamma(K^*(892)^0 \text{anything})/\Gamma_{total}$ Γ_{13}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.028±0.012±0.004	31 ± 12	ABLIKIM	05P	BES	$e^+e^- \approx$ 3773 MeV

$\Gamma(\eta \text{ anything})/\Gamma_{total}$ Γ_{14}/Γ

This ratio includes η particles from η' decays.

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
9.5±0.4±0.8	4463 ± 197	HUANG	06B	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\eta' \text{ anything})/\Gamma_{total}$ Γ_{15}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
2.48±0.17±0.21	299 ± 21	HUANG	06B	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\phi \text{ anything})/\Gamma_{total}$ Γ_{16}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.08 ±0.04 OUR AVERAGE					
1.091±0.027±0.035	4.1k	ABLIKIM	19AY	BES3	e^+e^- at 3773 MeV
1.05 ±0.08 ±0.07	368 ± 24	HUANG	06B	CLEO	e^+e^- at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.71 $^{+0.76}_{-0.71}$ ±0.17	9	BAI	00C	BES	$e^+e^- \rightarrow D\overline{D}^*, D^*\overline{D}^*$

$\Gamma(\text{invisibles})/\Gamma_{total}$ Γ_{17}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<9.4 \times 10^{-5}$	90	LAI	17	BELL	e^+e^- at Υ(nS), n=4,5

Semileptonic modes

$\Gamma(K^- e^+ \nu_e)/\Gamma_{total}$ Γ_{19}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
3.549±0.026 OUR FIT	Error includes scale factor of 1.2.				
3.525±0.023 OUR AVERAGE					
3.567±0.031±0.025	4040	ABLIKIM	21BA	BES3	e^+e^- at 3.773 GeV
3.505±0.014±0.033	71k	[1] ABLIKIM	15X	BES3	2.92 fb^{-1}, 3.773 GeV
3.50 ±0.03 ±0.04	14.1k	[1] BESSON	09	CLEO	e^+e^- at $\psi(3770)$
3.45 ±0.10 ±0.19	1.3k	[2] WIDHALM	06	BELL	$e^+e^- \approx \Upsilon(4S)$
3.82 ±0.40 ±0.27	104	ABLIKIM	04C	BES	e^+e^-, 3.773 GeV
3.4 ±0.5 ±0.4	55	ADLER	89	MRK3	e^+e^- 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.56 ±0.03 ±0.09		[3] DOBBS	08	CLEO	See BESSON 09
3.44 ±0.10 ±0.10	1.3k	COAN	05	CLEO	See DOBBS 08

[1] See the form-factor parameters near the end of this D^0 Listing.

[2] The $\pi^- e^+ \nu_e$ and $K^- e^+ \nu_e$ results of WIDHALM 06 give $|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^{\pi}(0)}{f_+^K(0)}|^2 = 0.042 \pm 0.003 \pm 0.003$.

[3] DOBBS 08 establishes $\left|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^{\pi}(0)}{f_+^{K}(0)}\right| = 0.188 \pm 0.008 \pm 0.002$ from the D^+ and D^0 decays to $\overline{K} e^+ \nu_e$ and $\pi e^+ \nu_e$.

$\Gamma(K^- e^+ \nu_e)/\Gamma(K^- \pi^+)$ — Γ_{19}/Γ_{37}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.899±0.009 OUR FIT	Error includes scale factor of 1.3.				
0.930±0.013 OUR AVERAGE					
0.927±0.007±0.012	76k±323	[1] AUBERT	07BG	BABR	$e^+ e^- \approx \Upsilon(4S)$
0.978±0.027±0.044	2510	[2] BEAN	93C	CLE2	$e^+ e^- \approx \Upsilon(4S)$
0.90 ±0.06 ±0.06	584	[3] CRAWFORD	91B	CLEO	$e^+ e^- \approx$ 10.5 GeV
0.91 ±0.07 ±0.11	250	[4] ANJOS	89F	E691	Photoproduction

[1] The event samples in this AUBERT 07BG result include radiative photons. The $D^0 \to K^- e^+ \nu_e$ form factor at $q^2 = 0$ is $f_+(0) = 0.727 \pm 0.007 \pm 0.005 \pm 0.007$.

[2] BEAN 93C uses $K^- \mu^+ \nu_\mu$ as well as $K^- e^+ \nu_e$ events and makes a small phase-space adjustment to the number of the μ^+ events to use them as e^+ events. A pole mass of $2.00 \pm 0.12 \pm 0.18$ GeV/c^2 is obtained from the q^2 dependence of the decay rate.

[3] CRAWFORD 91B uses $K^- e^+ \nu_e$ and $K^- \mu^+ \nu_\mu$ candidates to measure a pole mass of $2.1^{+0.4}_{-0.2}{}^{+0.3}_{-0.2}$ GeV/c^2 from the q^2 dependence of the decay rate.

[4] ANJOS 89F measures a pole mass of $2.1^{+0.4}_{-0.2} \pm 0.2$ GeV/c^2 from the q^2 dependence of the decay rate.

$\Gamma(K^- \mu^+ \nu_\mu)/\Gamma_{\text{total}}$ — Γ_{20}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
3.41 ±0.04 OUR FIT					
3.41 ±0.04 OUR AVERAGE					
3.413±0.019±0.035	47k	ABLIKIM	19B	BES3	$e^+ e^-$, 3773 MeV
3.45 ±0.10 ±0.21	1249 ± 43	WIDHALM	06	BELL	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(K^- \mu^+ \nu_\mu)/\Gamma(\mu^+ \text{anything})$ — Γ_{20}/Γ_6

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.50 ±0.04 OUR FIT					
0.472±0.051±0.040	232	KODAMA	94	E653	π^- emulsion 600 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.32 ±0.05 ±0.05	124	KODAMA	91	EMUL	pA 800 GeV

$\Gamma(K^- \mu^+ \nu_\mu)/\Gamma(K^- \pi^+)$ — Γ_{20}/Γ_{37}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.864±0.012 OUR FIT	Error includes scale factor of 1.1.				
0.84 ±0.04 OUR AVERAGE					
0.852±0.034±0.028	1897	[1] FRABETTI	95G	E687	γ Be $\overline{E}_\gamma$= 220 GeV
0.82 ±0.13 ±0.13	338	[2] FRABETTI	93I	E687	γ Be $\overline{E}_\gamma$= 221 GeV
0.79 ±0.08 ±0.09	231	[3] CRAWFORD	91B	CLEO	$e^+ e^- \approx$ 10.5 GeV

[1] FRABETTI 95G extracts the ratio of form factors $f_-(0)/f_+(0) = -1.3^{+3.6}_{-3.4} \pm 0.6$, and measures a pole mass of $1.87^{+0.11}_{-0.08}{}^{+0.07}_{-0.06}$ GeV/c^2 from the q^2 dependence of the decay rate.

[2] FRABETTI 93I measures a pole mass of $2.1^{+0.7}_{-0.3}{}^{+0.7}_{-0.3}$ GeV/c^2 from the q^2 dependence of the decay rate.

[3] CRAWFORD 91B measures a pole mass of $2.00 \pm 0.12 \pm 0.18$ GeV/c^2 from the q^2 dependence of the decay rate.

$\Gamma(K^*(892)^- e^+ \nu_e)/\Gamma_{total}$ — Γ_{21}/Γ

Both decay modes of the $K^*(892)^-$ are included.

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
2.15±0.16 OUR FIT					
2.16±0.15±0.08	219 ± 16	[1] COAN	05	CLEO	e^+e^- at $\psi(3770)$

[1] COAN 05 uses both $K^-\pi^0$ and $K^0_S\pi^-$ events.

$\Gamma(K^*(892)^- e^+ \nu_e)/\Gamma(\overline{K}^0 \pi^- e^+ \nu_e)$ — Γ_{21}/Γ_{24}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
94.52±0.97±0.62	3.1k	ABLIKIM	19G	BES3	$K^0_S\pi^- e^+\nu_e$ events

$\Gamma(K^*(892)^- e^+ \nu_e)/\Gamma(K^0_S \pi^+ \pi^-)$ — Γ_{21}/Γ_{40}

Unseen decay modes of the $K^*(892)^-$ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.77±0.07 OUR FIT					
0.76±0.12±0.06	152	[1] BEAN	93C	CLE2	$e^+e^- \approx \Upsilon(4S)$

[1] BEAN 93C uses $K^{*-}\mu^+\nu_\mu$ as well as $K^{*-}e^+\nu_e$ events and makes a small phase-space adjustment to the number of the μ^+ events to use them as e^+ events.

$\Gamma(K^*(892)^- \mu^+ \nu_\mu)/\Gamma(K^0_S \pi^+ \pi^-)$ — Γ_{22}/Γ_{40}

Unseen decay modes of the $K^*(892)^-$ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.674±0.068±0.026	175 ± 17	[1] LINK	05B	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

[1] LINK 05B finds that in $D^0 \to \overline{K}^0\pi^-\mu^+\nu_\mu$ the $\overline{K}^0\pi^-$ system is 6% in S-wave.

$\Gamma(K^- \pi^0 e^+ \nu_e)/\Gamma_{total}$ — Γ_{23}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$0.016^{+0.013}_{-0.005}\pm0.002$	4	[1] BAI	91	MRK3	$e^+e^- \approx$ 3.77 GeV

[1] BAI 91 finds that a fraction $0.79^{+0.15}_{-0.17}{}^{+0.09}_{-0.03}$ of combined D^+ and D^0 decays to $\overline{K}\pi e^+\nu_e$ (24 events) are $\overline{K}^*(892)e^+\nu_e$. BAI 91 uses 56 $K^-e^+\nu_e$ events to measure a pole mass of $1.8 \pm 0.3 \pm 0.2$ GeV/c^2 from the q^2 dependence of the decay rate.

$\Gamma(\overline{K}^0 \pi^- e^+ \nu_e)/\Gamma_{total}$ — Γ_{24}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.44 ±0.04 OUR AVERAGE					
1.434±0.029±0.032	3.1k	ABLIKIM	19G	BES3	e^+e^- at 3773 MeV
2.61 ±1.04 ±0.28	9 ± 3	ABLIKIM	06O	BES2	e^+e^- at 3773 MeV
$2.8\ ^{+1.7}_{-0.8}\ \pm0.3$	6	[1] BAI	91	MRK3	$e^+e^- \approx$ 3.77 GeV

[1] BAI 91 finds that a fraction $0.79^{+0.15}_{-0.17}{}^{+0.09}_{-0.03}$ of combined D^+ and D^0 decays to $\overline{K}\pi e^+\nu_e$ (24 events) are $\overline{K}^*(892)e^+\nu_e$.

$\Gamma((\overline{K}^0 \pi^-)_{S-wave} e^+ \nu_e)/\Gamma(\overline{K}^0 \pi^- e^+ \nu_e)$ — Γ_{25}/Γ_{24}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
5.51±0.97±0.62	3.1k	ABLIKIM	19G	BES3	$K^0_S\pi^- e^+\nu_e$ events

$\Gamma(K^-\pi^+\pi^- e^+\nu_e)/\Gamma_{total}$ — Γ_{26}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
$2.8^{+1.4}_{-1.1}\pm0.3$	8	ARTUSO	07A	CLEO	e^+e^- at $\Upsilon(3770)$

$\Gamma(K_1(1270)^- e^+\nu_e)/\Gamma_{total}$ — Γ_{27}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
10.1±1.8 OUR AVERAGE					
$10.9\pm1.3^{+0.9}_{-1.6}\pm1.2$	109	[1] ABLIKIM	21AY	BES3	e^+e^- at 3.773 GeV
$7.6^{+4.1}_{-3.0}\pm0.9$	8	[2] ARTUSO	07A	CLEO	e^+e^- at $\Upsilon(3770)$

[1] Uses B($K_1(1270)^- \to K^-\pi^+\pi^-$) = (32.9 ± 3.6)%, which is the source of the third uncertainty.

[2] This ARTUSO 07A result is corrected for all decay modes of the $K_1(1270)^-$.

$\Gamma(K^-\pi^+\pi^-\mu^+\nu_\mu)/\Gamma(K^-\mu^+\nu_\mu)$ — Γ_{28}/Γ_{20}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.037	90	KODAMA	93B	E653	π^- emulsion 600 GeV

$\Gamma((\overline{K}^*(892)\pi)^-\mu^+\nu_\mu)/\Gamma(K^-\mu^+\nu_\mu)$ — Γ_{29}/Γ_{20}

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.043	90	[1] KODAMA	93B	E653	π^- emulsion 600 GeV

[1] KODAMA 93B searched in $K^-\pi^+\pi^-\mu^+\nu_\mu$, but the limit includes other $(\overline{K}^*(892)\pi)^-$ charge states.

$\Gamma(\pi^- e^+\nu_e)/\Gamma_{total}$ — Γ_{30}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.291±0.004 OUR FIT					
0.293±0.004 OUR AVERAGE					
0.295±0.004±0.003	6.3k	[1] ABLIKIM	15X	BES3	2.92 fb^{-1}, 3.773 GeV
0.288±0.008±0.003	1.3k	[1] BESSON	09	CLEO	e^+e^- at $\psi(3770)$
0.279±0.027±0.016	126	[2] WIDHALM	06	BELL	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.299±0.011±0.009		[3] DOBBS	08	CLEO	See BESSON 09
0.262±0.025±0.008	117	COAN	05	CLEO	See DOBBS 08

[1] See the form-factor parameters near the end of this D^0 Listing.

[2] The $\pi^- e^+\nu_e$ and $K^- e^+\nu_e$ results of WIDHALM 06 give $|\frac{V_{cd}}{V_{cs}}\cdot\frac{f_+^\pi(0)}{f_+^K(0)}|^2 = 0.042 \pm 0.003 \pm 0.003$.

[3] DOBBS 08 establishes $|\frac{V_{cd}}{V_{cs}}\cdot\frac{f_+^\pi(0)}{f_+^K(0)}| = 0.188 \pm 0.008 \pm 0.002$ from the D^+ and D^0 decays to $\overline{K}e^+\nu_e$ and $\pi e^+\nu_e$.

$\Gamma(\pi^- e^+\nu_e)/\Gamma(K^- e^+\nu_e)$ — Γ_{30}/Γ_{19}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0821±0.0013 OUR FIT Error includes scale factor of 1.1.					
0.085 ±0.007 OUR AVERAGE					
0.082 ±0.006 ±0.005		[1] HUANG	05	CLEO	$e^+e^- \approx \Upsilon(4S)$

0.101 ±0.020 ±0.003	91	[2] FRABETTI	96B	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV
0.103 ±0.039 ±0.013	87	[3] BUTLER	95	CLE2	$<$ 0.156 (90% CL)

[1] HUANG 05 uses both e and μ events, and makes a small correction to the μ events to make them effectively e events. This result gives $|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^\pi(0)}{f_+^K(0)}|^2 = 0.038^{+0.006}_{-0.007}{}^{+0.005}_{-0.003}$.

[2] FRABETTI 96B uses both e and μ events, and makes a small correction to the μ events to make them effectively e events. This result gives $|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^\pi(0)}{f_+^K(0)}|^2 = 0.050 \pm 0.011 \pm 0.002$.

[3] BUTLER 95 has 87 ± 33 $\pi^- e^+ \nu_e$ events. The result gives $|\frac{V_{cd}}{V_{cs}} \cdot \frac{f_+^\pi(0)}{f_+^K(0)}|^2 = 0.052 \pm 0.020 \pm 0.007$.

$\Gamma(\pi^- e^+ \nu_e)/\Gamma(K^- \pi^+)$ Γ_{30}/Γ_{37}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
7.38±0.12 OUR FIT	Error includes scale factor of 1.1.				
7.02±0.17±0.23	375k	[1] LEES	15F	BABR	347 fb^{-1}, 10.58 GeV

[1] See the form-factor parameters near the end of the D^0 Listing.

$\Gamma(\pi^- \mu^+ \nu_\mu)/\Gamma_{total}$ Γ_{31}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.267±0.012 OUR FIT	Error includes scale factor of 1.3.				
0.268±0.012 OUR AVERAGE	Error includes scale factor of 1.2.				
0.272±0.008±0.006	2.3k	ABLIKIM	18AE	BES3	$e^+ e^-$, 3773 MeV
0.231±0.026±0.019	106 ± 13	WIDHALM	06	BELL	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\pi^- \mu^+ \nu_\mu)/\Gamma(K^- \mu^+ \nu_\mu)$ Γ_{31}/Γ_{20}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0784±0.0035 OUR FIT	Error includes scale factor of 1.2.				
0.074 ±0.008 ±0.007	288 ± 29	[1] LINK	05	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

[1] LINK 05 finds the form-factor ratio $|f_0^\pi(0)/f_0^K(0)|$ to be 0.85 ± 0.04 ± 0.04 ± 0.01.

$\Gamma(\pi^- \pi^0 e^+ \nu_e)/\Gamma_{total}$ Γ_{32}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.445±0.058±0.039	1.1k	[1] ABLIKIM	19C	BES3	$e^+ e^-$ at 3773 MeV

[1] Seen 100% via $D^0 \to \rho(770)^- e^+ \nu_e$, and also reported as the branching fraction for $D^0 \to \rho(770)^- e^+ \nu_e$.

$\Gamma(\rho^- e^+ \nu_e)/\Gamma_{total}$ Γ_{33}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.50 ±0.12 OUR AVERAGE	Error includes scale factor of 1.9.				
1.445±0.058±0.039	1.1k	[1] ABLIKIM	19C	BES3	$e^+ e^-$ at 3773 MeV
1.77 ±0.12 ±0.10	305 ± 21	[2,3] DOBBS	13	CLEO	$e^+ e^-$ at $\psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.94 ±0.39 ±0.13	31 ± 6	COAN	05	CLEO	See DOBBS 13

[1] This result is the same as the one reported for $D^0 \to \pi^- \pi^0 e^+ \nu_e$ which ABLIKIM 19C found to proceed 100% via $D^0 \to \rho(770)^- e^+ \nu_e$.

[2] DOBBS 13 finds $\Gamma(D^0 \to \rho^- e^+ \nu_e)$ / 2 $\Gamma(D^+ \to \rho^0 e^+ \nu_e) = 1.03 \pm 0.09^{+0.08}_{-0.02}$; isospin invariance predicts the ratio is 1.0.
[3] See the D^+ Listings for $D \to \rho e^+ \nu_e$ form factors.

$\Gamma(\rho^- \mu^+ \nu_\mu)/\Gamma_{total}$ — Γ_{34}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.35±0.09±0.09	570	ABLIKIM	21BC	BES3	$e^+ e^-$ at 3.773 GeV

$\Gamma(a(980)^- e^+ \nu_e,\ a^- \to \eta \pi^-)/\Gamma_{total}$ — Γ_{35}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
$1.33^{+0.33}_{-0.29}\pm0.09$	26	[1] ABLIKIM	18F	BES3	$e^+ e^-$ at 3773 MeV

[1] Signal observed at 6.4 σ C.L.

$\Gamma(b_1(1235)^- e^+ \nu_e,\ b_1^- \to \omega \pi^-)/\Gamma_{total}$ — Γ_{36}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.12 \times 10^{-4}$	90	ABLIKIM	20AF	BES3	$e^+ e^-$, 3773 MeV

Hadronic modes with a single $\overline{K}$

$\Gamma(K^- \pi^+)/\Gamma_{total}$ — Γ_{37}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
3.947±0.030 OUR FIT	Error includes scale factor of 1.2.				
3.909±0.034 OUR AVERAGE					
3.883±0.006±0.051	0.5M	[1] ABLIKIM	18W	BES3	$e^+ e^-$, 3773 MeV
3.934±0.021±0.061		BONVICINI	14	CLEO	All CLEO-c runs
4.007±0.037±0.072	33.8k	AUBERT	08L	BABR	$e^+ e^-$ at $\Upsilon(4S)$
3.82 ±0.07 ±0.12		[2] ARTUSO	98	CLE2	CLEO average
3.90 ±0.09 ±0.12	5.4k	[3] BARATE	97C	ALEP	From Z decays
3.41 ±0.12 ±0.28	1.2k	[3] ALBRECHT	94F	ARG	$e^+ e^- \approx \Upsilon(4S)$
3.62 ±0.34 ±0.44		[3] DECAMP	91J	ALEP	From Z decays
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.891±0.035±0.069		[4] DOBBS	07	CLEO	See BONVICINI 14
3.91 ±0.08 ±0.09	10.3k	[4] HE	05	CLEO	See DOBBS 07
3.81 ±0.15 ±0.16	1.2k	[5] ARTUSO	98	CLE2	$e^+ e^-$ at $\Upsilon(4S)$
3.69 ±0.11 ±0.16		[6] COAN	98	CLE2	See ARTUSO 98
4.5 ±0.6 ±0.4		[7] ALBRECHT	94	ARG	$e^+ e^- \approx \Upsilon(4S)$
3.95 ±0.08 ±0.17	4.2k	[3,8] AKERIB	93	CLE2	See ARTUSO 98
4.5 ±0.8 ±0.5	56	[3] ABACHI	88	HRS	$e^+ e^-$ 29 GeV
4.2 ±0.4 ±0.4	0.9k	ADLER	88C	MRK3	$e^+ e^-$ 3.77 GeV
4.1 ±0.6	0.3k	[9] SCHINDLER	81	MRK2	$e^+ e^-$ 3.771 GeV
4.3 ±1.0	130	[10] PERUZZI	77	LGW	$e^+ e^-$ 3.77 GeV

[1] ABLIKIM 18W measured the combined $K^\mp \pi^\pm$ branching fraction to be 3.898%. We have subtracted off the doubly Cabibbo-suppressed branching fraction B($D^0 \to K^+ \pi^-$) $= (1.50 \pm 0.07) \times 10^{-4}$, even though it is less than one-third of the uncertainty of the combined measurement, in order to treat this as a measurement of B($D^0 \to K^- \pi^+$).
[2] This combines the CLEO results of ARTUSO 98, COAN 98, and AKERIB 93.
[3] ABACHI 88, DECAMP 91J, AKERIB 93, ALBRECHT 94F, and BARATE 97C use $D^*(2010)^+ \to D^0 \pi^+$ decays. The π^+ is both slow and of low p_T with respect

to the event thrust axis or nearest jet ($\approx D^{*+}$ direction). The excess number of such π^+'s over background gives the number of $D^*(2010)^+ \to D^0\pi^+$ events, and the fraction with $D^0 \to K^-\pi^+$ gives the $D^0 \to K^-\pi^+$ branching fraction.

[4] DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.

[5] ARTUSO 98, following ALBRECHT 94, uses D^0 mesons from $\overline{B}^0 \to D^*(2010)^+ X \ell^- \overline{\nu}_\ell$ decays. Our average uses the CLEO average of this value with the values of COAN 98 and AKERIB 93.

[6] COAN 98 assumes that $\Gamma(B \to \overline{D} X \ell^+ \nu)/\Gamma(B \to X \ell^+ \nu) = 1.0 - 3|V_{ub}/V_{cb}|^2 - 0.010 \pm 0.005$, the last term accounting for $\overline{B} \to D_s^+ K X \ell^- \overline{\nu}$. COAN 98 is included in the CLEO average in ARTUSO 98.

[7] ALBRECHT 94 uses D^0 mesons from $\overline{B}^0 \to D^{*+} \ell^- \overline{\nu}_\ell$ decays. This is a different set of events than used by ALBRECHT 94F.

[8] This AKERIB 93 value includes radiative corrections; without them, the value is $0.0391 \pm 0.0008 \pm 0.0017$. AKERIB 93 is included in the CLEO average in ARTUSO 98.

[9] SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \to \psi(3770)) \times$ branching fraction to be 0.24 ± 0.02 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

[10] PERUZZI 77 (MARK-1) measures $\sigma(e^+e^- \to \psi(3770)) \times$ branching fraction to be 0.25 ± 0.05 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

$\Gamma(K^0_S\pi^0)/\Gamma_{total}$ — Γ_{38}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.240±0.022 OUR FIT					
1.239±0.006±0.027	67k	ABLIKIM	18W	BES3	e^+e^-, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.240±0.017±0.056	614	HE	08	CLEO	See MENDEZ 10

$\Gamma(K^0_S\pi^0)/[\Gamma(K^-\pi^+)+\Gamma(K^+\pi^-)]$ — $\Gamma_{38}/(\Gamma_{37}+\Gamma_{274})$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
31.3±0.6 OUR FIT					
30.4±0.3±0.9	20k	MENDEZ	10	CLEO	e^+e^- at 3774 MeV

$\Gamma(K^0_S\pi^0)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{38}/Γ_{40}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.443±0.028 OUR FIT					
0.44 ±0.02 ±0.05	1942 ± 64	PROCARIO	93B	CLE2	e^+e^- 10.36–10.7 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.34 ±0.04 ±0.02	92	[1] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
0.36 ±0.04 ±0.08	104	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV

[1] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^0_L\pi^0)/\Gamma_{total}$ — Γ_{39}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.998±0.049±0.048	1116	[1] HE	08	CLEO	e^+e^- at $\psi(3770)$

[1] The difference of HE 08 $D^0 \to K^0_S\pi^0$ and $K^0_L\pi^0$ branching fractions over the sum is $0.108 \pm 0.025 \pm 0.024$. This is consistent with U-spin symmetry and the Cabibbo angle.

$\Gamma(K^0_S\pi^+\pi^-)/\Gamma_{total}$ — Γ_{40}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$2.52\pm0.20\pm0.25$	284 ± 22	[1] ALBRECHT	94F	ARG	$e^+e^- \approx \Upsilon(4S)$
$3.2\ \pm0.3\ \pm0.5$		ADLER	87	MRK3	e^+e^- 3.77 GeV
$2.6\ \pm0.8$	32 ± 8	[2] SCHINDLER	81	MRK2	e^+e^- 3.771 GeV
$4.0\ \pm1.2$	28	[3] PERUZZI	77	LGW	e^+e^- 3.77 GeV

[1] See the footnote on the ALBRECHT 94F measurement of $\Gamma(K^-\pi^+)/\Gamma_{total}$ for the method used.

[2] SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.30 ± 0.08 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

[3] PERUZZI 77 (MARK-1) measures $\sigma(e^+e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.46 ± 0.12 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

$\Gamma(K^0_S\pi^+\pi^-)/\Gamma(K^-\pi^+)$ — Γ_{40}/Γ_{37}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.71±0.05 OUR FIT	Error includes scale factor of 1.1.				
0.81±0.05±0.08	856 ± 35	FRABETTI	94J	E687	γ Be $\overline{E}_\gamma$=220 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.85 ± 0.40	35	AVERY	80	SPEC	$\gamma N \rightarrow D^{*+}$
$1.4\ \pm0.5$	116	PICCOLO	77	MRK1	e^+e^- 4.03, 4.41 GeV

$\Gamma(K^0_S\rho^0)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{41}/Γ_{40}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.224^{+0.017}_{-0.023}}$ **OUR AVERAGE**	Error includes scale factor of 1.7.			
0.210 ± 0.016	[1] AUBERT	08AL	BABR	Dalitz fit, ≈ 487 k evts
$0.264\pm0.009^{+0.010}_{-0.026}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.267\pm0.011^{+0.009}_{-0.028}$	ASNER	04A	CLEO	See MURAMATSU 02
$0.350\pm0.028\pm0.067$	FRABETTI	94G	E687	Dalitz fit, 597 evts
$0.227\pm0.032\pm0.009$	ALBRECHT	93D	ARG	Dalitz fit, 440 evts
$0.215\pm0.051\pm0.037$	ANJOS	93	E691	γ Be 90–260 GeV
$0.20\ \pm0.06\ \pm0.03$	FRABETTI	92B	E687	γ Be, $\overline{E}_\gamma$= 221 GeV
$0.12\ \pm0.01\ \pm0.07$	ADLER	87	MRK3	e^+e^- 3.77 GeV

[1] The error on this AUBERT 08AL value includes both statistical and systematic uncertainties; the latter dominates.

$\Gamma(K^0_S\omega,\ \omega \rightarrow \pi^+\pi^-)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{42}/Γ_{40}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.0073±0.0020 OUR AVERAGE				
$0.009\ \pm0.010$	[1] AUBERT	08AL	BABR	Dalitz fit, ≈ 487 k evts
$0.0072\pm0.0018^{+0.0010}_{-0.0009}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.0081\pm0.0019^{+0.0018}_{-0.0010}$	ASNER	04A	CLEO	See MURAMATSU 02

[1] The error on this AUBERT 08AL value includes both statistical and systematic uncertainties; the latter dominates.

$\Gamma\big(K^0_S(\pi^+\pi^-)_{S-wave}\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ — Γ_{43}/Γ_{40}

This is the "fit fraction" from the Dalitz-plot analysis. The $(\pi^+\pi^-)_{S-wave}$ includes what in isobar models are the $f_0(980)$ and $f_0(1370)$; see the following two data blocks.

VALUE	DOCUMENT ID		TECN	COMMENT
0.119±0.026	[1] AUBERT	08AL	BABR	Dalitz fit, ≈ 487 k evts

[1] The error on this AUBERT 08AL value includes both statistical and systematic uncertainties; the latter dominates.

$\Gamma\big(K^0_S f_0(980),\ f_0\to\pi^+\pi^-\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ — Γ_{44}/Γ_{40}

Fit fraction from the Dalitz plot analyses.

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.043\pm0.005^{+0.012}_{-0.006}}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.042\pm0.005^{+0.011}_{-0.005}$	ASNER	04A	CLEO	See MURAMATSU 02
0.068±0.016±0.018	FRABETTI	94G	E687	Dalitz fit, 597 evts
0.046±0.018±0.006	ALBRECHT	93D	ARG	Dalitz fit, 440 evts

$\Gamma\big(K^0_S f_0(1370),\ f_0\to\pi^+\pi^-\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ — Γ_{45}/Γ_{40}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.099\pm0.011^{+0.028}_{-0.044}}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.098\pm0.014^{+0.026}_{-0.036}$	ASNER	04A	CLEO	See MURAMATSU 02
0.077±0.022±0.031	FRABETTI	94G	E687	Dalitz fit, 597 evts
0.082±0.028±0.013	ALBRECHT	93D	ARG	Dalitz fit, 440 evts

$\Gamma\big(K^0_S f_2(1270),\ f_2\to\pi^+\pi^-\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ — Γ_{46}/Γ_{40}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.0032^{+0.0035}_{-0.0022}}$ **OUR AVERAGE**				
0.006 ±0.007	[1] AUBERT	08AL	BABR	Dalitz fit, ≈ 487 k evts
$0.0027\pm0.0015^{+0.0037}_{-0.0017}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.0036\pm0.0022^{+0.0032}_{-0.0019}$	ASNER	04A	CLEO	See MURAMATSU 02
0.037 ±0.014 ±0.017	FRABETTI	94G	E687	Dalitz fit, 597 evts
0.050 ±0.021 ±0.008	ALBRECHT	93D	ARG	Dalitz fit, 440 evts

[1] The error on this AUBERT 08AL value includes both statistical and systematic uncertainties; the latter dominates.

$\Gamma\big(K^*(892)^-\pi^+,\ K^{*-}\to K^0_S\pi^-\big)/\Gamma\big(K^0_S\pi^+\pi^-\big)$ — Γ_{47}/Γ_{40}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.588^{+0.034}_{-0.050}}$ **OUR AVERAGE** Error includes scale factor of 2.0.				
0.557±0.028	[1] AUBERT	08AL	BABR	Dalitz fit, ≈ 487 k evts
$0.657\pm0.013^{+0.018}_{-0.040}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts

• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.663 \pm 0.013 ^{+0.024}_{-0.043}$	ASNER	04A	CLEO	See MURAMATSU 02
$0.625 \pm 0.036 \pm 0.026$	FRABETTI	94G	E687	Dalitz fit, 597 evts
$0.718 \pm 0.042 \pm 0.030$	ALBRECHT	93D	ARG	Dalitz fit, 440 evts
0.480 ± 0.097	ANJOS	93	E691	γ Be 90–260 GeV
$0.56 \pm 0.04 \pm 0.05$	ADLER	87	MRK3	$e^+ e^-$ 3.77 GeV

[1] The error on this AUBERT 08AL value includes both statistical and systematic uncertainties; the latter dominates.

$\Gamma\big(K_0^*(1430)^- \pi^+,\ K_0^{*-} \to K_S^0 \pi^-\big)/\Gamma\big(K_S^0 \pi^+ \pi^-\big)$ $\qquad \Gamma_{48}/\Gamma_{40}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.095^{+0.014}_{-0.010}$ OUR AVERAGE				
0.102 ± 0.015	[1] AUBERT	08AL	BABR	Dalitz fit, $\approx$ 487 k evts
$0.073 \pm 0.007 ^{+0.031}_{-0.011}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.072 \pm 0.007 ^{+0.014}_{-0.013}$	ASNER	04A	CLEO	See MURAMATSU 02
$0.109 \pm 0.027 \pm 0.029$	FRABETTI	94G	E687	Dalitz fit, 597 evts
$0.129 \pm 0.034 \pm 0.021$	ALBRECHT	93D	ARG	Dalitz fit, 440 evts

[1] The error on this AUBERT 08AL value includes both statistical and systematic uncertainties; the latter dominates.

$\Gamma\big(K_2^*(1430)^- \pi^+,\ K_2^{*-} \to K_S^0 \pi^-\big)/\Gamma\big(K_S^0 \pi^+ \pi^-\big)$ $\qquad \Gamma_{49}/\Gamma_{40}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.0120^{+0.0070}_{-0.0035}$ OUR AVERAGE				
0.022 ± 0.016	[1] AUBERT	08AL	BABR	Dalitz fit, $\approx$ 487 k evts
$0.011 \pm 0.002 ^{+0.007}_{-0.003}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.011 \pm 0.002 ^{+0.005}_{-0.003}$	ASNER	04A	CLEO	See MURAMATSU 02

[1] The error on this AUBERT 08AL value includes both statistical and systematic uncertainties; the latter dominates.

$\Gamma\big(K^*(1680)^- \pi^+,\ K^{*-} \to K_S^0 \pi^-\big)/\Gamma\big(K_S^0 \pi^+ \pi^-\big)$ $\qquad \Gamma_{50}/\Gamma_{40}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.016 ± 0.013 OUR AVERAGE				
0.007 ± 0.019	[1] AUBERT	08AL	BABR	Dalitz fit, $\approx$ 487 k evts
$0.022 \pm 0.004 ^{+0.018}_{-0.015}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.023 \pm 0.005 ^{+0.007}_{-0.014}$	ASNER	04A	CLEO	See MURAMATSU 02

[1] The error on this AUBERT 08AL value includes both statistical and systematic uncertainties; the latter dominates.

$\Gamma(K^*(892)^+\pi^-,\ K^{*+}\to K^0_S\pi^+)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{51}/Γ_{40}

This is the "fit fraction" from the Dalitz-plot analysis. This is a doubly Cabibbo-suppressed mode.

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
$4.0^{+2.0}_{-1.2}$ OUR AVERAGE				
4.6 ± 2.3	[1] AUBERT	08AL	BABR	Dalitz fit, $\approx$ 487 k evts
$3.4\pm1.3^{+4.1}_{-0.4}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$3.4\pm1.3^{+3.6}_{-0.5}$	ASNER	04A	CLEO	See MURAMATSU 02

[1] The error on this AUBERT 08AL value includes both statistical and systematic uncertainties; the latter dominates.

$\Gamma(K^*_0(1430)^+\pi^-,\ K^{*+}_0\to K^0_S\pi^+)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{52}/Γ_{40}

This is the "fit fraction" from the Dalitz-plot analysis. This is a doubly Cabibbo-suppressed mode.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<5\times10^{-4}$	95	AUBERT	08AL	BABR	Dalitz fit, $\approx$ 487 k evts

$\Gamma(K^*_2(1430)^+\pi^-,\ K^{*+}_2\to K^0_S\pi^+)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{53}/Γ_{40}

This is the "fit fraction" from the Dalitz-plot analysis. This is a doubly Cabibbo-suppressed mode.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.2\times10^{-3}$	95	AUBERT	08AL	BABR	Dalitz fit, $\approx$ 487 k evts

$\Gamma(K^0_S\pi^+\pi^-$ nonresonant$)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{54}/Γ_{40}

This is the "fit fraction" from the Dalitz-plot analysis. Neither FRABETTI 94G nor ALBRECHT 93D (quoted in many of the earlier submodes of $K^0_S\pi^+\pi^-$) sees evidence for a nonresonant component.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.009\pm0.004^{+0.020}_{-0.004}$	MURAMATSU	02	CLE2	Dalitz fit, 5299 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.007\pm0.007^{+0.021}_{-0.006}$	ASNER	04A	CLEO	See MURAMATSU 02
$0.263\pm0.024\pm0.041$	ANJOS	93	E691	γBe 90–260 GeV
$0.26\pm0.08\pm0.05$	FRABETTI	92B	E687	γ Be, $\overline{E}_\gamma$= 221 GeV
$0.33\pm0.05\pm0.10$	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^-\pi^+\pi^0)/\Gamma_{total}$ Γ_{55}/Γ

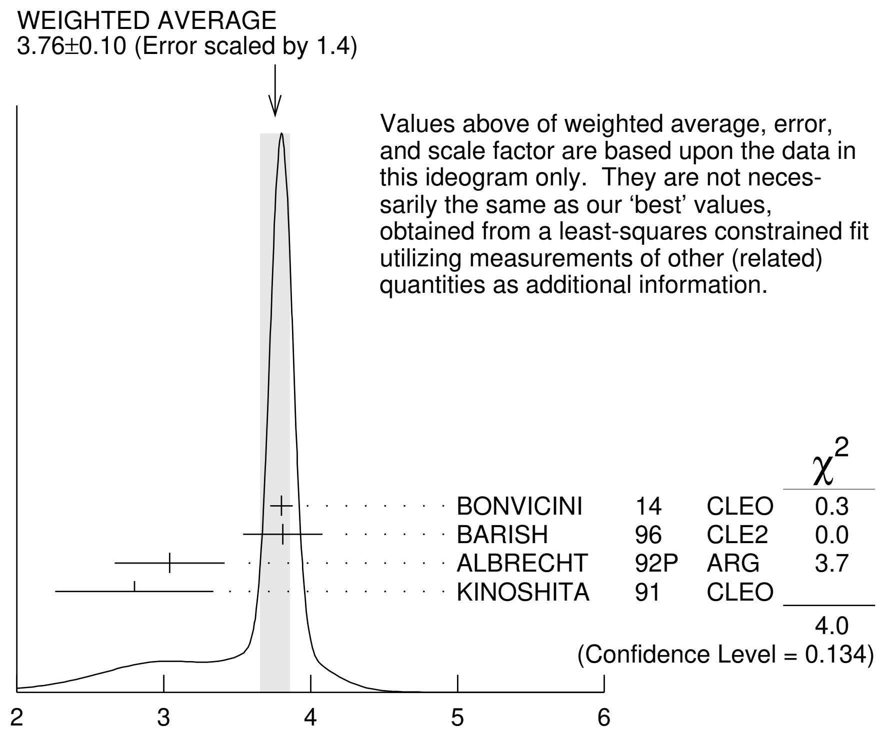
VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$14.57\pm0.12\pm0.38$		[1] DOBBS	07	CLEO	See BONVICINI 14
$14.9\pm0.3\pm0.5$	19k ±150	[1] HE	05	CLEO	See DOBBS 07
$13.3\pm1.2\pm1.3$	931	ADLER	88C	MRK3	e^+e^- 3.77 GeV
11.7 ± 4.3	37	[2] SCHINDLER	81	MRK2	e^+e^- 3.771 GeV

[1] DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.

[2] SCHINDLER 81 (MARK-2) measures $\sigma(e^+e^-\to\psi(3770))\times$ branching fraction to be 0.68 ± 0.23 nb. We use the MARK-3 (ADLER 88C) value of $\sigma=5.8\pm0.5\pm0.6$ nb.

$\Gamma(K^-\pi^+\pi^0)/\Gamma(K^-\pi^+)$ Γ_{55}/Γ_{37}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
3.65 ±0.13 OUR FIT	Error includes scale factor of 2.1.				
3.76 ±0.10 OUR AVERAGE	Error includes scale factor of 1.4. See the ideogram below.				
3.802±0.022±0.073		BONVICINI	14	CLEO	All CLEO-c runs
3.81 ±0.07 ±0.26	10k	BARISH	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
3.04 ±0.16 ±0.34	931	[1] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
2.8 ±0.14 ±0.52	1050	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV



[1] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^-\pi^+\pi^0)/\Gamma(K^-\pi^+)$

$\Gamma(K^-\rho^+)/\Gamma(K^-\pi^+\pi^0)$ Γ_{56}/Γ_{55}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.78 ±0.04 OUR AVERAGE				
0.788±0.019±0.048	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts
0.765±0.041±0.054	FRABETTI	94G	E687	Dalitz fit, 530 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.647±0.039±0.150	ANJOS	93	E691	γ Be 90–260 GeV
0.81 ±0.03 ±0.06	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma(K^-\rho(1700)^+, \rho^+ \to \pi^+\pi^0)/\Gamma(K^-\pi^+\pi^0)$ Γ_{57}/Γ_{55}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.057±0.008±0.009	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts

$\Gamma\big(K^*(892)^-\pi^+,\ K^*(892)^-\to K^-\pi^0\big)/\Gamma\big(K^-\pi^+\pi^0\big)$ — Γ_{58}/Γ_{55}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.160^{+0.025}_{-0.013}$ OUR AVERAGE				
$0.161\pm0.007^{+0.027}_{-0.011}$	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts
$0.148\pm0.028\pm0.049$	FRABETTI	94G	E687	Dalitz fit, 530 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.084\pm0.011\pm0.012$	ANJOS	93	E691	γ Be 90–260 GeV
$0.12\ \pm0.02\ \pm0.03$	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma\big(\overline{K}^*(892)^0\pi^0,\ \overline{K}^*(892)^0\to K^-\pi^+\big)/\Gamma\big(K^-\pi^+\pi^0\big)$ — Γ_{59}/Γ_{55}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
0.135 ± 0.016 OUR AVERAGE				
$0.127\pm0.009\pm0.016$	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts
$0.165\pm0.031\pm0.015$	FRABETTI	94G	E687	Dalitz fit, 530 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.142\pm0.018\pm0.024$	ANJOS	93	E691	γ Be 90–260 GeV
$0.13\ \pm0.02\ \pm0.03$	ADLER	87	MRK3	e^+e^- 3.77 GeV

$\Gamma\big(K_0^*(1430)^-\pi^+,\ K_0^{*-}\to K^-\pi^0\big)/\Gamma\big(K^-\pi^+\pi^0\big)$ — Γ_{60}/Γ_{55}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.033\pm0.006\pm0.014$	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts

$\Gamma\big(\overline{K}_0^*(1430)^0\pi^0,\ \overline{K}_0^{*0}\to K^-\pi^+\big)/\Gamma\big(K^-\pi^+\pi^0\big)$ — Γ_{61}/Γ_{55}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.041\pm0.006^{+0.032}_{-0.009}$	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts

$\Gamma\big(K^*(1680)^-\pi^+,\ K^{*-}\to K^-\pi^0\big)/\Gamma\big(K^-\pi^+\pi^0\big)$ — Γ_{62}/Γ_{55}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
$0.013\pm0.003\pm0.004$	KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts

$\Gamma\big(K^-\pi^+\pi^0$ nonresonant$\big)/\Gamma\big(K^-\pi^+\pi^0\big)$ — Γ_{63}/Γ_{55}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$0.080^{+0.040}_{-0.014}$ OUR AVERAGE					
$0.075\pm0.009^{+0.056}_{-0.011}$		KOPP	01	CLE2	Dalitz fit, ≈ 7,000 evts
$0.101\pm0.033\pm0.040$		FRABETTI	94G	E687	Dalitz fit, 530 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.036\pm0.004\pm0.018$		ANJOS	93	E691	γ Be 90–260 GeV
$0.09\ \pm0.02\ \pm0.04$		ADLER	87	MRK3	e^+e^- 3.77 GeV
$0.51\ \pm0.22$	21	SUMMERS	84	E691	Photoproduction

$\Gamma(K^0_S 2\pi^0)/\Gamma_{\text{total}}$ Γ_{64}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
9.1 ±1.1 OUR AVERAGE Error includes scale factor of 2.2.					
10.58±0.38±0.73	1259	LOWREY	11	CLEO	$e^+e^- \approx$ 3.77 GeV
8.34±0.45±0.42		ASNER	08	CLEO	$e^+e^- \to D^0\overline{D}^0$, 3.77 GeV

$\Gamma(K^0_S (2\pi^0)_{S-wave})/\Gamma(K^0_S 2\pi^0)$ Γ_{65}/Γ_{64}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
28.9±6.3±3.1	LOWREY	11	CLEO	Dalitz analysis, 1259 evts

$\Gamma(\overline{K}^*(892)^0\pi^0,\ \overline{K}^{*0} \to K^0_S\pi^0)/\Gamma(K^0_S\pi^0)$ Γ_{66}/Γ_{38}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
65.6± 5.3±2.5	LOWREY	11	CLEO	Dalitz analysis, 1259 evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
55 $^{+13}_{-10}$ ±7	PROCARIO	93B	CLE2	Dalitz plot fit, 122 evts

$\Gamma(\overline{K}^*(1430)^0\pi^0,\ \overline{K}^{*0} \to K^0_S\pi^0)/\Gamma(K^0_S 2\pi^0)$ Γ_{67}/Γ_{64}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.49±0.45±2.51	LOWREY	11	CLEO	Dalitz analysis, 1259 evts

$\Gamma(\overline{K}^*(1680)^0\pi^0,\ \overline{K}^{*0} \to K^0_S\pi^0)/\Gamma(K^0_S 2\pi^0)$ Γ_{68}/Γ_{64}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
11.2±2.7±2.5	LOWREY	11	CLEO	Dalitz analysis, 1259 evts

$\Gamma(K^0_S f_2(1270),\ f_2 \to 2\pi^0)/\Gamma(K^0_S 2\pi^0)$ Γ_{69}/Γ_{64}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
2.48±0.91±0.78	LOWREY	11	CLEO	Dalitz analysis, 1259 evts

$\Gamma(2K^0_S,\ \text{one}\ K^0_S \to 2\pi^0)/\Gamma(K^0_S 2\pi^0)$ Γ_{70}/Γ_{64}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
3.46±0.92±0.66	LOWREY	11	CLEO	Dalitz analysis, 1259 evts

$\Gamma(K^0_S 2\pi^0\ \text{nonresonant})/\Gamma(K^0_S\pi^0)$ Γ_{71}/Γ_{38}

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.37±0.08±0.04	PROCARIO	93B	CLE2	Dalitz plot fit, 122 evts

$\Gamma(K^- 2\pi^+ \pi^-)/\Gamma_{total}$ — Γ_{72}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
8.30±0.07±0.20		[1] DOBBS	07	CLEO	See BONVICINI 14
8.3 ±0.2 ±0.3	15k	[1] HE	05	CLEO	See DOBBS 07
7.9 ±1.5 ±0.9		[2] ALBRECHT	94	ARG	$e^+ e^- \approx \Upsilon(4S)$
6.80±0.27±0.57	1.4k	[3] ALBRECHT	94F	ARG	$e^+ e^- \approx \Upsilon(4S)$
9.1 ±0.8 ±0.8	992	ADLER	88C	MRK3	$e^+ e^-$ 3.77 GeV
11.7 ±2.5	185	[4] SCHINDLER	81	MRK2	$e^+ e^-$ 3.771 GeV
6.2 ±1.9	44	[5] PERUZZI	77	LGW	$e^+ e^-$ 3.77 GeV

[1] DOBBS 07 and HE 05 use single- and double-tagged events in an overall fit. DOBBS 07 supersedes HE 05.

[2] ALBRECHT 94 uses D^0 mesons from $\overline{B}^0 \rightarrow D^{*+} \ell^- \overline{\nu}_\ell$ decays. This is a different set of events than used by ALBRECHT 94F.

[3] See the footnote on the ALBRECHT 94F measurement of $\Gamma(K^- \pi^+)/\Gamma_{total}$ for the method used.

[4] SCHINDLER 81 (MARK-2) measures $\sigma(e^+ e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.68 ± 0.11 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

[5] PERUZZI 77 (MARK-1) measures $\sigma(e^+ e^- \rightarrow \psi(3770)) \times$ branching fraction to be 0.36 ± 0.10 nb. We use the MARK-3 (ADLER 88C) value of $\sigma = 5.8 \pm 0.5 \pm 0.6$ nb.

$\Gamma(K^- 2\pi^+ \pi^-)/\Gamma(K^- \pi^+)$ — Γ_{72}/Γ_{37}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
2.083±0.031 OUR FIT					
2.087±0.032 OUR AVERAGE					
2.106±0.013±0.032		BONVICINI	14	CLEO	All CLEO-c runs
1.94 ±0.07 $^{+0.09}_{-0.11}$		JUN	00	SELX	Σ^- nucleus, 600 GeV
1.7 ±0.2 ±0.2	1745	ANJOS	92C	E691	γ Be 90–260 GeV
1.90 ±0.25 ±0.20	337	ALVAREZ	91B	NA14	Photoproduction
2.12 ±0.16 ±0.09		BORTOLETTO	88	CLEO	$e^+ e^-$ 10.55 GeV
2.17 ±0.28 ±0.23		ALBRECHT	85F	ARG	$e^+ e^-$ 10 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.0 ±0.9	48	BAILEY	86	ACCM	π^- Be fixed target
2.0 ±1.0	10	BAILEY	83B	SPEC	π^- Be $\rightarrow D^0$
2.2 ±0.8	214	PICCOLO	77	MRK1	$e^+ e^-$ 4.03, 4.41 GeV

$\Gamma(K^- \pi^+ \rho^0 \text{total})/\Gamma(K^- 2\pi^+ \pi^-)$ — Γ_{73}/Γ_{72}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
83.5±3.5 OUR AVERAGE				
80 ±3 ±5	ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts
85.5±3.2±3.0	COFFMAN	92B	MRK3	1281 ± 45 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(K^- \pi^+ \rho^0 \text{3-body})/\Gamma(K^- 2\pi^+ \pi^-)$ — Γ_{74}/Γ_{72}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
7.4±2.0 OUR AVERAGE					
8.4±1.1±2.5	16k	ABLIKIM	17O	BES3	$D^0 \rightarrow K^- 2\pi^+ \pi^-$
5 ±3 ±2		ANJOS	92C	E691	1745 $K^- 2\pi^+ \pi^-$ evts
8.4±2.2±4.0		COFFMAN	92B	MRK3	1281 ± 45 $K^- 2\pi^+ \pi^-$ evts

$\Gamma(\overline{K}^*(892)^0\rho^0,\ \overline{K}^{*0}\to K^-\pi^+)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{75}/Γ_{72}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
12.3±0.6 OUR AVERAGE					
12.3±0.4±0.5	16k	ABLIKIM	17O	BES3	$D^0\to K^-2\pi^+\pi^-$
13 ±2 ±2		ANJOS	92C	E691	1745 $K^-2\pi^+\pi^-$ evts

$\Gamma(\overline{K}^*(892)^0\rho^0$ transverse, $\overline{K}^{*0}\to K^-\pi^+)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{76}/Γ_{72}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.142±0.016±0.05	1281	COFFMAN	92B	MRK3	$K^-2\pi^+\pi^-$ evts

$\Gamma(K^-a_1(1260)^+,\ a_1^+\to\rho^0\pi^+)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{77}/Γ_{72}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
53 ±4 OUR AVERAGE					
54.6±2.8± 3.7	16k	ABLIKIM	17O	BES3	$D^0\to K^-2\pi^+\pi^-$
47 ±5 ±10	1745	ANJOS	92C	E691	$K^-2\pi^+\pi^-$ evts
49.2±2.4± 8.0	1281	COFFMAN	92B	MRK3	$K^-2\pi^+\pi^-$ evts

$\Gamma(K_1(1270)^-\pi^+,\ K_1^-\to K^-\pi^+\pi^-$ total$)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{78}/Γ_{72}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
4.8 ±0.4 OUR AVERAGE					
4.66±0.05±0.39±0.24	891k	[1] AAIJ	18AI	LHCB	$D^0\to K^-2\pi^+\pi^-$
6.6 ±1.9 ±0.3	1281	COFFMAN	92B	MRK3	$K^-2\pi^+\pi^-$ evts

[1] The 3rd error is due to the uncertainty in the amplitude model composition.

$\Gamma(K_1(1270)^-\pi^+,\ K_1^-\to\overline{K}^*(892)^0\pi^-,\ \overline{K}^{*0}\to K^-\pi^+)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{81}/Γ_{72}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.8±0.2±0.2	16k	ABLIKIM	17O	BES3	$D^0\to K^-2\pi^+\pi^-$

$\Gamma(K^-2\pi^+\pi^-$ nonresonant$)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{82}/Γ_{72}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
22.0 ±0.8 OUR AVERAGE					
22.04±0.28±2.09±1.51	891k	[1] AAIJ	18AI	LHCB	$D^0\to K^-2\pi^+\pi^-$
21.9 ±0.6 ±0.6	16k	[2] ABLIKIM	17O	BES3	$D^0\to K^-2\pi^+\pi^-$
23 ±2 ±3	1.7k	ANJOS	92C	E691	$D^0\to K^-2\pi^+\pi^-$
24.2 ±2.5 ±6.0	1.2k	COFFMAN	92B	MRK3	$D^0\to K^-2\pi^+\pi^-$

[1] The 3rd error is due to the uncertainty in the amplitude model composition.

[2] In addition to the 14 ABLIKIM 17O branching ratios we have listed, the paper gives 15 more ratios for mostly non-resonant modes. Four of the 15 have less than 2-standard-deviation significance. Here are some of the omitted modes, with S, P, V, A, and T for scalar, pseudo-scalar, vector, axial-vector, and tensor spin sub-structures: $\pi^+(K^-\rho^0)_P$, $\pi^+(K^-\rho^0)_V$, $\pi^+(\overline{K}^{*0}\pi^-)_P$, $\pi^+(\overline{K}^{*0}\pi^-)_V$, $\pi^+(\pi^-(K^-\pi^+)_{S-wave})_A$, $(K^-\pi^+)_V\ (\pi^+\pi^-)_S$, $(K^-\pi^+)_T\ (\pi^+\pi^-)_S\ldots$

$\Gamma(K_S^0\pi^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_{83}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
5.2±0.6 OUR FIT					
5.2±1.1±1.2	140	COFFMAN	92B	MRK3	e^+e^- 3.77 GeV

• • • We do not use the following data for averages, fits, limits, etc. • • •

$6.7^{+1.6}_{-1.7}$		[1] BARLAG	92C	ACCM	π^- Cu 230 GeV

[1] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(K^0_S\pi^+\pi^-\pi^0)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{83}/Γ_{40}

Branching fractions for submodes of this mode with narrow resonances (the η, ω, η') are fairly well determined (see below). COFFMAN 92B gives fractions of K^* and ρ submodes, but with only 140 ± 28 events above background could not determine them with much accuracy. We omit those measurements here; they are in our 2008 Review (Physics Letters **B667** 1 (2008)).

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.85±0.20 OUR FIT					
1.86±0.23 OUR AVERAGE					
1.80±0.20±0.21	190	[1] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
2.8 ±0.8 ±0.8	46	ANJOS	92C	E691	γ Be 90–260 GeV
1.85±0.26±0.30	158	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV

[1] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^-\pi^+2\pi^0)/\Gamma_{total}$ Γ_{86}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
8.86±0.13±0.19	6.1k	ABLIKIM	19AK	BES3	e^+e^- at 3773 MeV

• • • We do not use the following data for averages, fits, limits, etc. • • •

17.7 ±2.9		[1] BARLAG	92C	ACCM	π^- Cu 230 GeV
14.9 ±3.7 ±3.0	24	[2] ADLER	88C	MRK3	e^+e^- 3.77 GeV
20.9 $^{+7.4}_{-4.3}$ ±1.2	9	[1] AGUILAR-...	87F	HYBR	πp, pp 360, 400 GeV

[1] AGUILAR-BENITEZ 87F and BARLAG 92C compute the branching fraction using topological normalization. They do not distinguish the presence of a third π^0, and thus are not included in the average.

[2] ADLER 88C uses an absolute normalization method finding this decay channel opposite a detected $\overline{D}^0 \rightarrow K^+\pi^-$ in pure $D\overline{D}$ events.

$\Gamma(K^-2\pi^+\pi^-\pi^0)/\Gamma(K^-\pi^+)$ Γ_{87}/Γ_{37}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.09±0.10 OUR FIT					
0.98±0.11±0.11	225	[1] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV

[1] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^-2\pi^+\pi^-\pi^0)/\Gamma(K^-2\pi^+\pi^-)$ Γ_{87}/Γ_{72}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.52±0.05 OUR FIT					
0.56±0.07 OUR AVERAGE					
$0.55\pm0.07^{+0.12}_{-0.09}$	167	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV
0.57±0.06±0.05	180	ANJOS	90D	E691	Photoproduction

$\Gamma(K^0_S\eta\pi^0)/\Gamma_{total}$ Γ_{91}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
10.06±0.34±0.30	1.1k	ABLIKIM	20V	BES3	e^+e^-, 3773 MeV

$\Gamma(K^0_S \eta \pi^0)/\Gamma(K^0_S \pi^0)$ — Γ_{91}/Γ_{38}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.46±0.07±0.06	155 ± 22	[1] RUBIN	04	CLEO	$e^+e^- \approx$ 10 GeV

[1] The η here is detected in its $\gamma\gamma$ mode, but other η modes are included in the value given.

$\Gamma(K^0_S a_0(980),\ a_0 \to \eta\pi^0)/\Gamma(K^0_S \eta \pi^0)$ — Γ_{92}/Γ_{91}

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
1.19±0.09±0.26	[1] RUBIN	04	CLEO	Dalitz fit, 155 evts

[1] In addition to $K^0_S a_0(980)$ and $\overline{K}^*(892)^0\eta$ modes, RUBIN 04 finds a fit fraction of 0.246 ± 0.092 ± 0.091 for other, undetermined modes.

$\Gamma(\overline{K}^*(892)^0\eta,\ \overline{K}^{*0} \to K^0_S \pi^0)/\Gamma(K^0_S \eta \pi^0)$ — Γ_{93}/Γ_{91}

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
0.293±0.062±0.035	[1] RUBIN	04	CLEO	Dalitz fit, 155 evts

[1] See the note on RUBIN 04 in the preceding data block.

$\Gamma(K^-\pi^+\eta)/\Gamma_{total}$ — Γ_{94}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.88 ±0.05 OUR FIT	Error includes scale factor of 1.4.				
1.853±0.025±0.031	6.1k	ABLIKIM	20V	BES3	e^+e^-, 3773 MeV

$\Gamma(K^-\pi^+\eta)/\Gamma(K^-\pi^+)$ — Γ_{94}/Γ_{37}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
47.6±1.3 OUR FIT	Error includes scale factor of 1.4.				
50.1±2.0±0.2	116k	[1] CHEN	20A	BELL	e^+e^- at $\Upsilon(4S)$

[1] CHEN 20A reports 0.500 ± 0.002 ± 0.020 ± 0.003 from a measurement of $[\Gamma(D^0 \to K^-\pi^+\eta)/\Gamma(D^0 \to K^-\pi^+)] \times [B(\eta \to 2\gamma)]$ assuming $B(\eta \to 2\gamma) = (39.41 \pm 0.20) \times 10^{-2}$, which we rescale to our best value $B(\eta \to 2\gamma) = (39.36 \pm 0.18) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. The third reported uncertainty is the uncertainty from $B(\eta \to \gamma\gamma)$.

$\Gamma(K^*(892)^0\eta,\ K^{*0} \to K^-\pi^+)/\Gamma(K^-\pi^+\eta)$ — Γ_{95}/Γ_{94}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
$\mathbf{47.61 \pm 1.32^{+0.24}_{-0.49}{}^{+3.64}_{-2.71}}$	[1] CHEN	20A	BELL	e^+e^- at $\Upsilon(4S)$

[1] The third uncertainty is due to the uncertainty from the Dalitz model .

$\Gamma(a_0(980)^+K^-,\ a_0^+ \to \eta\pi^+)/\Gamma(K^-\pi^+\eta)$ — Γ_{96}/Γ_{94}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
$\mathbf{39.28 \pm 1.50^{+1.58}_{-0.51}{}^{+4.38}_{-3.30}}$	[1] CHEN	20A	BELL	e^+e^- at $\Upsilon(4S)$

[1] The third uncertainty is due to the uncertainty from the Dalitz model .

$\Gamma(K_2^*(1980)^-\pi^+,\ K_2^{*-} \to K^-\eta)/\Gamma_{total}$ — Γ_{97}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
$\mathbf{2.2^{+1.7}_{-1.9}}$	CHEN	20A	BELL	e^+e^- at $\Upsilon(4S)$

$\Gamma(K^-\pi^+\pi^0\eta)/\Gamma_{total}$ — Γ_{98}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
4.49±0.22±0.15	580	ABLIKIM	20V	BES3	e^+e^-, 3773 MeV

$\Gamma(K^0_S\pi^+\pi^-\eta)/\Gamma_{total}$ — Γ_{99}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.80±0.19±0.10	250	ABLIKIM	20V	BES3	e^+e^-, 3773 MeV

$\Gamma(K^0_S 2\pi^0\eta)/\Gamma_{total}$ — Γ_{100}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.76±0.23±0.13	65	ABLIKIM	20V	BES3	e^+e^-, 3773 MeV

$\Gamma(K^0_S 2\pi^+2\pi^-)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{101}/Γ_{40}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.095±0.005±0.007	1283 ± 57	LINK	04D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.07 ±0.02 ±0.01	11	[1] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
0.149±0.026	56	AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV
0.18 ±0.07 ±0.04	6	ANJOS	90D	E691	Photoproduction

[1] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^0_S\rho^0\pi^+\pi^-, \text{no } K^*(892)^-)/\Gamma(K^0_S 2\pi^+2\pi^-)$ — $\Gamma_{102}/\Gamma_{101}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.40±0.24±0.07	LINK	04D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^*(892)^- 2\pi^+\pi^-,\ K^*(892)^- \to K^0_S\pi^-, \text{no } \rho^0)/\Gamma(K^0_S 2\pi^+2\pi^-)$ — $\Gamma_{103}/\Gamma_{101}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.17±0.28±0.02	LINK	04D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^*(892)^-\rho^0\pi^+,\ K^*(892)^- \to K^0_S\pi^-)/\Gamma(K^0_S 2\pi^+2\pi^-)$ — $\Gamma_{104}/\Gamma_{101}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.60±0.21±0.09	LINK	04D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^0_S 2\pi^+2\pi^- \text{ nonresonant})/\Gamma(K^0_S 2\pi^+2\pi^-)$ — $\Gamma_{105}/\Gamma_{101}$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.46	90	LINK	04D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^- 3\pi^+2\pi^-)/\Gamma(K^- 2\pi^+\pi^-)$ — Γ_{107}/Γ_{72}

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.70±0.58±0.38	48 ± 10	LINK	04B	FOCS	γA, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^0_S\eta)/\Gamma_{total}$ — Γ_{108}/Γ

Unseen decay modes of the η are included.

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
5.09±0.13 OUR FIT					
5.13±0.07±0.12	9.5k	ABLIKIM	18W	BES3	e^+e^-, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
4.42±0.15±0.28		ASNER	08	CLEO	See MENDEZ 10

$\Gamma(K^0_S\eta)/[\Gamma(K^-\pi^+)+\Gamma(K^+\pi^-)]$ $\Gamma_{108}/(\Gamma_{37}+\Gamma_{274})$

Unseen decay modes of the η are included.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
12.83±0.33 OUR FIT					
12.3 ±0.3 ±0.7	2864 ± 65	MENDEZ	10	CLEO	e^+e^- at 3774 MeV

$\Gamma(K^0_S\eta)/\Gamma(K^0_S\pi^0)$ Γ_{108}/Γ_{38}

Unseen decay modes of the η are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.32±0.04±0.03	225 ± 30	PROCARIO	93B	CLE2	$\eta \to \gamma\gamma$

$\Gamma(K^0_S\eta)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{108}/Γ_{40}

Unseen decay modes of the η are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.14±0.02±0.02	80 ± 12	PROCARIO	93B	CLE2	$\eta \to \pi^+\pi^-\pi^0$

$\Gamma(K^0_S\omega)/\Gamma_{total}$ Γ_{109}/Γ

Unseen decay modes of the ω are included.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
1.11±0.06 OUR FIT				
1.12±0.04±0.05	ASNER	08	CLEO	$e^+e^- \to D^0\overline{D}^0$, 3.77 GeV

$\Gamma(K^0_S\omega)/\Gamma(K^-\pi^+)$ Γ_{109}/Γ_{37}

Unseen decay modes of the ω are included.

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.50±0.18±0.10	ALBRECHT	89D	ARG	e^+e^- 10 GeV

$\Gamma(K^0_S\omega)/\Gamma(K^0_S\pi^+\pi^-)$ Γ_{109}/Γ_{40}

Unseen decay modes of the ω are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.396±0.032 OUR FIT Error includes scale factor of 1.1.					
0.33 ±0.09 OUR AVERAGE Error includes scale factor of 1.1.					
0.29 ±0.08 ±0.05	16	[1] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV
0.54 ±0.14 ±0.16	40	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV

[1] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^0_S\omega)/\Gamma(K^0_S\pi^+\pi^-\pi^0)$ Γ_{109}/Γ_{83}

Unseen decay modes of the ω are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.215±0.026 OUR FIT				
0.220±0.048±0.0116	COFFMAN	92B	MRK3	1281 ± 45 $K^-2\pi^+\pi^-$ evts

$\Gamma(K^0_S\eta'(958))/\Gamma_{total}$ Γ_{110}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
9.49±0.32 OUR FIT					
9.49±0.20±0.36	3k	ABLIKIM	18W	BES3	e^+e^-, 3773 MeV

$\Gamma(K^0_S \eta'(958))/[\Gamma(K^-\pi^+)+\Gamma(K^+\pi^-)]$ — $\Gamma_{110}/(\Gamma_{37}+\Gamma_{274})$

Unseen decay modes of the $\eta'(958)$ are included.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
24.0±0.8 OUR FIT					
24.3±0.8±1.1	1321 ± 42	MENDEZ	10	CLEO	e^+e^- at 3774 MeV

$\Gamma(K^0_S \eta'(958))/\Gamma(K^0_S \pi^+\pi^-)$ — Γ_{110}/Γ_{40}

Unseen decay modes of the $\eta'(958)$ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.339±0.023 OUR FIT					
0.32 ±0.04 OUR AVERAGE					
0.31 ±0.02 ±0.04	594	PROCARIO	93B	CLE2	$\eta' \to \eta\pi^+\pi^-$, $\rho^0\gamma$
0.37 ±0.13 ±0.06	18	[1] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV

[1] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(\overline{K}^*(892)^0\pi^+\pi^-\pi^0)/\Gamma(K^-2\pi^+\pi^-\pi^0)$ — Γ_{111}/Γ_{87}

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	DOCUMENT ID		TECN	COMMENT
0.45±0.15±0.15	ANJOS	90D	E691	Photoproduction

$\Gamma(\overline{K}^*(892)^0\eta)/\Gamma_{total}$ — Γ_{112}/Γ

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
$1.41^{+0.13}_{-0.12}\pm0.01$	[1] CHEN	20A	BELL	e^+e^- at $\Upsilon(4S)$

[1] CHEN 20A reports $(1.41 \pm 0.04^{+0.12}_{-0.11} \pm 0.01) \times 10^{-2}$ from a measurement of $[\Gamma(D^0 \to \overline{K}^*(892)^0\eta)/\Gamma_{total}] \times [B(\eta \to 2\gamma)]$ assuming $B(\eta \to 2\gamma) = (39.41 \pm 0.20) \times 10^{-2}$, which we rescale to our best value $B(\eta \to 2\gamma) = (39.36 \pm 0.18) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. The third reported uncertainty is the uncertainty from $B(\eta \to \gamma\gamma)$.

$\Gamma(\overline{K}^*(892)^0\eta)/\Gamma(K^-\pi^+)$ — Γ_{112}/Γ_{37}

Unseen decay modes of the $\overline{K}^*(892)^0$ and η are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.58\pm0.19^{+0.24}_{-0.28}$	46	KINOSHITA	91	CLEO	$e^+e^- \sim$ 10.7 GeV

$\Gamma(\overline{K}^*(892)^0\eta)/\Gamma(K^-\pi^+\pi^0)$ — Γ_{112}/Γ_{55}

Unseen decay modes of the $\overline{K}^*(892)^0$ and η are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.13±0.02±0.03	214	PROCARIO	93B	CLE2	$\overline{K}^{*0}\eta \to K^-\pi^+/\gamma\gamma$

$\Gamma(K^-\pi^+\omega)/\Gamma(K^-\pi^+)$ — Γ_{113}/Γ_{37}

Unseen decay modes of the ω are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.78±0.12±0.10	99	[1] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV

[1] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(\overline{K}^*(892)^0\omega)/\Gamma(K^-\pi^+)$ — Γ_{114}/Γ_{37}

Unseen decay modes of the $\overline{K}^*(892)^0$ and ω are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.28±0.11±0.04	17	[1] ALBRECHT	92P	ARG	$e^+e^- \approx$ 10 GeV

[1] This value is calculated from numbers in Table 1 of ALBRECHT 92P.

$\Gamma(K^-\pi^+\eta'(958))/\Gamma_{total}$ — Γ_{115}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
6.43±0.15±0.31	2.5k	ABLIKIM	18AC	BES3	e^+e^-, 3773 MeV

$\Gamma(K^-\pi^+\eta'(958))/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{115}/Γ_{72}

Unseen decay modes of the $\eta'(958)$ are included.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.093±0.014±0.019	286	PROCARIO	93B	CLE2	$\eta' \to \eta\pi^+\pi^-$, $\rho^0\gamma$

$\Gamma(K^0_S\eta'(958)\pi^0)/\Gamma_{total}$ — Γ_{116}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.52±0.22±0.15	289	ABLIKIM	18AC	BES3	e^+e^-, 3773 MeV

$\Gamma(\overline{K}^*(892)^0\eta'(958))/\Gamma(K^-\pi^+\eta'(958))$ — $\Gamma_{117}/\Gamma_{115}$

Unseen decay modes of the $\overline{K}^*(892)^0$ are included.

VALUE	CL%	DOCUMENT ID		TECN
<0.15	90	PROCARIO	93B	CLE2

Hadronic modes with three K's

$\Gamma(K^0_S K^+K^-)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{118}/Γ_{40}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.158±0.001±0.005	14k±116	AUBERT,B	05J	BABR	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.20 ±0.05 ±0.04	47	FRABETTI	92B	E687	γ Be, $\overline{E}_\gamma$= 221 GeV
0.170±0.022	136	AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV
0.24 ±0.08		BEBEK	86	CLEO	e^+e^- near $\Upsilon(4S)$
0.185±0.055	52	ALBRECHT	85B	ARG	e^+e^- 10 GeV

$\Gamma(K^0_S a_0(980)^0,\ a_0^0 \to K^+K^-)/\Gamma(K^0_S K^+K^-)$ — $\Gamma_{119}/\Gamma_{118}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
0.664±0.016±0.070	AUBERT,B	05J	BABR	Dalitz fit, 12540 ± 112 evts

$\Gamma(K^-a_0(980)^+,\ a_0^+ \to K^+K^0_S)/\Gamma(K^0_S K^+K^-)$ — $\Gamma_{120}/\Gamma_{118}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
0.134±0.011±0.037	AUBERT,B	05J	BABR	Dalitz fit, 12540 ± 112 evts

$\Gamma(K^+a_0(980)^-,\ a_0^- \to K^-K^0_S)/\Gamma(K^0_S K^+K^-)$ — $\Gamma_{121}/\Gamma_{118}$

This is a doubly Cabibbo-suppressed mode.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.025	95	AUBERT,B	05J	BABR	Dalitz fit, 12540 ± 112 evts

$\Gamma(K^0_S f_0(980),\ f_0 \to K^+ K^-)/\Gamma(K^0_S K^+ K^-)$ — $\Gamma_{122}/\Gamma_{118}$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.021	95	AUBERT,B	05J	BABR	Dalitz fit, 12540 ± 112 evts

$\Gamma(K^0_S \phi,\ \phi \to K^+ K^-)/\Gamma(K^0_S K^+ K^-)$ — $\Gamma_{123}/\Gamma_{118}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
0.459±0.007±0.007	AUBERT,B	05J	BABR	Dalitz fit, 12540 ± 112 evts

$\Gamma(K^0_S f_0(1370),\ f_0 \to K^+ K^-)/\Gamma(K^0_S K^+ K^-)$ — $\Gamma_{124}/\Gamma_{118}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
0.038±0.007±0.023	[1] AUBERT,B	05J	BABR	Dalitz fit, 12540 ± 112 evts

[1] AUBERT,B 05J calls the mode $K^0_S f_0(1400)$, but insofar as it is seen here at all, it is certainly the same as $f_0(1370)$.

$\Gamma(3K^0_S)/\Gamma_{total}$ — Γ_{125}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
7.5 ±0.7 OUR FIT	Error includes scale factor of 1.4.				
7.21±0.33±0.44	597	ABLIKIM	17A	BES3	$e^+ e^- \to \psi(3770)$

$\Gamma(3K^0_S)/\Gamma(K^0_S \pi^+ \pi^-)$ — Γ_{125}/Γ_{40}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.70±0.26 OUR FIT	Error includes scale factor of 1.2.				
3.2 ±0.4 OUR AVERAGE					
3.58±0.54±0.52	170 ± 26	LINK	05A	FOCS	γBe, $\overline{E}_\gamma \approx 180$ GeV
2.78±0.38±0.48	61	ASNER	96B	CLE2	$e^+ e^- \approx \Upsilon(4S)$
7.0 ±2.4 ±1.2	10 ± 3	FRABETTI	94J	E687	γBe, $\overline{E}_\gamma$=220 GeV
3.2 ±1.0	22	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV
3.4 ±1.4 ±1.0	5	ALBRECHT	90C	ARG	$e^+ e^- \approx$ 10 GeV

$\Gamma(K^+ 2K^- \pi^+)/\Gamma(K^- 2\pi^+ \pi^-)$ — Γ_{126}/Γ_{72}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.0027 ±0.0004 OUR AVERAGE	Error includes scale factor of 1.1.				
0.00257±0.00034±0.00024	143	LINK	03G	FOCS	γ A, $\overline{E}_\gamma \approx 180$ GeV
0.0054 ±0.0016 ±0.0008	18	AITALA	01D	E791	π^- A, 500 GeV
0.0028 ±0.0007 ±0.0001	20	FRABETTI	95C	E687	γ Be, $\overline{E}_\gamma \approx 200$ GeV

$\Gamma(K^+ K^- \overline{K}^*(892)^0,\ \overline{K}^{*0} \to K^- \pi^+)/\Gamma(K^+ 2K^- \pi^+)$ — $\Gamma_{127}/\Gamma_{126}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.20±0.07±0.02	LINK	03G	FOCS	γ A, $\overline{E}_\gamma \approx 180$ GeV

$\Gamma(K^- \pi^+ \phi,\ \phi \to K^+ K^-)/\Gamma(K^+ 2K^- \pi^+)$ — $\Gamma_{128}/\Gamma_{126}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.18±0.06±0.04	LINK	03G	FOCS	γ A, $\overline{E}_\gamma \approx 180$ GeV

$\Gamma(\phi \overline{K}^*(892)^0,\ \phi \to K^+ K^-,\ \overline{K}^{*0} \to K^- \pi^+)/\Gamma(K^+ 2K^- \pi^+)$ — $\Gamma_{129}/\Gamma_{126}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.48±0.06±0.01	LINK	03G	FOCS	γ A, $\overline{E}_\gamma \approx 180$ GeV

$\Gamma(K^+ 2K^- \pi^+ \text{nonresonant})/\Gamma(K^+ 2K^- \pi^+)$ $\Gamma_{130}/\Gamma_{126}$

VALUE	DOCUMENT ID		TECN	COMMENT
0.15±0.06±0.02	LINK	03G	FOCS	γ A, $\overline{E}_\gamma \approx 180$ GeV

$\Gamma(2K^0_S K^\pm \pi^\mp)/\Gamma(K^0_S \pi^+ \pi^-)$ Γ_{131}/Γ_{40}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.12±0.38±0.20	57 ± 10	LINK	05A	FOCS	γ Be, $\overline{E}_\gamma \approx$ 180 GeV

Pionic modes

$\Gamma(\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{132}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.454±0.024 OUR FIT	Error includes scale factor of 1.4.				
1.508±0.018±0.022	21k	ABLIKIM	18W	BES3	e^+e^-, 3773 MeV

$\Gamma(\pi^+\pi^-)/\Gamma(K^-\pi^+)$ Γ_{132}/Γ_{37}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.68 ±0.05 OUR FIT	Error includes scale factor of 1.3.				
3.59 ±0.06 OUR AVERAGE					
3.594±0.054±0.040	7334 ± 97	ACOSTA	05C	CDF	$p\overline{p}$, $\sqrt{s} = 1.96$ TeV
3.53 ±0.12 ±0.06	3453	LINK	03	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV
3.51 ±0.16 ±0.17	710	CSORNA	02	CLE2	$e^+e^- \approx \Upsilon(4S)$
4.0 ±0.2 ±0.3	2043	AITALA	98C	E791	π^- A, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.62 ±0.10 ±0.08	2085 ± 54	RUBIN	06	CLEO	See MENDEZ 10
3.4 ±0.7 ±0.1	76 ± 15	ABLIKIM	05F	BES	$e^+e^- \approx \psi(3770)$
4.3 ±0.7 ±0.3	177	FRABETTI	94C	E687	γ Be $\overline{E}_\gamma$= 220 GeV
3.48 ±0.30 ±0.23	227	SELEN	93	CLE2	$e^+e^- \approx \Upsilon(4S)$
5.5 ±0.8 ±0.5	120	ANJOS	91D	E691	Photoproduction
5.0 ±0.7 ±0.5	110	ALEXANDER	90	CLEO	e^+e^- 10.5–11 GeV

$\Gamma(\pi^+\pi^-)/\left[\Gamma(K^-\pi^+) + \Gamma(K^+\pi^-)\right]$ $\Gamma_{132}/(\Gamma_{37}+\Gamma_{274})$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.67±0.05 OUR FIT	Error includes scale factor of 1.3.				
3.70±0.06±0.09	6210 ± 93	MENDEZ	10	CLEO	e^+e^- at 3774 MeV

$\Gamma(2\pi^0)/\Gamma_{\text{total}}$ Γ_{133}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
8.26±0.25 OUR FIT					
8.29±0.30 OUR AVERAGE					
8.24±0.21±0.30	6k	ABLIKIM	15F	BES3	e^+e^- at 3.773GeV
8.4 ±0.1 ±0.5	26k	LEES	12L	BABR	$e^+e^- \approx$ 10.58 GeV

$\Gamma(2\pi^0)/\Gamma(K^-\pi^+)$ Γ_{133}/Γ_{37}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.05±0.13±0.16	499 ± 32	RUBIN	06	CLEO	See MENDEZ 10
2.2 ±0.4 ±0.4	40	SELEN	93	CLE2	$e^+e^- \to \Upsilon(4S)$

$\Gamma(2\pi^0)/[\Gamma(K^-\pi^+)+\Gamma(K^+\pi^-)]$ — $\Gamma_{133}/(\Gamma_{37}+\Gamma_{274})$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.08±0.07 OUR FIT					
2.06±0.07±0.10	1567 ± 54	MENDEZ	10	CLEO	e^+e^- at 3774 MeV

$\Gamma(\pi^+\pi^-\pi^0)/\Gamma(K^-\pi^+)$ — Γ_{134}/Γ_{37}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
37.7±1.6 OUR FIT Error includes scale factor of 2.2.					
34.4±0.5±1.2	11k±164	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\pi^+\pi^-\pi^0)/\Gamma(K^-\pi^+\pi^0)$ — Γ_{134}/Γ_{55}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
10.32±0.25 OUR FIT Error includes scale factor of 2.3.					
10.41±0.23 OUR AVERAGE Error includes scale factor of 2.0.					
10.12±0.04±0.18	123k±490	ARINSTEIN	08	BELL	$e^+e^- \approx \Upsilon(4S)$
10.59±0.06±0.13	60k±343	AUBERT,B	06X	BABR	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\rho^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{135}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference. See GASPERO 08 and BHATTACHARYA 10A for isospin decompositions of the $D^0 \to \pi^+\pi^0\pi^-$ Dalitz plot, both based on the amplitudes of AUBERT 07BJ. They quantify the conclusion that the final state is dominantly isospin 0.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
68.1±0.6 OUR AVERAGE				
67.8±0.0±0.6	AUBERT	07BJ	BABR	Dalitz fit, 45k events
76.3±1.9±2.5	CRONIN-HEN..	05	CLEO	$e^+e^- \approx$ 10 GeV

$\Gamma(\rho^0\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{136}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
25.9±1.1 OUR AVERAGE				
26.2±0.5±1.1	AUBERT	07BJ	BABR	Dalitz fit, 45k events
24.4±2.0±2.1	CRONIN-HEN..	05	CLEO	$e^+e^- \approx$ 10 GeV

$\Gamma(\rho^-\pi^+)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{137}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis, with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
34.6±0.8 OUR AVERAGE				
34.6±0.8±0.3	AUBERT	07BJ	BABR	Dalitz fit, 45k events
34.5±2.4±1.3	CRONIN-HEN..	05	CLEO	$e^+e^- \approx$ 10 GeV

$\Gamma(\rho(1450)^+\pi^-,\ \rho^+ \to \pi^+\pi^0)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{138}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.11±0.07±0.12	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(\rho(1450)^0\pi^0,\ \rho^0 \to \pi^+\pi^-)/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{139}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.30±0.11±0.07	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(\rho(1450)^- \pi^+,\ \rho^- \to \pi^- \pi^0)/\Gamma(\pi^+ \pi^- \pi^0)$ — $\Gamma_{140}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
1.79±0.22±0.12	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(\rho(1700)^+ \pi^-,\ \rho^+ \to \pi^+ \pi^0)/\Gamma(\pi^+ \pi^- \pi^0)$ — $\Gamma_{141}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
4.1±0.7±0.7	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(\rho(1700)^0 \pi^0,\ \rho^0 \to \pi^+ \pi^-)/\Gamma(\pi^+ \pi^- \pi^0)$ — $\Gamma_{142}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
5.0±0.6±1.0	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(\rho(1700)^- \pi^+,\ \rho^- \to \pi^- \pi^0)/\Gamma(\pi^+ \pi^- \pi^0)$ — $\Gamma_{143}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
3.2±0.4±0.6	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(f_0(980) \pi^0,\ f_0 \to \pi^+ \pi^-)/\Gamma(\pi^+ \pi^- \pi^0)$ — $\Gamma_{144}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.25±0.04±0.04	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(f_0(500) \pi^0,\ f_0 \to \pi^+ \pi^-)/\Gamma(\pi^+ \pi^- \pi^0)$ — $\Gamma_{145}/\Gamma_{134}$

The $f_0(500)$ is the σ. This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.82±0.10±0.10	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(f_0(1370) \pi^0,\ f_0 \to \pi^+ \pi^-)/\Gamma(\pi^+ \pi^- \pi^0)$ — $\Gamma_{146}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.37±0.11±0.09	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(f_0(1500) \pi^0,\ f_0 \to \pi^+ \pi^-)/\Gamma(\pi^+ \pi^- \pi^0)$ — $\Gamma_{147}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.39±0.08±0.07	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(f_0(1710) \pi^0,\ f_0 \to \pi^+ \pi^-)/\Gamma(\pi^+ \pi^- \pi^0)$ — $\Gamma_{148}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.31±0.07±0.08	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(f_2(1270) \pi^0,\ f_2 \to \pi^+ \pi^-)/\Gamma(\pi^+ \pi^- \pi^0)$ — $\Gamma_{149}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
1.32±0.08±0.10	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(\pi^+\pi^-\pi^0 \text{nonresonant})/\Gamma(\pi^+\pi^-\pi^0)$ — $\Gamma_{150}/\Gamma_{134}$

This is the "fit fraction" from the Dalitz-plot analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
0.84±0.21±0.12	AUBERT	07BJ	BABR	Dalitz fit, 45k events

$\Gamma(3\pi^0)/\Gamma_{total}$ — Γ_{151}/Γ

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
2.0±0.4±0.3		60	[1] ABLIKIM	18X	BES3	e^+e^-, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<3.5	90		RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

[1] Significance of signal reported by ABLIKIM 18X is 4.8σ.

$\Gamma(2\pi^+2\pi^-)/\Gamma(K^-\pi^+)$ — Γ_{152}/Γ_{37}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
19.1±0.5 OUR FIT					
19.1±0.4±0.6	7331 ± 130	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(2\pi^+2\pi^-)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{152}/Γ_{72}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
9.19±0.22 OUR FIT					
9.20±0.26 OUR AVERAGE					
9.14±0.18±0.22	6360±115	LINK	07A	FOCS	γ Be, $\overline{E}_\gamma \approx$ 180 GeV
7.9 ±1.8 ±0.5	162	ABLIKIM	05F	BES	$e^+e^- \approx \psi(3770)$
9.5 ±0.7 ±0.2	814	FRABETTI	95C	E687	γ Be, $\overline{E}_\gamma \approx$ 200 GeV
10.2 ±1.3	345	AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
11.5 ±2.3 ±1.6	64	ADAMOVICH	92	OMEG	π^- 340 GeV
10.8 ±2.4 ±0.8	79	FRABETTI	92	E687	γ Be
9.6 ±1.8 ±0.7	66	ANJOS	91	E691	γ Be 80–240 GeV

$\Gamma(a_1(1260)^+\pi^-,\ a_1^+ \to 2\pi^+\pi^- \text{total})/\Gamma(2\pi^+2\pi^-)$ — $\Gamma_{153}/\Gamma_{152}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
60.0±3.0±2.4	LINK	07A	FOCS	4-body fit, $\approx$ 5.7k evts

$\Gamma(a_1(1260)^+\pi^-,\ a_1^+ \to \rho^0\pi^+ \text{ S-wave})/\Gamma(2\pi^+2\pi^-)$ — $\Gamma_{154}/\Gamma_{152}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
41.5±2.5 OUR AVERAGE				
38.1±2.3±3.6	[1] DARGENT	17		4-body fit, 7.3k 4π evts
43.3±2.5±1.9	LINK	07A	FOCS	4-body fit, $\approx$ 5.7k evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma(a_1(1260)^+\pi^-,\ a_1^+ \to \rho^0\pi^+ \text{ D-wave})/\Gamma(2\pi^+2\pi^-)$ — $\Gamma_{155}/\Gamma_{152}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
2.5±0.5±0.4	[1] LINK	07A	FOCS	4-body fit, $\approx$ 5.7k evts

[1] DARGENT 17 using 7.3k events find this contribution negligible.

$\Gamma\big(a_1(1260)^+\pi^-,\ a_1^+ \to \sigma\pi^+\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{156}/\Gamma_{152}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
8.4±0.9 OUR AVERAGE				
10.2±1.4±3.3	[1] DARGENT	17		7.3k 4-body fit, 4π evts
8.3±0.7±0.6	LINK	07A	FOCS	4-body fit, $\approx$ 5.7k evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma\big(a_1(1260)^-\pi^+,\ a_1^- \to \rho^0\pi^-\ S\text{-wave}\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{157}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
3.1±0.6±1.0	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma\big(a_1(1260)^-\pi^+,\ a_1^- \to \sigma\pi^-\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{158}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
0.8±0.2±0.4	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma\big(\pi(1300)^+\pi^-,\ \pi(1300)^+ \to \sigma\pi^+\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{159}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
6.8±0.9±3.4	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma\big(\pi(1300)^-\pi^+,\ \pi(1300)^- \to \sigma\pi^-\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{160}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
3.0±0.6±2.8	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma\big(a_1(1640)^+\pi^-,\ a_1^+ \to \rho^0\pi^+\ D\text{-wave}\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{161}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
4.2±0.6±2.0	7.3k	[1,2] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.
[2] 4-body fit, 4π evts

$\Gamma\big(a_1(1640)^+\pi^-,\ a_1^+ \to \sigma\pi^+\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{162}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
2.4±0.7±1.7	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma(\pi_2(1670)^+\pi^-,\ \pi_2^+ \to f_2(1270)^0\pi^+,\ f_2^0 \to \pi^+\pi^-)/\Gamma(2\pi^+2\pi^-)$ — $\Gamma_{163}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
2.7±0.6±1.1	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma(\pi_2(1670)^+\pi^-,\ \pi_2^+ \to \sigma\pi^+)/\Gamma(2\pi^+2\pi^-)$ — $\Gamma_{164}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
3.5±0.6±1.2	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma(2\rho^0\,\text{total})/\Gamma(2\pi^+2\pi^-)$ — $\Gamma_{165}/\Gamma_{152}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
24.5±1.3±1.0	LINK	07A	FOCS	4-body fit, $\approx$ 5.7k evts

$\Gamma(2\rho^0,\ \text{parallel helicities})/\Gamma(2\pi^+2\pi^-)$ — $\Gamma_{166}/\Gamma_{152}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
1.1±0.3±0.3	LINK	07A	FOCS	4-body fit, $\approx$ 5.7k evts

$\Gamma(2\rho^0,\ \text{perpendicular helicities})/\Gamma(2\pi^+2\pi^-)$ — $\Gamma_{167}/\Gamma_{152}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
6.4±0.6±0.5	LINK	07A	FOCS	4-body fit, $\approx$ 5.7k evts

$\Gamma(2\rho^0,\ \text{longitudinal helicities})/\Gamma(2\pi^+2\pi^-)$ — $\Gamma_{168}/\Gamma_{152}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
16.8±1.0±0.8	LINK	07A	FOCS	4-body fit, $\approx$ 5.7k evts

$\Gamma(2\rho(770)^0,\ S\text{-wave})/\Gamma(2\pi^+2\pi^-)$ — $\Gamma_{169}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
2.4±0.7±1.5	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma(2\rho(770)^0,\ P\text{-wave})/\Gamma(2\pi^+2\pi^-)$ — $\Gamma_{170}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
7.0±0.5±1.6	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma(2\rho(770)^0,\ D\text{-wave})/\Gamma(2\pi^+2\pi^-)$ — $\Gamma_{171}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
8.2±1.0±3.9	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma\big(\text{Resonant } (\pi^+\pi^-)\pi^+\pi^- \text{ 3-body total}\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{172}/\Gamma_{152}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
20.0±1.2±1.0	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma\big(\sigma\pi^+\pi^-\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{173}/\Gamma_{152}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
8.2±0.9±0.7	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma\big(\sigma\rho(770)^0\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{174}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
6.6±1.0±3.2	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma\big(f_0(1370)\sigma,\ f_0\to\pi^+\pi^-\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{178}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
21.2±1.8±6.7	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma\big(f_0(980)\pi^+\pi^-,\ f_0\to\pi^+\pi^-\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{175}/\Gamma_{152}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
2.4±0.5±0.4	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma\big(f_2(1270)\pi^+\pi^-,\ f_2\to\pi^+\pi^-\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{176}/\Gamma_{152}$

This is the fit fraction from the coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
4.9±0.6±0.5	LINK	07A	FOCS	4-body fit, ≈ 5.7k evts

$\Gamma\big(2f_2(1270),\ f_2\to\pi^+\pi^-\big)/\Gamma\big(2\pi^+2\pi^-\big)$ — $\Gamma_{177}/\Gamma_{152}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
2.1±0.5±2.3	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma\big(\pi^+\pi^-2\pi^0\big)/\Gamma\big(K^-\pi^+\big)$ — Γ_{179}/Γ_{37}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
25.8±1.5±1.8	2724 ± 166	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma\big(\eta\pi^0\big)/\Gamma_{\text{total}}$ — Γ_{180}/Γ

Unseen decay modes of the η are included.

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
6.3±0.6 OUR FIT Error includes scale factor of 1.1.					
5.8±0.5±0.5	1.7k	ABLIKIM	18L	BES3	e^+e^-, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
6.5±0.9±0.4	75	ABLIKIM	16D	BES3	See ABLIKIM 18L
6.4±1.0±0.4	156 ± 24	ARTUSO	08	CLEO	See MENDEZ 10

$\Gamma(\eta\pi^0)/\Gamma(K^-\pi^+)$ — Γ_{180}/Γ_{37}

Unseen decay modes of the η are included.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1.47\pm0.34\pm0.11$	62 ± 14	RUBIN	06	CLEO	See ARTUSO 08

$\Gamma(\eta\pi^0)/[\Gamma(K^-\pi^+)+\Gamma(K^+\pi^-)]$ — $\Gamma_{180}/(\Gamma_{37}+\Gamma_{274})$

Unseen decay modes of the η are included.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.60±0.14 OUR FIT	Error includes scale factor of 1.1.				
1.74±0.15±0.11	481 ± 40	MENDEZ	10	CLEO	e^+e^- at 3774 MeV

$\Gamma(\omega\pi^0)/\Gamma_{total}$ — Γ_{181}/Γ

Unseen decay modes of the ω are included.

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.17±0.34±0.07	45	ABLIKIM	16D	BES3	e^+e^-, 3773 MeV

$\Gamma(2\pi^+2\pi^-\pi^0)/\Gamma(K^-\pi^+)$ — Γ_{183}/Γ_{37}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
10.7±1.2±0.5	1614 ± 171	RUBIN	06	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\eta\pi^+\pi^-)/\Gamma_{total}$ — Γ_{184}/Γ

Unseen decay modes of the η are included.

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
11.6±0.7 OUR AVERAGE					
$10.6\pm1.8\pm0.7$	96	ABLIKIM	20AA	BES3	e^+e^-, 3773 MeV
$12.0\pm0.7\pm0.4$	450	ABLIKIM	20G	BES3	e^+e^-, 3773 MeV
$10.9\pm1.3\pm0.9$	257	ARTUSO	08	CLEO	e^+e^- at $\psi(3770)$

$\Gamma(\eta\pi^+\pi^-)/\Gamma(K^-\pi^+\eta)$ — Γ_{184}/Γ_{94}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
6.49±0.09±0.12	13k	LI	21G	BELL	e^+e^- at Υ(nS)

$\Gamma(\eta 2\pi^0)/\Gamma_{total}$ — Γ_{187}/Γ

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
3.8±1.1±0.7		42	[1] ABLIKIM	18X	BES3	e^+e^-, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<23.8	90		ABLIKIM	20AA	BES3	e^+e^-, 3773 MeV

[1] Significance of signal reported by ABLIKIM 18X is 3.8σ.

$\Gamma(\pi^+\pi^-\pi^0\eta)/\Gamma_{total}$ — Γ_{188}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
3.23±0.17±0.14	510	ABLIKIM	20V	BES3	e^+e^-, 3773 MeV

$\Gamma(\omega\eta)/\Gamma_{total}$ — Γ_{182}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.98±0.18 OUR AVERAGE	Error includes scale factor of 1.1.				
$2.15\pm0.17\pm0.15$	2.2k	ABLIKIM	18L	BES3	e^+e^-, 3773 MeV

1.78±0.19±0.15	600	[1] SMITH	18		$e^+ e^-$, 3773 MeV

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$\Gamma(\omega\pi^+\pi^-)/\Gamma_{total}$ Γ_{185}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.33±0.16±0.12	411	ABLIKIM	20AA	BES3	$e^+ e^-$, 3773 MeV

$\Gamma(\omega\pi^+\pi^-)/\Gamma(K^-\pi^+)$ Γ_{185}/Γ_{37}

Unseen decay modes of the ω are included.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
4.1±1.2±0.4	472 ± 132	RUBIN	06	CLEO	$e^+ e^-$ at $\psi(3770)$

$\Gamma(\omega\pi^0\pi^0)/\Gamma_{total}$ Γ_{186}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.10 × 10^{-3}	90	ABLIKIM	20AA	BES3	$e^+ e^-$, 3773 MeV

$\Gamma(3\pi^+3\pi^-)/\Gamma(K^-2\pi^+\pi^-)$ Γ_{189}/Γ_{72}

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
5.23±0.59±1.35	149 ± 17	LINK	04B	FOCS	γA, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(3\pi^+3\pi^-)/\Gamma(K^-3\pi^+2\pi^-)$ $\Gamma_{189}/\Gamma_{107}$

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.93±047±0.48	[1] LINK	04B	FOCS	γA, $\overline{E}_\gamma \approx$ 180 GeV

[1] This LINK 04B result is not independent of other results in these Listings.

$\Gamma(\eta'(958)\pi^0)/\Gamma_{total}$ Γ_{190}/Γ

Unseen decay modes of the $\eta'(958)$ are included.

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
9.2±1.0 OUR FIT					
9.3±1.1±0.9	469 ± 56	ABLIKIM	18L	BES3	$e^+ e^-$, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
8.1±1.5±0.6	50 ± 9	ARTUSO	08	CLEO	See MENDEZ 10

$\Gamma(\eta'(958)\pi^0)/[\Gamma(K^-\pi^+)+\Gamma(K^+\pi^-)]$ $\Gamma_{190}/(\Gamma_{37}+\Gamma_{274})$

Unseen decay modes of the $\eta'(958)$ are included.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.32±0.25 OUR FIT					
2.3 ±0.3 ±0.2	159 ± 19	MENDEZ	10	CLEO	$e^+ e^-$ at 3774 MeV

$\Gamma(\eta'(958)\pi^+\pi^-)/\Gamma_{total}$ Γ_{191}/Γ

Unseen decay modes of the $\eta'(958)$ are included.

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
4.5±1.6±0.5	21 ± 8	ARTUSO	08	CLEO	$e^+ e^-$ at $\psi(3770)$

$\Gamma(2\eta)/\Gamma_{total}$ — Γ_{192}/Γ

Unseen decay modes of the η are included.

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
21.1±1.9 OUR FIT	Error includes scale factor of 2.2.				
22.0±0.7±0.6	3.4k	ABLIKIM	18L	BES3	e^+e^-, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
16.7±1.4±1.3	255 ± 22	ARTUSO	08	CLEO	See MENDEZ 10

$\Gamma(2\eta)/[\Gamma(K^-\pi^+)+\Gamma(K^+\pi^-)]$ — $\Gamma_{192}/(\Gamma_{37}+\Gamma_{274})$

Unseen decay modes of the η are included.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
5.3±0.5 OUR FIT	Error includes scale factor of 2.2.				
4.3±0.3±0.4	430 ± 29	MENDEZ	10	CLEO	e^+e^- at 3774 MeV

$\Gamma(2\eta\pi^0)/\Gamma_{total}$ — Γ_{193}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
7.3±1.6±1.5	27	[1] ABLIKIM	18X	BES3	e^+e^-, 3773 MeV

[1] Significance of signal reported by ABLIKIM 18X is 5.5σ.

$\Gamma(3\eta)/\Gamma_{total}$ — Γ_{194}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.3\times10^{-4}$	90	ABLIKIM	18X	BES3	e^+e^-, 3773 MeV

$\Gamma(\eta\eta'(958))/\Gamma_{total}$ — Γ_{195}/Γ

Unseen decay modes of the η and $\eta'(958)$ are included.

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
10.1±1.9 OUR FIT					
9.4±2.5±1.1	158 ± 41	ABLIKIM	18L	BES3	e^+e^-, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
12.6±2.5±1.1	46 ± 9	ARTUSO	08	CLEO	See MENDEZ 10

$\Gamma(\eta\eta'(958))/[\Gamma(K^-\pi^+)+\Gamma(K^+\pi^-)]$ — $\Gamma_{195}/(\Gamma_{37}+\Gamma_{274})$

Unseen decay modes of the η and $\eta'(958)$ are included.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.5±0.5 OUR FIT					
2.7±0.6±0.3	66 ± 15	MENDEZ	10	CLEO	e^+e^- at 3774 MeV

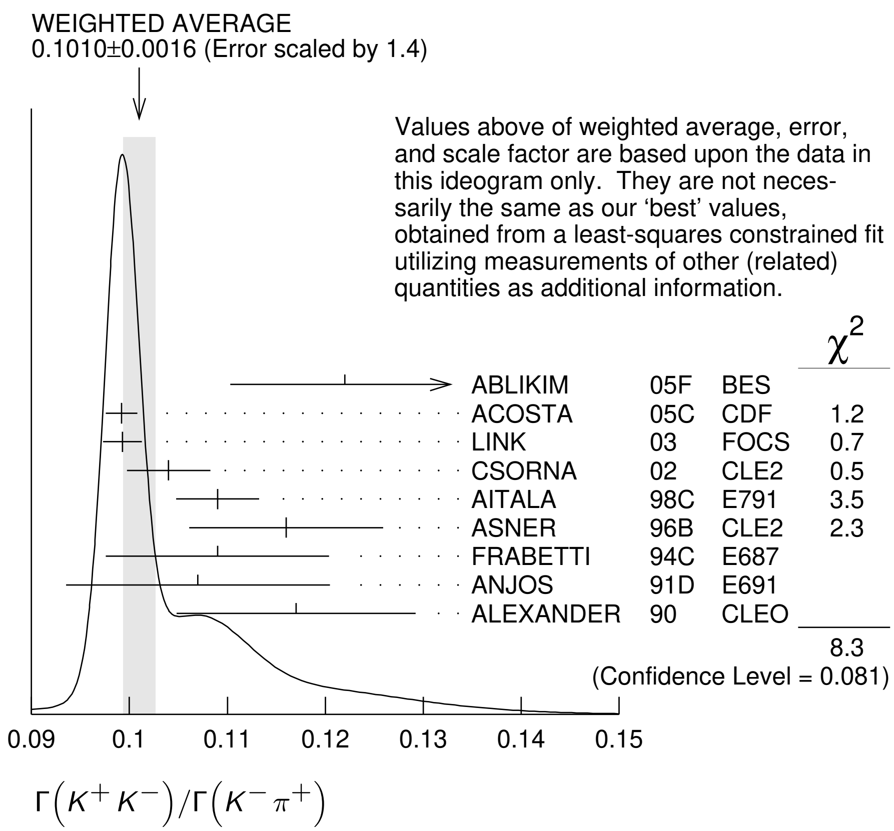
Hadronic modes with a $K\overline{K}$ pair

$\Gamma(K^+K^-)/\Gamma_{total}$ — Γ_{196}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
4.08 ±0.06 OUR FIT	Error includes scale factor of 1.6.				
4.233±0.021±0.064	56k	ABLIKIM	18W	BES3	e^+e^-, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
4.08 ±0.08 ±0.09	4.7k	BONVICINI	08	CLEO	See MENDEZ 10

$\Gamma(K^+K^-)/\Gamma(K^-\pi^+)$ Γ_{196}/Γ_{37}

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.1033±0.0013 OUR FIT Error includes scale factor of 1.6.				
0.1010±0.0016 OUR AVERAGE Error includes scale factor of 1.4. See the ideogram below.				
0.122 ±0.011 ±0.004	242 ± 20	ABLIKIM 05F	BES	$e^+e^- \approx \psi(3770)$
0.0992±0.0011±0.0012	16k±200	ACOSTA 05C	CDF	$p\overline{p}$, $\sqrt{s}$=1.96 TeV
0.0993±0.0014±0.0014	11k	LINK 03	FOCS	γ nucleus, $\overline{E}_\gamma \approx$ 180 GeV
0.1040±0.0033±0.0027	1900	CSORNA 02	CLE2	$e^+e^- \approx \Upsilon(4S)$
0.109 ±0.003 ±0.003	3317	AITALA 98C	E791	π^- nucleus, 500 GeV
0.116 ±0.007 ±0.007	1102	ASNER 96B	CLE2	$e^+e^- \approx \Upsilon(4S)$
0.109 ±0.007 ±0.009	581	FRABETTI 94C	E687	γBe $\overline{E}_\gamma$= 220 GeV
0.107 ±0.010 ±0.009	193	ANJOS 91D	E691	Photoproduction
0.117 ±0.010 ±0.007	249	ALEXANDER 90	CLEO	e^+e^- 10.5–11 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.107 ±0.029 ±0.015	103	ADAMOVICH 92	OMEG	π^- 340 GeV
0.138 ±0.027 ±0.010	155	FRABETTI 92	E687	γBe
0.16 ±0.05	34	ALVAREZ 91B	NA14	Photoproduction
0.10 ±0.02 ±0.01	131	ALBRECHT 90C	ARG	$e^+e^- \approx$ 10 GeV
0.122 ±0.018 ±0.012	118	BALTRUSAIT...85E	MRK3	e^+e^- 3.77 GeV
0.113 ±0.030		ABRAMS 79D	MRK2	e^+e^- 3.77 GeV



$\Gamma(K^+K^-)/[\Gamma(K^-\pi^+)+\Gamma(K^+\pi^-)]$ — $\Gamma_{196}/(\Gamma_{37}+\Gamma_{274})$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
10.29±0.13 OUR FIT	Error includes scale factor of 1.6.				
10.41±0.11±0.12	13.8k	MENDEZ	10	CLEO	e^+e^- at 3774 MeV

$\Gamma(K^+K^-)/\Gamma(\pi^+\pi^-)$ — $\Gamma_{196}/\Gamma_{132}$

The unused results here are redundant with $\Gamma(K^+K^-)/\Gamma(K^-\pi^+)$ and $\Gamma(\pi^+\pi^-)/\Gamma(K^-\pi^+)$ measurements by the same experiments.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.760±0.040±0.034	7334	ACOSTA	05C	CDF	$p\overline{p}$, $\sqrt{s}$=1.96 TeV
2.81 ±0.10 ±0.06		LINK	03	FOCS	γ nucleus, $\overline{E}_\gamma\approx$ 180 GeV
2.96 ±0.16 ±0.15	710	CSORNA	02	CLE2	$e^+e^-\approx\ \Upsilon(4S)$
2.75 ±0.15 ±0.16		AITALA	98C	E791	π^- nucleus, 500 GeV
2.53 ±0.46 ±0.19		FRABETTI	94C	E687	γBe $\overline{E}_\gamma$= 220 GeV
2.23 ±0.81 ±0.46		ADAMOVICH	92	OMEG	π^- 340 GeV
1.95 ±0.34 ±0.22		ANJOS	91D	E691	Photoproduction
2.5 ±0.7		ALBRECHT	90C	ARG	$e^+e^-\approx$ 10 GeV
2.35 ±0.37 ±0.28		ALEXANDER	90	CLEO	e^+e^- 10.5–11 GeV

$\Gamma(2K^0_S)/\Gamma_{total}$ — Γ_{197}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.41±0.05 OUR FIT	Error includes scale factor of 1.1.				
1.67±0.11±0.11	576	ABLIKIM	17A	BES3	$e^+e^-\to\ \psi(3770)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.46±0.32±0.09	68 ± 15	BONVICINI	08	CLEO	See MENDEZ 10

$\Gamma(2K^0_S)/[\Gamma(K^-\pi^+)+\Gamma(K^+\pi^-)]$ — $\Gamma_{197}/(\Gamma_{37}+\Gamma_{274})$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.357±0.013 OUR FIT	Error includes scale factor of 1.1.				
0.41 ±0.04 ±0.02	215 ± 23	MENDEZ	10	CLEO	e^+e^- at 3774 MeV

$\Gamma(2K^0_S)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{197}/Γ_{40}

This is the same as $\Gamma(K^0\overline{K}^0)$ / $\Gamma(\overline{K}^0\pi^+\pi^-)$ because $D^0\to\ K^0_S K^0_L$ is forbidden by CP conservation.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.506±0.034 OUR FIT					
1.20 ±0.22 OUR AVERAGE					
1.44 ±0.32 ±0.16	79 ± 17	LINK	05A	FOCS	γ Be, $\overline{E}_\gamma\approx$ 180 GeV
1.01 ±0.22 ±0.16	26	ASNER	96B	CLE2	$e^+e^-\approx\ \Upsilon(4S)$
3.9 ±1.3 ±1.3	20 ± 7	FRABETTI	94J	E687	γBe $\overline{E}_\gamma$=220 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.1 $^{+1.1}_{-0.8}$ ±0.2	5	ALEXANDER	90	CLEO	e^+e^- 10.5–11 GeV

$\Gamma(2K^0_S)/\Gamma(K^0_S\pi^0)$ — Γ_{197}/Γ_{38}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.14 ±0.04 OUR FIT	Error includes scale factor of 1.1.				
1.101±0.023±0.030	4.8k	DASH	17	BELL	At/near $\Upsilon(4S)$, $\Upsilon(5S)$

$\Gamma(K^0_S K^-\pi^+)/\Gamma(K^-\pi^+)$ — Γ_{198}/Γ_{37}

VALUE	DOCUMENT ID		TECN	COMMENT
0.084±0.013 OUR FIT Error includes scale factor of 1.1.				
0.08 ±0.03	[1] ANJOS	91	E691	γ Be 80–240 GeV

[1] The factor 100 at the top of column 2 of Table I of ANJOS 91 should be omitted.

$\Gamma(\phi\pi^0)/\Gamma_{total}$ — Γ_{265}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.168±0.028±0.028	3.3k	ABLIKIM	19BI	BES3	e^+e^- at 3773 MeV

$\Gamma(\phi\eta)/\Gamma_{total}$ — Γ_{266}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.81±0.46±0.06	102	ABLIKIM	19BI	BES3	e^+e^- at 3773 MeV

$\Gamma(K^0_S K^-\pi^+)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{198}/Γ_{40}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.118±0.017 OUR FIT Error includes scale factor of 1.1.					
0.119±0.021 OUR AVERAGE Error includes scale factor of 1.3.					
0.108±0.019	61	AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV
0.16 ±0.03 ±0.02	39	ALBRECHT	90C	ARG	$e^+e^- \approx$ 10 GeV

$\Gamma(\overline{K}^*(892)^0 K^0_S,\ \overline{K}^{*0}\to K^-\pi^+)/\Gamma(K^0_S K^-\pi^+)$ — $\Gamma_{199}/\Gamma_{198}$

Fit fraction from Dalitz plot analyses. The fraction for the $K^0_S\pi^+$ mass between 792 and 992 MeV is 0.370 ± 0.003 ± 0.012.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.47±0.15±0.23	113k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty.

$\Gamma(K^*(892)^+ K^-,\ K^{*+}\to K^0_S\pi^+)/\Gamma(K^0_S K^-\pi^+)$ — $\Gamma_{200}/\Gamma_{198}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
56.9±0.6±1.1	113k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty.

$\Gamma(\overline{K}^*(1410)^0 K^0_S,\ \overline{K}^{*0}\to K^-\pi^+)/\Gamma(K^0_S K^-\pi^+)$ — $\Gamma_{201}/\Gamma_{198}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.8±0.5±5.6	113k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a uncertainty (which in this case dominates)

$\Gamma(K^*(1410)^+ K^-,\ K^{*+}\to K^0_S\pi^+)/\Gamma(K^0_S K^-\pi^+)$ — $\Gamma_{202}/\Gamma_{198}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
9.6±1.1±5.4	113k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty (which in this case dominates).

$\Gamma\big((K^-\pi^+)_{S-wave}K^0_S\big)/\Gamma\big(K^0_S K^-\pi^+\big)$ — $\Gamma_{203}/\Gamma_{198}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
18±2±8	113k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty (which in this case dominates).

$\Gamma\big((K^0_S\pi^+)_{S-wave}K^-\big)/\Gamma\big(K^0_S K^-\pi^+\big)$ — $\Gamma_{204}/\Gamma_{198}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
11.7±1.0±2.3	113k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty.

$\Gamma\big(a_0(980)^-\pi^+,\ a_0^- \to K^0_S K^-\big)/\Gamma\big(K^0_S K^-\pi^+\big)$ — $\Gamma_{205}/\Gamma_{198}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
4.0±0.7±4.1	113k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty (which in this case dominates).

$\Gamma\big(a_0(1450)^-\pi^+,\ a_0^- \to K^0_S K^-\big)/\Gamma\big(K^0_S K^-\pi^+\big)$ — $\Gamma_{206}/\Gamma_{198}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.74±0.15±0.57	113k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty (which in this case dominates).

$\Gamma\big(a_2(1320)^-\pi^+,\ a_2^- \to K^0_S K^-\big)/\Gamma\big(K^0_S K^-\pi^+\big)$ — $\Gamma_{207}/\Gamma_{198}$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.15±0.06±0.14	113k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty.

$\Gamma\big(\rho(1450)^-\pi^+,\ \rho^- \to K^0_S K^-\big)/\Gamma\big(K^0_S K^-\pi^+\big)$ — $\Gamma_{208}/\Gamma_{198}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.4±0.2±0.7	113k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty.

$\Gamma\big(K^0_S K^+\pi^-\big)/\Gamma\big(K^-\pi^+\big)$ — Γ_{209}/Γ_{37}

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.05±0.025	[1] ANJOS	91	E691	γ Be 80–240 GeV

[1] The factor 100 at the top of column 2 of Table I of ANJOS 91 should be omitted.

$\Gamma(K^0_S K^+ \pi^-)/\Gamma(K^0_S \pi^+ \pi^-)$ — Γ_{209}/Γ_{40}

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.098±0.020	55	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV

$\Gamma(K^0_S K^+ \pi^-)/\Gamma(K^0_S K^- \pi^+)$ — $\Gamma_{209}/\Gamma_{198}$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.654±0.007 OUR FIT					
0.654±0.007 OUR AVERAGE					
0.655±0.004±0.006	76k,113k	AAIJ	16N	LHCB	pp at 7, 8 TeV
0.592±0.044±0.018		INSLER	12	CLEO	$e^+ e^- \rightarrow D^0 \overline{D}^0$ at 3.77 GeV

$\Gamma(K^*(892)^0 K^0_S,\ K^{*0} \rightarrow K^+ \pi^-)/\Gamma(\overline{K}^*(892)^0 K^0_S,\ \overline{K}^{*0} \rightarrow K^- \pi^+)$ — $\Gamma_{210}/\Gamma_{199}$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.356±0.034±0.007		[1] INSLER	12	CLEO	$e^+ e^- \rightarrow D^0 \overline{D}^0$, 3.77 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.010	90	AMMAR	91	CLEO	$e^+ e^- \approx$ 10.5 GeV

[1] Uses quantum correlations in $e^+ e^- \rightarrow D^0 \overline{D}^0$ at the $\psi(3770)$, where the signal side D decays to $K^0_S K \pi$ and the tag-side D decays to $K\pi$, $K\pi\pi\pi$, $K\pi\pi^0$, and 10 additional CP-even, CP-odd, and mixed CP modes involving K^0_S or K^0_L.

$\Gamma(K^*(892)^0 K^0_S,\ K^{*0} \rightarrow K^+ \pi^-)/\Gamma(K^0_S K^+ \pi^-)$ — $\Gamma_{210}/\Gamma_{209}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
5.17±0.21±0.47	76k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty.

$\Gamma(K^*(892)^- K^+,\ K^{*-} \rightarrow K^0_S \pi^-)/\Gamma(K^0_S K^+ \pi^-)$ — $\Gamma_{211}/\Gamma_{209}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
28.8±0.4±1.5	76k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty.

$\Gamma(K^*(1410)^0 K^0_S,\ K^{*0} \rightarrow K^+ \pi^+)/\Gamma(K^0_S K^+ \pi^-)$ — $\Gamma_{212}/\Gamma_{209}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.2±0.6±3.7	76k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty (which in this case dominates).

$\Gamma(K^*(1410)^- K^+,\ K^{*-} \to K^0_S \pi^-)/\Gamma(K^0_S K^+ \pi^-)$ — $\Gamma_{213}/\Gamma_{209}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
11.9±1.5±9.1	76k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty (which in this case dominates).

$\Gamma((K^+\pi^-)_{S-wave} K^0_S)/\Gamma(K^0_S K^+ \pi^-)$ — $\Gamma_{214}/\Gamma_{209}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
17±2±8	76k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty.

$\Gamma((K^0_S\pi^-)_{S-wave} K^+)/\Gamma(K^0_S K^+ \pi^-)$ — $\Gamma_{215}/\Gamma_{209}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
6.3±0.9±2.3	76k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty.

$\Gamma(a_0(980)^+\pi^-,\ a_0^+ \to K^0_S K^+)/\Gamma(K^0_S K^+ \pi^-)$ — $\Gamma_{216}/\Gamma_{209}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
26±2±18	76k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty (which in this case dominates).

$\Gamma(a_0(1450)^+\pi^-,\ a_0^+ \to K^0_S K^+)/\Gamma(K^0_S K^+ \pi^-)$ — $\Gamma_{217}/\Gamma_{209}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.5±0.3±1.1	76k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty (which in this case dominates).

$\Gamma(\rho(1700)^+\pi^-,\ \rho^+ \to K^0_S K^+)/\Gamma(K^0_S K^+ \pi^-)$ — $\Gamma_{218}/\Gamma_{209}$

Fit fraction from Dalitz plot analyses.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.53±0.11±0.23	76k	[1] AAIJ	16N	LHCB	Dalitz plot fit

[1] AAIJ 16N gives results for two S-wave parameterisations. We take the values from the model with LASS parametrization, and the difference as a systematic uncertainty.

$\Gamma(K^+K^-\pi^0)/\Gamma(K^-\pi^+\pi^0)$ — Γ_{219}/Γ_{55}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.37±0.03±0.04	11k±122	AUBERT,B	06X	BABR	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.95±0.26	151	ASNER	96B	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma\big(K^*(892)^+ K^-,\ K^*(892)^+ \to K^+\pi^0\big)/\Gamma\big(K^+K^-\pi^0\big)$ — $\Gamma_{220}/\Gamma_{219}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
44.4±0.8±0.6	AUBERT	07T	BABR	Dalitz fit II, 11k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
46.1±3.1	[1] CAWLFIELD	06A	CLEO	Dalitz fit, 627 ± 30 evts

[1] The error on this CAWLFIELD 06A result is statistical only.

$\Gamma\big(K^*(892)^- K^+,\ K^*(892)^- \to K^-\pi^0\big)/\Gamma\big(K^+K^-\pi^0\big)$ — $\Gamma_{221}/\Gamma_{219}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
15.9±0.7±0.6	AUBERT	07T	BABR	Dalitz fit II, 11k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
12.3±2.2	[1] CAWLFIELD	06A	CLEO	Dalitz fit, 627 ± 30 evts

[1] The error on this CAWLFIELD 06A result is statistical only.

$\Gamma\big((K^+\pi^0)_{S-wave} K^-\big)/\Gamma\big(K^+K^-\pi^0\big)$ — $\Gamma_{222}/\Gamma_{219}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
71.1±3.7±1.9	[1] AUBERT	07T	BABR	Dalitz fit II, 11k evts

[1] The only major difference between fits I and II in the AUBERT 07T analysis is in this mode, where the fit-I fraction is (16.3 ± 3.4 ± 2.1)%.

$\Gamma\big((K^-\pi^0)_{S-wave} K^+\big)/\Gamma\big(K^+K^-\pi^0\big)$ — $\Gamma_{223}/\Gamma_{219}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
3.9±0.9±1.0	AUBERT	07T	BABR	Dalitz fit II, 11k evts

$\Gamma\big(f_0(980)\pi^0,\ f_0 \to K^+K^-\big)/\Gamma\big(K^+K^-\pi^0\big)$ — $\Gamma_{224}/\Gamma_{219}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
10.5±1.1±1.2	[1] AUBERT	07T	BABR	Dalitz fit II, 11k evts

[1] When AUBERT 07T replace the $f_0(980)\pi^0$ mode with $a_0(980)\pi^0$, the fit fraction is a negligibly different (11.0 ± 1.5 ± 1.2)%.

$\Gamma\big(\phi\pi^0,\ \phi \to K^+K^-\big)/\Gamma\big(K^+K^-\pi^0\big)$ — $\Gamma_{225}/\Gamma_{219}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
19.4±0.6±0.5	AUBERT	07T	BABR	Dalitz fit II, 11k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
14.9±1.6	[1] CAWLFIELD	06A	CLEO	Dalitz fit, 627 ± 30 evts

[1] The error on this CAWLFIELD 06A result is statistical only.

$\Gamma\big(K^+K^-\pi^0\,\text{nonresonant}\big)/\Gamma\big(K^+K^-\pi^0\big)$ — $\Gamma_{226}/\Gamma_{219}$

This is the "fit fraction" from the Dalitz-plot analysis with interference.

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.360±0.037	[1] CAWLFIELD	06A	CLEO	Dalitz fit, 627 ± 30 evts

[1] The error is statistical only. CAWLFIELD 06A also fits the Dalitz plot replacing this flat nonresonant background with broad S−wave $\kappa^\pm \to K^\pm\pi^0$ resonances. There is no significant improvement in the fit, and $K^{*\pm}K^\mp$ and $\phi\pi^0$ results are not much changed.

$\Gamma(2K^0_S\pi^0)/\Gamma_{total}$ — Γ_{227}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
<0.00059	ASNER	96B	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(K^+K^-\eta)/\Gamma_{total}$ — Γ_{228}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
0.59±0.18±0.05	13	ABLIKIM	20V	BES3	e^+e^-, 3773 MeV

$\Gamma(K^+K^-\eta)/\Gamma(K^-\pi^+\eta)$ — Γ_{228}/Γ_{94}

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
$9.57^{+0.36}_{-0.33}\pm0.20$	1.4k	LI	21G	BELL	e^+e^- at Υ(nS)

$\Gamma(\phi(1020)\eta)/\Gamma(K^-\pi^+\eta)$ — Γ_{229}/Γ_{94}

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
9.8±0.6±0.1	1.4k	[1] LI	21G	BELL	e^+e^- at Υ(nS)

[1] LI 21G reports $[\Gamma(D^0 \to \phi(1020)\eta)/\Gamma(D^0 \to K^-\pi^+\eta)] \times [B(\phi(1020) \to K^+K^-)] = (4.82 \pm 0.23 \pm 0.16) \times 10^{-3}$ which we divide by our best value $B(\phi(1020) \to K^+K^-) = (49.1 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^+K^-\eta\,\text{nonresonant})/\Gamma(K^-\pi^+\eta)$ — Γ_{230}/Γ_{94}

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
$5.26^{+0.45}_{-0.38}\pm0.11$	1.4k	LI	21G	BELL	e^+e^- at Υ(nS)

$\Gamma(2K^0_S\eta)/\Gamma_{total}$ — Γ_{231}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.33±0.59±0.18	7	ABLIKIM	20V	BES3	e^+e^-, 3773 MeV

$\Gamma(K^+K^-\pi^0\pi^0)/\Gamma_{total}$ — Γ_{232}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
6.9±0.7±0.4	132	ABLIKIM	20AC	BES3	e^+e^- at 3.773 GeV

$\Gamma(K^+K^-\pi^+\pi^-)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{233}/Γ_{72}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.00±0.13 OUR AVERAGE					
2.95±0.11±0.08	2669 ± 101	[1] LINK	05G	FOCS	γBe, $\overline{E}_\gamma \approx 180$ GeV
3.13±0.37±0.36	136 ± 15	AITALA	98D	E791	π^- nucleus, 500 GeV
3.5 ±0.4 ±0.2	244 ± 26	FRABETTI	95C	E687	γBe, $\overline{E}_\gamma \approx 200$ GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
4.4 ±1.8 ±0.5	19 ± 8	ABLIKIM	05F	BES	$e^+e^- \approx \psi(3770)$
4.1 ±0.7 ±0.5	114 ± 20	ALBRECHT	94I	ARG	$e^+e^- \approx 10$ GeV
3.14±1.0	89 ± 29	AMMAR	91	CLEO	$e^+e^- \approx 10.5$ GeV
$2.8\ ^{+0.8}_{-0.7}$		ANJOS	91	E691	γBe 80–240 GeV

[1] LINK 05G uses a smaller, cleaner subset of 1279 ± 48 events for the amplitude analysis that gives the results in the next data blocks.

$\Gamma\big(\phi(\pi^+\pi^-)_{S-wave},\ \phi \to K^+K^-\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ — $\Gamma_{234}/\Gamma_{233}$

This is the fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
4.0±0.6±2.1	3k	[1] DARGENT	17		4-body fit, $K K \pi\pi$ events
• • • We do not use the following data for averages, fits, limits, etc. • • •					
10.3±1.0±0.8	3k	[2] ARTUSO	12	CLEO	4-body fit, $K K \pi\pi$ events
1 ±1	1.3k	LINK	05G	FOCS	4-body fit, $K K \pi\pi$ events

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.
[2] See DARGENT 17

$\Gamma\big((\phi\rho^0)_{S-wave},\ \phi \to K^+K^-\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ — $\Gamma_{235}/\Gamma_{233}$

This is the fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
28.1±1.3±1.7	2.9k	[1,2] DARGENT	17		4-body fit, $K K \pi\pi$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
38.3±2.5±3.8		[1,3] ARTUSO	12	CLEO	Fitting 2959 evts.
29 ±2 ±1		LINK	05G	FOCS	Fits 1279 ± 48 evts.

[1] ARTUSO 12 and DARGENT 17 use the same dataset, but ARTUSO 12 uses a formulation for the D-wave component that is in fact a mix of S- and D-wave, while DARGENT 17 uses a pure D-wave. This explains the discrepancy in their $\rho\phi$ S- and D-wave components.
[2] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.
[3] See DARGENT 17

$\Gamma\big((\phi\rho^0)_{P-wave},\ \phi \to K^+K^-\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ — $\Gamma_{236}/\Gamma_{233}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
1.6±0.3±0.7	2.9k	[1] DARGENT	17	4-body fit, $K K \pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$\Gamma\big((\phi\rho^0)_{D-wave},\ \phi \to K^+K^-\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ — $\Gamma_{237}/\Gamma_{233}$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.7±0.4±0.4	2.9k	[1,2] DARGENT	17		4-body fit, $K K \pi\pi$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.4±0.7±0.6		[1,3] ARTUSO	12	CLEO	Fitting 2959 evts.

[1] ARTUSO 12 use a formulation for the D-wave component that is in fact a mix of S- and D-wave, while DARGENT 17 uses a pure D-wave.
[2] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.
[3] See DARGENT 17

$\Gamma\big(K^*(892)^0\overline{K}^*(892)^0,\ K^{*0} \to K^\pm\pi^\mp\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ — $\Gamma_{238}/\Gamma_{233}$

This is the fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
3±2±1	LINK	05G	FOCS	Fits 1279 ± 48 evts.

$\Gamma\big(K^+K^-\rho^0\,3\text{-body}\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ $\Gamma_{239}/\Gamma_{233}$

This is the fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$2\pm2\pm2$	LINK	05G	FOCS	Fits 1279 ± 48 evts.

$\Gamma\big(f_0(980)\pi^+\pi^-,\ f_0\to K^+K^-\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ $\Gamma_{240}/\Gamma_{233}$

This is the fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$15\pm3\pm2$	LINK	05G	FOCS	Fits 1279 ± 48 evts.

$\Gamma\big((K^*(892)^0\overline{K}^*(892)^0)_{S-wave},\ K^{*0}\to K^\pm\pi^\mp\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ $\Gamma_{241}/\Gamma_{233}$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
9.06±0.35 OUR AVERAGE					
$9.18\pm0.21\pm0.28$	163k	AAIJ	19C	LHCB	4-body fit, $KK\pi\pi$ evts
$4.5\ \pm0.8\ \pm2.0$	3k	[1] DARGENT	17		4-body fit, $KK\pi\pi$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$6.1\ \pm0.8\ \pm0.9$	3k	[2] ARTUSO	12	CLEO	4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.
[2] See DARGENT 17

$\Gamma\big((K^*(892)^0\overline{K}^*(892)^0)_{P-wave},\ K^*\to K^\pm\pi^\mp\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ $\Gamma_{242}/\Gamma_{233}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
4.87±0.24 OUR AVERAGE					
$4.90\pm0.16\pm0.18$	163k	AAIJ	19C	LHCB	4-body fit, $KK\pi\pi$ evts
$3.6\ \pm0.7\ \pm1.5$	2.9k	[1] DARGENT	17		4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$\Gamma\big((K^*(892)^0\overline{K}^*(892)^0)_{D-wave},\ K^*\to K^\pm\pi^\mp\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ $\Gamma_{243}/\Gamma_{233}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.89±0.13 OUR AVERAGE					
$1.85\pm0.09\pm0.10$	163k	AAIJ	19C	LHCB	4-body fit, $KK\pi\pi$ evts
$4.0\ \pm0.6\ \pm0.7$	2.9k	[1] DARGENT	17		4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$\Gamma\big(K^*(892)^0K^\mp\pi^\pm\,3\text{-body},K^{*0}\to K^\pm\pi^\mp\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ $\Gamma_{244}/\Gamma_{233}$

This is the fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$11\pm2\pm1$	LINK	05G	FOCS	Fits 1279 ± 48 evts.

$\Gamma\big(K^*(892)^0(K^-\pi^+)_{S-wave}\text{ 3-body, } K^{*0}\to K^+\pi^-\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ $\Gamma_{245}/\Gamma_{233}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
5.8±1.2±2.1	2.9k	[1] DARGENT	17	4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$\Gamma\big((K^-\pi^+)_{P-wave}, (K^+\pi^-)_{S-wave}\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ $\Gamma_{246}/\Gamma_{233}$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
10.9±1.2±1.7	[1] ARTUSO	12	CLEO	Fitting 2959 evts.

[1] See DARGENT 17

$\Gamma\big(K_1(1270)^\pm K^\mp, K_1^\pm\to K^\pm\pi^+\pi^-\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ $\Gamma_{247}/\Gamma_{233}$

This is the fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
33±6±4	[1] LINK	05G	FOCS	Fits 1279 ± 48 evts.

[1] This LINK 05G value includes $K_1(1270)^\pm \to \rho^0 K^\pm$, $\to K_0^*(1430)^0\pi^\pm$, and $K^*(892)^0\pi^\pm$.

$\Gamma\big(K_1(1270)^+K^-, K_1^+\to K^{*0}\pi^+\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ $\Gamma_{248}/\Gamma_{233}$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
5.5±1.4±3.4	3k	[1] DARGENT	17		4-body fit, $KK\pi\pi$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
7.3±0.8±1.9	3k	[2] ARTUSO	12	CLEO	4-body fit, $KK\pi\pi$ events

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.
[2] See DARGENT 17

$\Gamma\big(K_1(1270)^+K^-, K_1^+\to K^*(1430)^0\pi^+, K^{*0}\to K^+\pi^-\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ $\Gamma_{249}/\Gamma_{233}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
6.1±1.2±1.8	2.9k	[1] DARGENT	17	4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$\Gamma\big(K_1(1270)^+K^-, K_1^+\to \rho^0K^+\big)/\Gamma\big(K^+K^-\pi^+\pi^-\big)$ $\Gamma_{250}/\Gamma_{233}$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
9.1±1.5±1.9	2.9k	[1] DARGENT	17		4-body fit, $KK\pi\pi$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
4.7±0.7±0.8		[2] ARTUSO	12	CLEO	Fitting 2959 evts.

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.
[2] see DARGENT 17

$\Gamma\big(K_1(1270)^+ K^-,\ K_1^+ \to \omega(782) K^+,\ \omega \to \pi^+\pi^-\big)/\Gamma\big(K^+ K^- \pi^+\pi^-\big)$ $\Gamma_{251}/\Gamma_{233}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
0.6±0.3±0.4	2.9k	[1] DARGENT	17	4-body fit, $K K \pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$\Gamma\big(K_1(1270)^- K^+,\ K_1^- \to \overline{K}^{*0}\pi^-\big)/\Gamma\big(K^+ K^- \pi^+\pi^-\big)$ $\Gamma_{252}/\Gamma_{233}$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.9±0.3±0.4	[1] ARTUSO	12	CLEO	Fitting 2959 evts.

[1] See DARGENT 17

$\Gamma\big(K_1(1270)^- K^+,\ K_1^- \to \rho^0 K^-\big)/\Gamma\big(K^+ K^- \pi^+\pi^-\big)$ $\Gamma_{253}/\Gamma_{233}$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
5.4±0.7±1.3	2.9k	[1] DARGENT	17		4-body fit, $K K \pi\pi$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
6.0±0.8±0.6		[2] ARTUSO	12	CLEO	Fitting 2959 evts.

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.
[2] See DARGENT 17

$\Gamma\big(K_1(1400)^\pm K^\mp,\ K_1^\pm \to K^\pm \pi^+\pi^-\big)/\Gamma\big(K^+ K^- \pi^+\pi^-\big)$ $\Gamma_{254}/\Gamma_{233}$

This is the fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
22±3±4	LINK	05G	FOCS	Fits 1279 ± 48 evts.

$\Gamma\big(K_1(1400)^+ K^-,\ K_1^+ \to K^*(892)^0 \pi^+,\ K^{*0} \to K^+\pi^-\big)/\Gamma\big(K^+ K^- \pi^+\pi^-\big)$ $\Gamma_{255}/\Gamma_{233}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
18.7 ±1.5 OUR AVERAGE					
19.08±0.60±1.46	163k	AAIJ	19C	LHCB	4-body fit, $K K \pi\pi$ evts
12.4 ±2.6 ±6.3	2.9k	[1] DARGENT	17		4-body fit, $K K \pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$\Gamma\big(K^*(1410)^+ K^-,\ K^{*+} \to K^{*0}\pi^+\big)/\Gamma\big(K^+ K^- \pi^+\pi^-\big)$ $\Gamma_{256}/\Gamma_{233}$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
4.2±0.7±0.8	[1,2] ARTUSO	12	CLEO	Fitting 2959 evts.

[1] DARGENT 17 find $K^*(1410)^+\pi^-$ and $K^*(1680)^+\pi^-$, which both peak outside the $D^0 \to K K \pi\pi$ kinematic range, effectively indistinguishable; we list their result under $K^*(1680)^+\pi^-$.
[2] See DARGENT 17

$\Gamma(K^*(1410)^- K^+,\ K^{*-} \to \overline{K}^{*0}\pi^-)/\Gamma(K^+K^-\pi^+\pi^-)$ — $\Gamma_{257}/\Gamma_{233}$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.82±0.19±0.39	163k	AAIJ	19C	LHCB	4-body fit, $KK\pi\pi$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
4.7 ±0.7 ±0.7	3k	[1] ARTUSO	12	CLEO	4-body fit, $KK\pi\pi$ evts

[1] See DARGENT 17.

$\Gamma(K_1(1680)^+ K^-,\ K_1^+ \to K^{*0}\pi^+,\ K^{*0} \to K^+\pi^-)/\Gamma(K^+K^-\pi^+\pi^-)$ — $\Gamma_{258}/\Gamma_{233}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
3.6±0.8±1.0	2.9k	[1,2] DARGENT	17	4-body fit, $KK\pi\pi$ evts

[1] DARGENT 17 find $K^*(1410)^+\pi^-$ and $K^*(1680)^+\pi^-$, which both peak outside the $D^0 \to KK\pi\pi$ kinematic range, effectively indistinguishable.

[2] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$\Gamma(K^+K^-\pi^+\pi^-\ \text{non-resonant})/\Gamma(K^+K^-\pi^+\pi^-)$ — $\Gamma_{259}/\Gamma_{233}$

This is the fit fraction from a coherent amplitude analysis.

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		COMMENT
11.1±1.2±2.2	2.9k	[1] DARGENT	17	4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$\Gamma(2K_S^0\pi^+\pi^-)/\Gamma_{total}$ — Γ_{260}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
5.3±0.9±0.3	63	ABLIKIM	20AC	BES3	e^+e^- at 3.773 GeV

$\Gamma(2K_S^0\pi^+\pi^-)/\Gamma(K_S^0\pi^+\pi^-)$ — Γ_{260}/Γ_{40}

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
4.3 ±0.8 OUR AVERAGE					
4.16±0.70±0.42	113 ± 21	LINK	05A	FOCS	γ Be, $\overline{E}_\gamma \approx$ 180 GeV
6.2 ±2.0 ±1.6	25	ALBRECHT	94I	ARG	$e^+e^- \approx$ 10 GeV

$\Gamma(K_S^0 K^-\pi^+\pi^0)/\Gamma_{total}$ — Γ_{261}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.32±0.14±0.07	195	ABLIKIM	20AC	BES3	e^+e^- at 3.773 GeV

$\Gamma(K_S^0 K^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_{262}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
6.5±0.7±0.2	119	ABLIKIM	20AC	BES3	e^+e^- at 3.773 GeV

$\Gamma(K_S^0 K^- 2\pi^+\pi^-)/\Gamma(K_S^0 2\pi^+ 2\pi^-)$ — $\Gamma_{263}/\Gamma_{101}$

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.054	90	LINK	04D	FOCS	γ A, $\overline{E}_\gamma \approx$ 180 GeV

$\Gamma(K^+K^-\pi^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_{264}/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.0031±0.0020	[1] BARLAG	92C	ACCM	π^- Cu 230 GeV

[1] BARLAG 92C computes the branching fraction using topological normalization.

$\Gamma(\phi\pi^0)/\Gamma(K^+K^-)$ — $\Gamma_{265}/\Gamma_{196}$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.194\pm0.006\pm0.009$	1254	TAJIMA	04	BELL	e^+e^- at $\Upsilon(4S)$

$\Gamma(\phi\eta)/\Gamma(K^+K^-)$ — $\Gamma_{266}/\Gamma_{196}$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.59±1.14±0.18	31	TAJIMA	04	BELL	e^+e^- at $\Upsilon(4S)$

$\Gamma(\phi\omega)/\Gamma_{total}$ — Γ_{267}/Γ

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
6.48±0.96±0.40		196	[1] ABLIKIM	22	BES3	e^+e^- at 3.773 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<21	90		ALBRECHT	94I	ARG	$e^+e^-\approx$ 10 GeV

[1] ABLIKIM 22 determines the longitudinal polarization fraction of the ϕ and ω, f_L = $0.00 \pm 0.10 \pm 0.08$, corresponding to $f_L < 0.24$ at 95% CL.

Radiative modes

$\Gamma(\rho^0\gamma)/\Gamma(\pi^+\pi^-)$ — $\Gamma_{268}/\Gamma_{132}$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.25±0.21±0.05	500	NANUT	17	BELL	e^+e^- at Υ(nS), n=2,3,4,5

$\Gamma(\omega\gamma)/\Gamma_{total}$ — Γ_{269}/Γ

VALUE	CL%	DOCUMENT ID		TECN
$<2.4\times10^{-4}$	90	ASNER	98	CLE2

$\Gamma(\phi\gamma)/\Gamma(K^-\pi^+)$ — Γ_{270}/Γ_{37}

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
7.1 ±0.5 OUR FIT					
7.15±0.78±0.69	243 ± 25	AUBERT	08AZ	BABR	$e^+e^-\approx$ 10.6 GeV

$\Gamma(\phi\gamma)/\Gamma(K^+K^-)$ — $\Gamma_{270}/\Gamma_{196}$

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
6.9 ±0.5 OUR FIT					
6.88±0.47±0.21	524	NANUT	17	BELL	e^+e^- at Υ(nS), n=2,3,4,5
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$6.31^{+1.70}_{-1.48}{}^{+0.30}_{-0.36}$	28	TAJIMA	04	BELL	See NANUT 17

$\Gamma(\overline{K}^*(892)^0\gamma)/\Gamma(K^-\pi^+)$ — Γ_{271}/Γ_{37}

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
10.5 ±1.7 OUR AVERAGE	Error includes scale factor of 3.1.				
11.9 ±0.5 ±0.5	9.1k	NANUT	17	BELL	e^+e^- at Υ(nS), n=2,3,4,5
8.43±0.51±0.70	2.2k	AUBERT	08AZ	BABR	$e^+e^-\approx$ 10.6 GeV

Doubly Cabibbo-suppressed / Mixing modes

$\Gamma(K^+ \ell^- \overline{\nu}_\ell \text{ via } \overline{D}^0)/\Gamma(K^- \ell^+ \nu_\ell)$ — Γ_{272}/Γ_{18}

This is a limit on R_M without the complications of possible doubly Cabibbo-suppressed decays that occur when using hadronic modes. For the limits on $|m_1 - m_2|$ and $(\Gamma_1 - \Gamma_2)/\Gamma$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 6.1 × 10^{-4}	90	[1] BITENC	08	BELL	e^+e^-, 10.58 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<50 \times 10^{-4}$	90	[2] AITALA	96C	E791	π^- nucleus, 500 GeV

[1] The BITENC 08 right-sign sample includes about 15% of $D^0 \to K^- \pi^0 \ell^+ \nu_\ell$ and other decays.

[2] AITALA 96C uses $D^{*+} \to D^0 \pi^+$ (and charge conjugate) decays to identify the charm at production and $D^0 \to K^- \ell^+ \nu_\ell$ (and charge conjugate) decays to identify the charm at decay.

$\Gamma(K^+ \text{ or } K^*(892)^+ e^- \overline{\nu}_e \text{ via } \overline{D}^0)/[\Gamma(K^- e^+ \nu_e) + \Gamma(K^*(892)^- e^+ \nu_e)]$ — $\Gamma_{273}/(\Gamma_{19}+\Gamma_{21})$

This is a limit on R_M without the complications of possible doubly Cabibbo-suppressed decays that occur when using hadronic modes. The experiments use $D^{*+} \to D^0 \pi^+$ (and charge conjugate) decays to identify the charm at production and the charge of the e to identify the charm at decay. These limits do not allow CP violation. For the limits on $|m_1 - m_2|$ and $(\Gamma_1 - \Gamma_2)/\Gamma$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.001	90	BITENC	05	BELL	$e^+e^- \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$-0.0013 < R < +0.0012$	90	AUBERT	07AB	BABR	$e^+e^- \approx$ 10.58 GeV
<0.0078	90	CAWLFIELD	05	CLEO	$e^+e^- \approx$ 10.6 GeV
<0.0042	90	AUBERT,B	04Q	BABR	See AUBERT 07AB

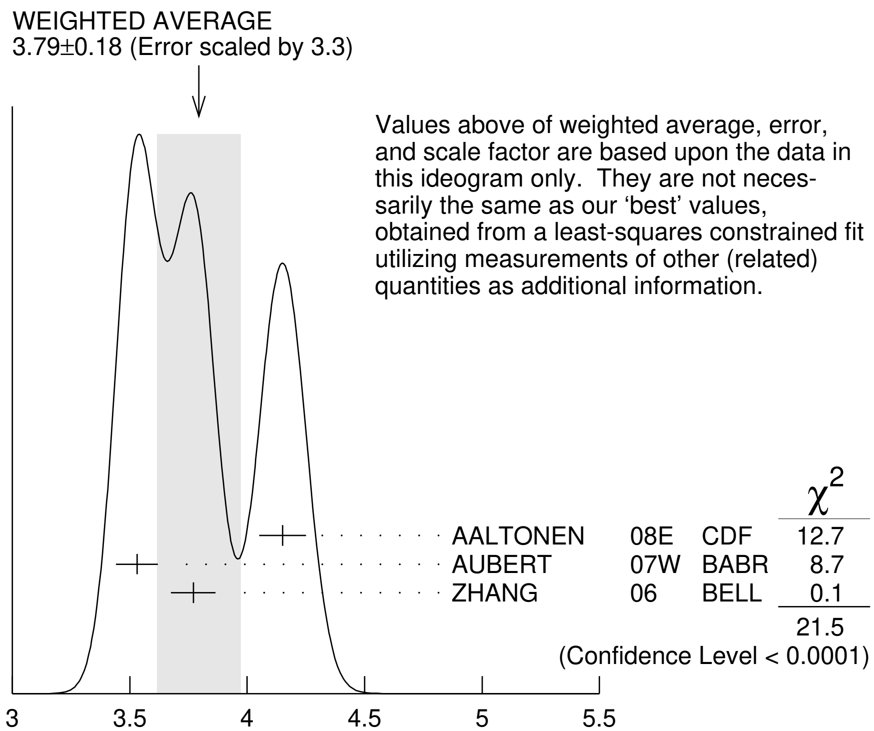
$\Gamma(K^+\pi^-)/\Gamma(K^-\pi^+)$ — Γ_{274}/Γ_{37}

This is R, the time-integrated wrong-sign rate compared to the right-sign rate. See the note on "D^0-$\overline{D}^0$ Mixing," near the start of the D^0 Listings.

The experiments here use the charge of the pion in $D^*(2010)^\pm \to (D^0 \text{ or } \overline{D}^0)\, \pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born. The $D^0 \to K^+\pi^-$ decay can occur directly by doubly Cabibbo-suppressed (DCS) decay, or indirectly by $D^0 \to \overline{D}^0$ mixing followed by $\overline{D}^0 \to K^+\pi^-$ decay. Some of the experiments can use the decay-time information to disentangle the two mechanisms. Here, we list the experimental branching ratio, which if there is no mixing is the DCS ratio. See the next data block for values of the DCS ratio R_D, and the following data block for limits on the mixing ratio R_M. See the section on CP-violating asymmetries near the end of this D^0 Listing for values of A_D, and the note on "D^0-$\overline{D}^0$ Mixing" for limits on x' and y'.

Some early limits have been omitted from this Listing; see our 1998 edition (The European Physical Journal **C3** 1 (1998)) and our 2006 edition (Journal of Physics **G33** 1 (2006)).

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
3.79±0.18 OUR FIT	Error includes scale factor of 3.3.				
3.79±0.18 OUR AVERAGE	Error includes scale factor of 3.3. See the ideogram below.				
4.15 ± 0.10	12.7 ± 0.3k	[1] AALTONEN	08E	CDF	$p\overline{p}$, $\sqrt{s} = 1.96$ TeV
$3.53 \pm 0.08 \pm 0.04$	4030 ± 90	[2] AUBERT	07W	BABR	$e^+e^- \approx$ 10.6 GeV
$3.77 \pm 0.08 \pm 0.05$	4024 ± 88	[1] ZHANG	06	BELL	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$4.05 \pm 0.21 \pm 0.11$	2.0 ± 0.1k	[3] ABULENCIA	06X	CDF	See AALTONEN 08E
$3.81 \pm 0.17 ^{+0.08}_{-0.16}$	845 ± 40	[2] LI	05A	BELL	See ZHANG 06
$4.29 ^{+0.63}_{-0.61} \pm 0.27$	234	[4] LINK	05H	FOCS	γ nucleus
$3.57 \pm 0.22 \pm 0.27$		[5] AUBERT	03Z	BABR	See AUBERT 07W
$4.04 \pm 0.85 \pm 0.25$	149	[6] LINK	01	FOCS	γ nucleus
$3.32 ^{+0.63}_{-0.65} \pm 0.40$	45	[1] GODANG	00	CLE2	e^+e^-
$6.8 ^{+3.4}_{-3.3} \pm 0.7$	34	[2] AITALA	98	E791	π^- nucl., 500 GeV



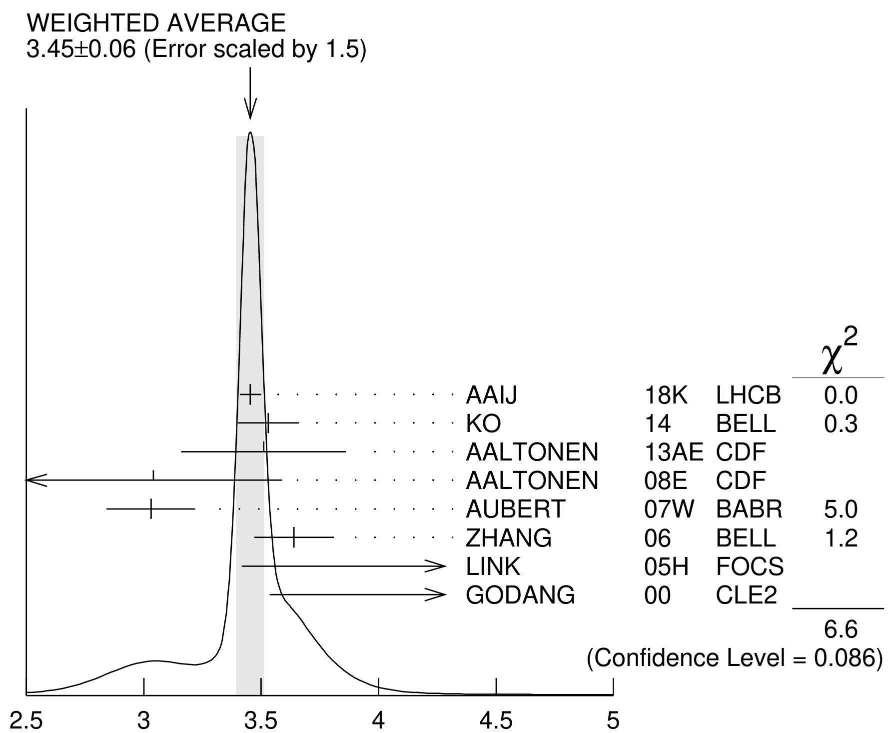
[1] GODANG 00, ZHANG 06, and AALTONEN 08E allow *CP* violation.
[2] AITALA 98, LI 05A, and AUBERT 07W assume no *CP* violation.
[3] This ABULENCIA 06X result assumes no mixing.
[4] This LINK 05H result assumes no mixing but allows *CP* violation. If neither mixing nor *CP* violation is allowed, $R = (4.29 \pm 0.63 \pm 0.28) \times 10^{-3}$.
[5] This AUBERT 03Z result allows *CP* violation. If *CP* violation is not allowed, $R = 0.00359 \pm 0.00020 \pm 0.00027$.
[6] This LINK 01 result assumes no mixing or *CP* violation.

$\Gamma(K^+\pi^-)/\Gamma(K^-\pi^+)$ (units 10^{-3})

$\Gamma(K^+\pi^- \text{via DCS})/\Gamma(K^-\pi^+)$ — Γ_{275}/Γ_{37}

This is R_D, the doubly Cabibbo-suppressed ratio when mixing is allowed.

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
3.45 ±0.06 OUR AVERAGE		Error includes scale factor of 1.5. See the ideogram below.			
3.454±0.040±0.020	722k	[1] AAIJ	18K	LHCB	pp at 7, 8, 13 TeV
3.53 ±0.13		[2] KO	14	BELL	$e^+e^- \rightarrow \Upsilon$(nS)
3.51 ±0.35		[3] AALTONEN	13AE	CDF	$p\overline{p}$ at 1.96 TeV
3.04 ±0.55	13k	AALTONEN	08E	CDF	$p\overline{p}$, $\sqrt{s}$ =1.96 TeV
3.03 ±0.16 ±0.10	4.0k	[4] AUBERT	07W	BABR	$e^+e^- \approx$ 10.6 GeV
3.64 ±0.17	4.0k	[5] ZHANG	06	BELL	e^+e^-
5.17 $^{+1.47}_{-1.58}$ ±0.76	234	[6] LINK	05H	FOCS	γ nucleus
4.8 ±1.2 ±0.4	45	[7] GODANG	00	CLE2	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.533±0.054	236k	[8] AAIJ	17AO	LHCB	See AAIJ 18K
3.568±0.066		[9] AAIJ	13CE	LHCB	pp at 7, 8 TeV
3.52 ±0.15		[10] AAIJ	13N	LHCB	Repl. by AAIJ 13CE
2.87 ±0.37	0.8k	LI	05A	BELL	See ZHANG 06



[1] This AAIJ 18K value is for direct and indirect CP violation allowed. The value is the same if either one or the other is not allowed, but in each case the error then is $(0.028 \pm 0.014) \times 10^{-3}$.

[2] Based on 976 fb^{-1} of data collected at Y(nS) resonances. Assumes no CP violation.

[3] Based on 9.6 fb^{-1} of data collected at the Tevatron. Assumes no CP violation.

[4] Result is the same whether or not CP violation is allowed.

[5] This ZHANG 06 assumes no CP violation.

[6] This LINK 05H result allows CP violation. Allowing mixing but not CP violation, $R_D = (3.81^{+1.67}_{-1.63} \pm 0.92) \times 10^{-3}$.

[7] This GODANG 00 result allows CP violation.
[8] The result was established with D^0 from prompt and secondary D^* assuming no CPV or no direct CPV.
[9] Based on 3 fb^{-1} of data collected at $\sqrt{s}$ = 7, 8 TeV. Assumes no CP violation.
[10] Based on 1 fb^{-1} of data collected at $\sqrt{s}$ = 7 TeV in 2011. Assumes no CP violation.
$\Gamma(K^+\pi^-$ via DCS$)/\Gamma(K^-\pi^+)$ (units 10^{-3})

$\Gamma(K^+\pi^-$ via $\overline{D}^0)/\Gamma(K^-\pi^+)$ — Γ_{276}/Γ_{37}

This is R_M in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings. The experiments here (1) use the charge of the pion in $D^*(2010)^\pm \to (D^0$ or $\overline{D}^0)\ \pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born; and (2) use the decay-time distribution to disentangle doubly Cabibbo-suppressed decay and mixing. For the limits on $|m_1 - m_2|$ and $(\Gamma_1 - \Gamma_2)/\Gamma$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.00040	95	[1] ZHANG	06	BELL	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.00046	95	[2] LI	05A	BELL	See ZHANG 06
<0.0063	95	[3] LINK	05H	FOCS	γ nucleus
<0.0013	95	[4] AUBERT	03Z	BABR	e^+e^-, 10.6 GeV
<0.00041	95	[5] GODANG	00	CLE2	e^+e^-
<0.0092	95	[6] BARATE	98W	ALEP	e^+e^- at Z^0
<0.005	90	[7] ANJOS	88C	E691	Photoproduction

[1] This ZHANG 06 result allows CP violation, but the result does not change if CP violation is not allowed.
[2] This LI 05A result allows CP violation. The limit becomes $<$ 0.00042 (95% CL) if CP violation is not allowed.
[3] LINK 05H obtains the same result whether or not CP violation is allowed.
[4] This AUBERT 03Z result allows CP violation and assumes that the strong phase between $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$ is small, and limits only $D^0 \to \overline{D}^0$ transitions via off-shell intermediate states. The limit on transitions via on-shell intermediate states is 0.0016.
[5] This GODANG 00 result allows CP violation and assumes that the strong phase between $D^0 \to K^+\pi^-$ and $\overline{D}^0 \to K^+\pi^-$ is small, and limits only $D^0 \to \overline{D}^0$ transitions via off-shell intermediate states. The limit on transitions via on-shell intermediate states is 0.0017.
[6] This BARATE 98W result assumes no interference between the DCS and mixing amplitudes (y' = 0 in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings). When interference is allowed, the limit degrades to 0.036 (95%CL).
[7] This ANJOS 88C result assumes no interference between the DCS and mixing amplitudes (y' = 0 in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings). When interference is allowed, the limit degrades to 0.019.

$\Gamma(K^0_S\pi^+\pi^-$ in $D^0 \to \overline{D}^0)/\Gamma(K^0_S\pi^+\pi^-)$ — Γ_{277}/Γ_{40}

This is R_M in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings. The experiments here (1) use the charge of the pion in $D^*(2010)^\pm \to (D^0$ or $\overline{D}^0)\ \pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born; and (2) use the decay-time distribution to disentangle doubly Cabibbo-suppressed decay and mixing. For the limits on $|m_1 - m_2|$ and $(\Gamma_1 - \Gamma_2)/\Gamma$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0063	95	[1] ASNER	05	CLEO	$e^+e^- \approx$ 10 GeV

[1] This ASNER 05 limit allows *CP* violation. If *CP* violation is not allowed, the limit is 0.0042 at 95% CL.

$\Gamma(K^+\pi^-\pi^0)/\Gamma(K^-\pi^+\pi^0)$ Γ_{281}/Γ_{55}

The experiments here use the charge of the pion in $D^*(2010)^\pm \to (D^0 \text{ or } \overline{D}^0)\ \pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born. The $D^0 \to K^+\pi^-\pi^0$ decay can occur directly by doubly Cabibbo-suppressed (DCS) decay, or indirectly by $D^0 \to \overline{D}^0$ mixing followed by $\overline{D}^0 \to K^+\pi^-\pi^0$ decay.

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.12±0.07 OUR AVERAGE					
2.01±0.11		[1] EVANS	16	CLEO	$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$
2.14±0.08±0.08	763	[2] AUBERT,B	06N	BABR	$e^+e^- \approx \Upsilon(4S)$
$2.29\pm0.15^{+0.13}_{-0.09}$	1.9k	TIAN	05	BELL	$e^+e^- \approx \Upsilon(4S)$
$4.3\ ^{+1.1}_{-1.0}\ \pm0.7$	38	BRANDENB...	01	CLE2	$e^+e^- \approx \Upsilon(4S)$

[1] A combined fit with a recent LHCb $D^0\overline{D}^0$ mixing results in AAIJ 16F is also reported to be $(2.00 \pm 0.11) \times 10^{-3}$.

[2] This AUBERT,B 06N result assumes no mixing.

$\Gamma(K^+\pi^-\pi^0 \text{ via } \overline{D}^0)/\Gamma(K^-\pi^+\pi^0)$ Γ_{282}/Γ_{55}

This is R_M in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings. The experiments here (1) use the charge of the pion in $D^*(2010)^\pm \to (D^0 \text{ or } \overline{D}^0)\ \pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born; and (2) use the decay-time distribution to disentangle doubly Cabibbo-suppressed decay and mixing. For the limits on $|m_1 - m_2|$ and $(\Gamma_1 - \Gamma_2)/\Gamma$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{5.25^{+0.25}_{-0.31}\pm0.12}$		AUBERT	09AN	BABR	e^+e^- at 10.58 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.54	95	[1] AUBERT,B	06N	BABR	$e^+e^- \approx \Upsilon(4S)$

[1] This AUBERT,B 06N limit assumes no *CP* violation. The measured value corresponding to the limit is $(2.3^{+1.8}_{-1.4} \pm 0.4) \times 10^{-4}$. If *CP* violation is allowed, this becomes $(1.0^{+2.2}_{-0.7} \pm 0.3) \times 10^{-4}$.

$\Gamma(K^+\pi^+2\pi^- \text{ via DCS})/\Gamma(K^-2\pi^+\pi^-)$ Γ_{283}/Γ_{72}

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
3.03 ±0.07 OUR AVERAGE					
3.025±0.077	42k,11M	[1] AAIJ	16F	LHCB	pp at 7, 8 TeV
3.03 ±0.13		[2] EVANS	16	CLEO	$e^+e^- \to D^0\overline{D}^0$ at $\psi(3770)$

[1] This result uses external input on the mixing parameters x, y. Without this input, the result is $(3.215 \pm 0.136) \times 10^{-3}$.

[2] A combined fit with a recent LHCb $D^0\overline{D}^0$ mixing results in AAIJ 16F is also reported to be $(3.01 \pm 0.07) \times 10^{-3}$.

$\Gamma(K^+\pi^+2\pi^-)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{284}/Γ_{72}

The experiments here use the charge of the pion in $D^*(2010)^\pm \to (D^0$ or $\overline{D}^0)\ \pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born. The $D^0 \to K^+\pi^-\pi^+\pi^-$ decay can occur directly by doubly Cabibbo-suppressed (DCS) decay, or indirectly by $D^0 \to \overline{D}^0$ mixing followed by $\overline{D}^0 \to K^+\pi^-\pi^+\pi^-$ decay. Some of the experiments can use the decay-time information to disentangle the two mechanisms. Here, we list the experimental branching ratio, which if there is no mixing is the DCS ratio; in the next data block we give the limits on the mixing ratio.

Some early limits have been omitted from this Listing; see our 1998 edition (EPJ **C3** 1).

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
3.22±0.05 OUR AVERAGE						
3.22±0.05		42k,11M	[1] AAIJ	16F	LHCB	pp at 7, 8 TeV
3.24±0.08±0.07		3.3k	[2] WHITE	13	BELL	$e^+e^- \approx \Upsilon(4S)$
$4.4\ ^{+1.3}_{-1.2}\ \pm0.4$		54	[2] DYTMAN	01	CLE2	$e^+e^- \approx \Upsilon(4S)$
$2.5\ ^{+3.6}_{-3.4}\ \pm0.3$			[3] AITALA	98	E791	π^- nucl., 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$3.20\pm0.18^{+0.18}_{-0.13}$		1.7k	[2] TIAN	05	BELL	See WHITE 13
<18	90		[2] AMMAR	91	CLEO	$e^+e^- \approx$ 10.5 GeV
<18	90		[4] ANJOS	88C	E691	Photoproduction

[1] AAIJ 16F result comes from time-dependent analysis that uses external input on the mixing parameters x, y. Without this input, the result is $(3.29 \pm 0.08) \times 10^{-3}$.

[2] AMMAR 91 cannot and DYTMAN 01, TIAN 05 do not distinguish between doublyCabibbo-suppressed decay and D^0-$\overline{D}^0$ mixing.

[3] This AITALA 98result assumes no D^0-$\overline{D}^0$ mixing (R_M in the note on "D^0-$\overline{D}^0$ Mixing").It becomes $-0.0020^{+0.0117}_{-0.0106} \pm 0.0035$ whenmixing is allowed and decay-time information is used todistinguish doubly Cabibbo-suppressed decays from mixing.

[4] ANJOS 88C uses decay-time information to distinguish doubly Cabibbo-suppressed (DCS) decays from D^0-$\overline{D}^0$ mixing. However, the result assumes no interference between the DCS and mixing amplitudes ($y' = 0$ in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings). When interference is allowed, the limit degrades to 0.033.

$\Gamma(K^+\pi^+2\pi^-\text{ via }\overline{D}^0)/\Gamma(K^-2\pi^+\pi^-)$ — Γ_{285}/Γ_{72}

This is a D^0-$\overline{D}^0$ mixing limit. The experiments here (1) use the charge of the pion in $D^*(2010)^\pm \to (D^0$ or $\overline{D}^0)\ \pi^\pm$ decay to tell whether a D^0 or a $\overline{D}^0$ was born; and (2) use the decay-time distribution to disentangle doubly Cabibbo-suppressed decay and mixing. For the limits on $\left|m_{D_1^0} - m_{D_2^0}\right|$ and $(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma_{D^0}$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
9.6±3.6		[1] AAIJ	16F	LHCB	pp at 7, 8 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<500	90	[2] ANJOS	88C	E691	Photoproduction

[1] AAIJ 16F result comes from an unconstrained decay-time dependent fit to the wrong-sign to right-sign decay rates ratio as $(x^2 + y^2)/2$.

[2] ANJOS 88C uses decay-time information to distinguish doubly Cabibbo-suppressed (DCS) decays from D^0-$\overline{D}^0$ mixing. However, the result assumes no interference between the DCS and mixing amplitudes ($y' = 0$ in the note on "D^0-$\overline{D}^0$ Mixing" near the start of the D^0 Listings). When interference is allowed, the limit degrades to 0.007.

$\Gamma(K^+\pi^- \text{ or } K^+\pi^+2\pi^- \text{ via } \overline{D}^0)/\Gamma(K^-\pi^+ \text{ or } K^-2\pi^+\pi^-)$ — Γ_{286}/Γ_0

This is a D^0-$\overline{D}^0$ mixing limit. For the limits on $|m_{D_1^0} - m_{D_2^0}|$ and $(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma_{D^0}$ that come from the best mixing limit, see near the beginning of these D^0 Listings.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.0085	90	[1] AITALA	98	E791	π^- nucleus, 500 GeV
<0.0037	90	[2] ANJOS	88C	E691	Photoproduction

[1] AITALA 98 uses decay-time information to distinguish doubly Cabibbo-suppressed decays from D^0-$\overline{D}^0$ mixing. The fit allows interference between the two amplitudes, and also allows CP violation in this term. The central value obtained is $0.0039^{+0.0036}_{-0.0032} \pm 0.0016$. When interference is disallowed, the result becomes $0.0021 \pm 0.0009 \pm 0.0002$.

[2] This combines results of ANJOS 88C on $K^+\pi^-$ and $K^+\pi^-\pi^+\pi^-$ (via $\overline{D}^0$) reported in the data block above (see footnotes there). It assumes no interference.

$\Gamma(\mu^- \text{ anything via } \overline{D}^0)/\Gamma(\mu^+ \text{ anything})$ — Γ_{287}/Γ_6

This is a D^0-$\overline{D}^0$ mixing limit. See the somewhat better limits above.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0056	90	LOUIS	86	SPEC	π^- W 225 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.012	90	BENVENUTI	85	CNTR	μC, 200 GeV
<0.044	90	BODEK	82	SPEC	π^-, pFe $\to$ D^0

Rare or forbidden modes

$\Gamma(\gamma\gamma)/\Gamma_{total}$ — Γ_{288}/Γ

$D^0 \to \gamma\gamma$ is a flavor-changing neutral-current decay, forbidden in the Standard Model at the tree level.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 8.5 × 10^{-7}	90	NISAR	16	BELL	e^+e^- at $\Upsilon(4S)$, $\Upsilon(5S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$< 3.8 \times 10^{-6}$	90	ABLIKIM	15F	BES3	e^+e^- at 3.773 GeV
$< 2.2 \times 10^{-6}$	90	LEES	12L	BABR	$e^+e^- \approx$ 10.58 GeV
$<29 \times 10^{-6}$	90	COAN	03	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(e^+e^-)/\Gamma_{total}$ — Γ_{289}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by first-order weak interaction combined with electromagnetic interaction.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<7.9 × 10^{-8}	90	PETRIC	10	BELL	$e^+e^- \approx \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$<1.7 \times 10^{-7}$	90	LEES	12Q	BABR	$e^+e^- \approx$ 10.58 GeV
$<1.2 \times 10^{-6}$	90	AUBERT,B	04Y	BABR	$e^+e^- \approx \Upsilon(4S)$
$<8.19 \times 10^{-6}$	90	PRIPSTEIN	00	E789	p nucleus, 800 GeV
$<6.2 \times 10^{-6}$	90	AITALA	99G	E791	$\pi^- N$ 500 GeV
$<1.3 \times 10^{-5}$	90	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
$<1.3 \times 10^{-4}$	90	ADLER	88	MRK3	e^+e^- 3.77 GeV
$<1.7 \times 10^{-4}$	90	ALBRECHT	88G	ARG	e^+e^- 10 GeV
$<2.2 \times 10^{-4}$	90	HAAS	88	CLEO	e^+e^- 10 GeV

$\Gamma(\mu^+\mu^-)/\Gamma_{total}$ — Γ_{290}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by first-order weak interaction combined with electromagnetic interaction.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<6.2 \times 10^{-9}$	90	AAIJ	13AI	LHCB	pp at 7 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.6–8.1 \times 10^{-7}$	90	[1] LEES	12Q	BABR	$e^+e^- \approx$ 10.58 GeV
$<2.1 \times 10^{-7}$	90	AALTONEN	10X	CDF	$p\overline{p}$, $\sqrt{s} = 1.96$ TeV
$<1.4 \times 10^{-7}$	90	PETRIC	10	BELL	$e^+e^- \approx \Upsilon(4S)$
$<2.0 \times 10^{-6}$	90	ABT	04	HERB	pA, 920 GeV
$<1.3 \times 10^{-6}$	90	AUBERT,B	04Y	BABR	$e^+e^- \approx \Upsilon(4S)$
$<2.5 \times 10^{-6}$	90	ACOSTA	03F	CDF	See AALTONEN 10X
$<1.56 \times 10^{-5}$	90	PRIPSTEIN	00	E789	p nucleus, 800 GeV
$<5.2 \times 10^{-6}$	90	AITALA	99G	E791	$\pi^- N$ 500 GeV
$<4.1 \times 10^{-6}$	90	ADAMOVICH	97	BEAT	π^- Cu, W 350 GeV
$<4.2 \times 10^{-6}$	90	ALEXOPOU...	96	E771	p Si, 800 GeV
$<3.4 \times 10^{-5}$	90	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
$<7.6 \times 10^{-6}$	90	ADAMOVICH	95	BEAT	See ADAMOVICH 97
$<4.4 \times 10^{-5}$	90	KODAMA	95	E653	π^- emulsion 600 GeV
$<3.1 \times 10^{-5}$	90	[2] MISHRA	94	E789	-4.1 ± 4.8 events
$<7.0 \times 10^{-5}$	90	ALBRECHT	88G	ARG	e^+e^- 10 GeV
$<1.1 \times 10^{-5}$	90	LOUIS	86	SPEC	π^- W 225 GeV
$<3.4 \times 10^{-4}$	90	AUBERT	85	EMC	Deep inelast. $\mu^- N$

[1] LEES 12Q gives a 2-sided range.

[2] Here MISHRA 94 uses "the statistical approach advocated by the PDG." For an alternate approach, giving a limit of 9×10^{-6} at 90% confidence level, see the paper.

$\Gamma(\pi^0 e^+e^-)/\Gamma_{total}$ — Γ_{291}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<4 \times 10^{-6}$	90	ABLIKIM	18P	BES3	e^+e^-, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.5 \times 10^{-5}$	90	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\pi^0 \mu^+\mu^-)/\Gamma_{total}$ — Γ_{292}/Γ

A test for the ΔC=1 weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.8 \times 10^{-4}$	90	KODAMA	95	E653	π^- emulsion 600 GeV

• • • We do not use the following data for averages, fits, limits, etc. • • •

$<5.4 \times 10^{-4}$	90	FREYBERGER 96	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\eta e^+ e^-)/\Gamma_{total}$ — Γ_{293}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<3 \times 10^{-6}$	90	ABLIKIM 18P	BES3	e^+e^-, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<1.1 \times 10^{-4}$	90	FREYBERGER 96	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\eta \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{294}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<5.3 \times 10^{-4}$	90	FREYBERGER 96	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\pi^+ \pi^- e^+ e^-)/\Gamma_{total}$ — Γ_{295}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<7 \times 10^{-6}$	90	ABLIKIM 18P	BES3	e^+e^-, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<3.73 \times 10^{-4}$	90	AITALA 01C	E791	π^- nucleus, 500 GeV

$\Gamma(\rho^0 e^+ e^-)/\Gamma_{total}$ — Γ_{296}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<1.0 \times 10^{-4}$	90	[1] FREYBERGER 96	CLE2	$e^+e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<1.24 \times 10^{-4}$	90	AITALA 01C	E791	π^- nucleus, 500 GeV
$<4.5 \times 10^{-4}$	90	HAAS 88	CLEO	e^+e^- 10 GeV

[1] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 1.8 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(\pi^+ \pi^- \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{297}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE (units 10^{-7})	EVTS	DOCUMENT ID	TECN	COMMENT
9.64±0.48±1.10	561	[1] AAIJ 17BG	LHCB	pp at 8 TeV

[1] The second AAIJ 17BG error is the systematic 0.51×10^{-7} and normalization 0.97×10^{-7} mode errors added in quadrature.

$\Gamma(\pi^+ \pi^- \mu^+ \mu^- \text{(non-res)})/\Gamma_{total}$ — Γ_{298}/Γ

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
$<5.5 \times 10^{-7}$	90	[1] AAIJ 14B	LHCB	pp at 7 TeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$<3.0 \times 10^{-5}$	90	AITALA 01C	E791	π^- nucleus, 500 GeV

[1] AAIJ 14B measures this branching-fraction limit relative to the $\pi^+\pi^-\phi$, $\phi \to \mu^+\mu^-$ fraction. The above limit excludes the resonant ϕ, ω, and ρ regions, and then fills those gaps with a phase-space model.

$\Gamma(\rho^0 \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{299}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.2 \times 10^{-5}$	90	AITALA	01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.9 \times 10^{-4}$	90	[1] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
$<2.3 \times 10^{-4}$	90	KODAMA	95	E653	π^- emulsion 600 GeV
$<8.1 \times 10^{-4}$	90	HAAS	88	CLEO	$e^+ e^-$ 10 GeV

[1] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 4.5 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(\omega e^+ e^-)/\Gamma_{total}$ — Γ_{300}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<6 \times 10^{-6}$	90	ABLIKIM	18P	BES3	$e^+ e^-$, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.8 \times 10^{-4}$	90	[1] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[1] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 2.7 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(\omega \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{301}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<8.3 \times 10^{-4}$	90	[1] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[1] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 6.5 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(K^- K^+ e^+ e^-)/\Gamma_{total}$ — Γ_{302}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.1 \times 10^{-5}$	90	ABLIKIM	18P	BES3	$e^+ e^-$, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<3.15 \times 10^{-4}$	90	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(K^- \pi^+ e^+ e^-, 675 < m_{ee} < 875\ \text{MeV})/\Gamma_{total}$ — Γ_{310}/Γ

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
$4.0 \pm 0.5 \pm 0.2 \pm 0.1$	68	[1,2] LEES	19A	BABR	$e^+ e^-$ near $\Upsilon(4S)$

[1] Observation with 9.7 σ significance. The last uncertainty is due to the uncertainty on the branching fraction of the normalization mode, $D^0 \to K^- \pi^+ \pi^+ \pi^-$. The second uncertainty is other systematic and is dominated by the model parameterization.

[2] LEES 19A also sets an upper limit for non-resonant regions, where long-distance effects are expected to be small: $< 3.1 \times 10^{-6}$ at 90% CL.

$\Gamma(K^- \pi^+ e^+ e^-, 1.005 < m_{ee} < 1.035 \text{ GeV})/\Gamma_{total}$ — Γ_{311}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<5 \times 10^{-7}$	90	[1] LEES	19A	BABR	$e^+ e^-$ near $\Upsilon(4S)$

[1] LEES 19A also sets an upper limit for non-resonant regions, where long-distance effects are expected to be small: $< 3.1 \times 10^{-6}$ at 90% CL.

$\Gamma(\phi e^+ e^-)/\Gamma_{total}$ — Γ_{303}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<5.2 \times 10^{-5}$	90	[1] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<5.9 \times 10^{-5}$	90	AITALA	01C	E791	π^- nucleus, 500 GeV

[1] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 7.6 \times 10^{-5}$ using a photon pole amplitude model.

$\Gamma(K^- K^+ \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{304}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE (units 10^{-7})	EVTS	DOCUMENT ID		TECN	COMMENT
1.54±0.27±0.18	34	[1] AAIJ	17BG	LHCB	pp at 8 TeV

[1] The second AAIJ 17BG error is the systematic 0.09×10^{-7} and normalization 0.16×10^{-7} mode errors added in quadrature.

$\Gamma(K^- K^+ \mu^+ \mu^- \text{(non-res)})/\Gamma_{total}$ — Γ_{305}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.3 \times 10^{-5}$	90	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\phi \mu^+ \mu^-)/\Gamma_{total}$ — Γ_{306}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.1 \times 10^{-5}$	90	AITALA	01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.1 \times 10^{-4}$	90	[1] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[1] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 2.4 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(\overline{K}^0 e^+ e^-)/\Gamma_{total}$ — Γ_{307}/Γ

Not a useful test for ΔC =1 weak neutral current because both quarks must change flavor.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.4 \times 10^{-5}$	90	[1] ABLIKIM	18P	BES3	$e^+ e^-$, 3773 MeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.1 \times 10^{-4}$	90	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$
$<1.7 \times 10^{-3}$	90	ADLER	89C	MRK3	$e^+ e^-$ 3.77 GeV

[1] ABLIKIM 18P report a 90% C.L. limit on $D^0 \to K^0_S e^+ e^-$ of 1.2×10^{-5} which is here interpreted in terms of $D^0 \to \overline{K}^0 e^+ e^-$.

$\Gamma(\overline{K}^0 \mu^+ \mu^-)/\Gamma_{total}$ Γ_{308}/Γ

Not a useful test for ΔC =1 weak neutral current because both quarks must change flavor.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.6 × 10^{-4}	90	KODAMA	95	E653	π^- emulsion 600 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<6.7 \times 10^{-4}$	90	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(K^- \pi^+ e^+ e^-)/\Gamma_{total}$ Γ_{309}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.1 \times 10^{-5}$	90	ABLIKIM	18P	BES3	see LEES 19A
$<3.85 \times 10^{-4}$	90	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\overline{K}^*(892)^0 e^+ e^-)/\Gamma_{total}$ Γ_{312}/Γ

Not a useful test for ΔC =1 weak neutral current because both quarks must change flavor.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<4.7 × 10^{-5}	90	AITALA	01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.4 \times 10^{-4}$	90	[1] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[1] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 2.0 \times 10^{-4}$ using a photon pole amplitude model.

$\Gamma(K^- \pi^+ \mu^+ \mu^-)/\Gamma_{total}$ Γ_{313}/Γ

A test for the $\Delta C = 1$ weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<3.59 × 10^{-4}	90	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(K^- \pi^+ \mu^+ \mu^-, 675 < m_{\mu\mu} < 875\text{ MeV})/\Gamma_{total}$ Γ_{314}/Γ

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
4.17±0.12±0.40	2.4k	[1] AAIJ	16I	LHCB	pp at 8 TeV

[1] AAIJ 16I uses B($D^0 \to K^- \pi^+ \pi^+ \pi^-$) = (8.287 ± 0.043 ± 0.200) × 10^{-2} value for the normalization mode.

$\Gamma(\overline{K}^*(892)^0 \mu^+ \mu^-)/\Gamma_{total}$ Γ_{315}/Γ

Not a useful test for ΔC =1 weak neutral current because both quarks must change flavor.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<2.4 × 10^{-5}	90	AITALA	01C	E791	π^- nucleus, 500 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.18 \times 10^{-3}$	90	[1] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[1] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 1.0 \times 10^{-3}$ using a photon pole amplitude model.

$\Gamma(\pi^+\pi^-\pi^0\mu^+\mu^-)/\Gamma_{total}$ Γ_{316}/Γ

A test for the ΔC=1 weak neutral current. Allowed by higher-order electroweak interactions.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<8.1 × 10^{-4}	90	KODAMA	95	E653	π^- emulsion 600 GeV

$\Gamma(\mu^\pm e^\mp)/\Gamma_{total}$ Γ_{317}/Γ

A test of lepton family number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 1.3 × 10^{-8}	90	AAIJ	16H	LHCB	pp at 7, 8 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 3.3 × 10^{-7}	90	LEES	12Q	BABR	$e^+e^- \approx$ 10.58 GeV
< 2.6 × 10^{-7}	90	PETRIC	10	BELL	$e^+e^- \approx \Upsilon(4S)$
< 8.1 × 10^{-7}	90	AUBERT,B	04Y	BABR	$e^+e^- \approx \Upsilon(4S)$
< 1.72 × 10^{-5}	90	PRIPSTEIN	00	E789	p nucleus, 800 GeV
< 8.1 × 10^{-6}	90	AITALA	99G	E791	$\pi^- N$ 500 GeV
< 1.9 × 10^{-5}	90	[1] FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$
< 1.0 × 10^{-4}	90	ALBRECHT	88G	ARG	e^+e^- 10 GeV
< 2.7 × 10^{-4}	90	HAAS	88	CLEO	e^+e^- 10 GeV
< 1.2 × 10^{-4}	90	BECKER	87C	MRK3	e^+e^- 3.77 GeV
< 9 × 10^{-4}	90	PALKA	87	SILI	200 GeV πp
<21 × 10^{-4}	90	[2] RILES	87	MRK2	e^+e^- 29 GeV

[1] This is the corrected result given in the erratum to FREYBERGER 96.

[2] RILES 87 assumes B($D \rightarrow K\pi$) = 3.0% and has production model dependency.

$\Gamma(\pi^0 e^\pm \mu^\mp)/\Gamma_{total}$ Γ_{318}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<8.0 × 10^{-7}	90	LEES	20A	BABR	e^+e^- at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<8.6 × 10^{-5}	90	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\eta e^\pm \mu^\mp)/\Gamma_{total}$ Γ_{319}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<22.5 × 10^{-7}	90	[1] LEES	20A	BABR	e^+e^- at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 1.0 × 10^{-4}	90	FREYBERGER	96	CLE2	$e^+e^- \approx \Upsilon(4S)$

[1] LEES 20A quotes separate limits B($D^0 \rightarrow \eta e^\pm \mu^\mp$, $\eta \rightarrow \gamma\gamma$) < 24.0 × 10^{-7} and B($D^0 \rightarrow \eta e^\pm \mu^\mp$, $\eta \rightarrow \pi^+\pi^-\pi^0$) < 43.0 × 10^{-7}.

$\Gamma(\pi^+\pi^- e^\pm \mu^\mp)/\Gamma_{total}$ Γ_{320}/Γ

A test of lepton family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.71 × 10^{-6}	90	LEES	20B	BABR	e^+e^- at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<1.5 × 10^{-5}	90	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\rho^0 e^\pm \mu^\mp)/\Gamma_{total}$ Γ_{321}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<5.0 × 10^{-7}	90	LEES	20A	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<6.6 \times 10^{-5}$	90	AITALA	01C	E791	π^- nucleus, 500 GeV
$<4.9 \times 10^{-5}$	90	[1] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[1] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 5.0 \times 10^{-5}$ using a photon pole amplitude model.

$\Gamma(\omega e^\pm \mu^\mp)/\Gamma_{total}$ Γ_{322}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<17.1 × 10^{-7}	90	LEES	20A	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$< 1.2 \times 10^{-4}$	90	[1] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[1] This FREYBERGER 96 limit is obtained using a phase-space model. The same limit is obtained using a photon pole amplitude model.

$\Gamma(K^- K^+ e^\pm \mu^\mp)/\Gamma_{total}$ Γ_{323}/Γ

A test of lepton family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.00 × 10^{-6}	90	LEES	20B	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.8 \times 10^{-4}$	90	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\phi e^\pm \mu^\mp)/\Gamma_{total}$ Γ_{324}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<5.1 × 10^{-7}	90	LEES	20A	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<4.7 \times 10^{-5}$	90	AITALA	01C	E791	π^- nucleus, 500 GeV
$<3.4 \times 10^{-5}$	90	[1] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[1] This FREYBERGER 96 limit is obtained using a phase-space model. The limit changes to $< 3.3 \times 10^{-5}$ using a photon pole amplitude model.

$\Gamma(\overline{K}^0 e^\pm \mu^\mp)/\Gamma_{total}$ Γ_{325}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<17.4 × 10^{-7}	90	[1] LEES	20A	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$< 1.0 \times 10^{-4}$	90	FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[1] LEES 20A quotes B($D^0 \to K^0_S e^\pm \mu^\mp$) $<$ 8.7 × 10^{-7} at 90% CL.

$\Gamma(K^- \pi^+ e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{326}/Γ

A test of lepton family-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.90 \times 10^{-6}$	90	LEES	20B	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<5.53 \times 10^{-4}$	90	AITALA	01C	E791	π^- nucleus, 500 GeV

$\Gamma(\overline{K}^*(892)^0 e^\pm \mu^\mp)/\Gamma_{total}$ — Γ_{327}/Γ

A test of lepton family number conservation. The value is for the sum of the two charge states.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<12.5 \times 10^{-7}$	90	LEES	20A	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$< 8.3 \times 10^{-5}$	90	AITALA	01C	E791	π^- nucleus, 500 GeV
$< 1.0 \times 10^{-4}$	90	[1] FREYBERGER	96	CLE2	$e^+ e^- \approx \Upsilon(4S)$

[1] This FREYBERGER 96 limit is obtained using a phase-space model. The same limit is obtained using a photon pole amplitude model.

$\Gamma(2\pi^- 2e^+)/\Gamma_{total}$ — Γ_{328}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<9.1 \times 10^{-7}$	90	LEES	20B	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.12 \times 10^{-4}$	90	[1] AITALA	01C	E791	π^- nucleus, 500 GeV

[1] Value includes decay to the charge conjugate state.

$\Gamma(2\pi^- 2\mu^+)/\Gamma_{total}$ — Γ_{329}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.52 \times 10^{-6}$	90	LEES	20B	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.9 \times 10^{-5}$	90	[1] AITALA	01C	E791	π^- nucleus, 500 GeV

[1] Value includes decay to the charge conjugate state.

$\Gamma(K^- \pi^- 2e^+)/\Gamma_{total}$ — Γ_{330}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<5.0 \times 10^{-7}$	90	LEES	20B	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.8 \times 10^{-6}$	90	ABLIKIM	19AL	BES3	$e^+ e^-$ at 3773 MeV
$<2.06 \times 10^{-4}$	90	[1] AITALA	01C	E791	π^- nucleus, 500 GeV

[1] Value includes decay to the charge conjugate state.

$\Gamma(K^- \pi^- 2\mu^+)/\Gamma_{total}$ — Γ_{331}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<5.3 \times 10^{-7}$	90	LEES	20B	BABR	$e^+ e^-$ at $\Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$<3.9 \times 10^{-4}$	90	[1] AITALA	01C	E791	π^- nucleus, 500 GeV

[1] Value includes decay to the charge conjugate state.

$\Gamma(2K^- 2e^+)/\Gamma_{total}$ — Γ_{332}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.4 \times 10^{-7}$	90	LEES	20B	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<1.52 \times 10^{-4}$	90	[1] AITALA	01C	E791	π^- nucleus, 500 GeV

[1] Value includes decay to the charge conjugate state.

$\Gamma(2K^- 2\mu^+)/\Gamma_{total}$ — Γ_{333}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.0 \times 10^{-7}$	90	LEES	20B	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<9.4 \times 10^{-5}$	90	[1] AITALA	01C	E791	π^- nucleus, 500 GeV

[1] Value includes decay to the charge conjugate state.

$\Gamma(\pi^- \pi^- e^+ \mu^+)/\Gamma_{total}$ — Γ_{334}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.06 \times 10^{-6}$	90	LEES	20B	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<7.9 \times 10^{-5}$	90	[1] AITALA	01C	E791	π^- nucleus, 500 GeV

[1] Value includes decay to the charge conjugate state.

$\Gamma(K^- \pi^- e^+ \mu^+)/\Gamma_{total}$ — Γ_{335}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.10 \times 10^{-6}$	90	LEES	20B	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.18 \times 10^{-4}$	90	[1] AITALA	01C	E791	π^- nucleus, 500 GeV

[1] Value includes decay to the charge conjugate state.

$\Gamma(2K^- e^+ \mu^+)/\Gamma_{total}$ — Γ_{336}/Γ

A test of lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<5.8 \times 10^{-7}$	90	LEES	20B	BABR	$e^+ e^-$ at $\Upsilon(4S)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<5.7 \times 10^{-5}$	90	[1] AITALA	01C	E791	π^- nucleus, 500 GeV

[1] Value includes decay to the charge conjugate state.

$\Gamma(p e^-)/\Gamma_{total}$ Γ_{337}/Γ

A test of baryon- and lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.0 \times 10^{-5}$	90	[1] RUBIN	09	CLEO	$e^+ e^-$ at $\psi(3770)$

[1] This RUBIN 09 limit is for either $D^0 \to p e^-$ or $\overline{D}^0 \to p e^-$ decay.

$\Gamma(\overline{p} e^+)/\Gamma_{total}$ Γ_{338}/Γ

A test of baryon- and lepton-number conservation.

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.1 \times 10^{-5}$	90	[1] RUBIN	09	CLEO	$e^+ e^-$ at $\psi(3770)$

[1] This RUBIN 09 limit is for either $D^0 \to \overline{p} e^+$ or $\overline{D}^0 \to \overline{p} e^+$ decay.

D^0 CP-VIOLATING DECAY-RATE ASYMMETRIES

This is the difference between D^0 and $\overline{D}^0$ partial widths for the decay to state f, divided by the sum of the widths:
$A_{CP}(f) = [\Gamma(D^0 \to f) - \Gamma(\overline{D}^0 \to \overline{f})] / [\Gamma(D^0 \to f) + \Gamma(\overline{D}^0 \to \overline{f})]$.

$A_{CP}(K^+ K^-)$ in D^0, $\overline{D}^0 \to K^+ K^-$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
-0.07 ± 0.11 OUR AVERAGE					
$0.04 \pm 0.12 \pm 0.10$	4.56M	AAIJ	17M	LHCB	pp 7, 8 TeV
$-0.24 \pm 0.22 \pm 0.09$	476k	[1] AALTONEN	12B	CDF	$p\overline{p}$, $\sqrt{s}$=1.96 TeV
$0.00 \pm 0.34 \pm 0.13$	129k	[2] AUBERT	08M	BABR	$e^+ e^- \approx$ 10.6 GeV
$-0.43 \pm 0.30 \pm 0.11$	120k	[3] STARIC	08	BELL	$e^+ e^- \approx \Upsilon(4S)$
$+2.0 \pm 1.2 \pm 0.6$		[4] ACOSTA	05C	CDF	$p\overline{p}$, $\sqrt{s}$=1.96 TeV
$0.0 \pm 2.2 \pm 0.8$	3023	[4] CSORNA	02	CLE2	$e^+ e^- \approx \Upsilon(4S)$
$-0.1 \pm 2.2 \pm 1.5$	3330	[4] LINK	00B	FOCS	
$-1.0 \pm 4.9 \pm 1.2$	609	[4] AITALA	98C	E791	$-0.093 < A_{CP} < +0.073$ (90% CL)
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$-0.06 \pm 0.15 \pm 0.10$	1.8M	[1] AAIJ	14AK	LHCB	See AAIJ 17M

[1] See also "D^0 CP-violating asymmetry differences" at the end of the CP-violating asymmetries.
[2] AUBERT 08M uses corrected numbers of events directly, not ratios with $K^\mp \pi^\pm$ events.
[3] STARIC 08 uses $D^0 \to K^- \pi^+$ and $\overline{D}^0 \to K^+ \pi^-$ decays to correct for detector-induced asymmetries.
[4] AITALA 98C, LINK 00B, CSORNA 02, and ACOSTA 05C measure $N(D^0 \to K^+ K^-)/N(D^0 \to K^- \pi^+)$, the ratio of numbers of events observed, and similarly for the $\overline{D}^0$.

$A_{CP}(K^0_S K^0_S)$ in D^0, $\overline{D}^0 \to K^0_S K^0_S$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
-1.9 ± 1.1 OUR AVERAGE		Error includes scale factor of 1.1.			
$-3.1 \pm 1.2 \pm 0.5$	8.1k	[1] AAIJ	21X	LHCB	pp at 13 TeV
$-0.02 \pm 1.53 \pm 0.17$	5.4k	[2] DASH	17	BELL	At/near $\Upsilon(4S)$, $\Upsilon(5S)$
$-2.9 \pm 5.2 \pm 2.2$	630	AAIJ	15AT	LHCB	pp at 7, 8 TeV
-23 ± 19	65	BONVICINI	01	CLE2	$e^+ e^- \approx$ 10.6 GeV

• • • We do not use the following data for averages, fits, limits, etc. • • •

2.3 ± 2.8 ±0.9	1.7k	AAIJ	18AV	LHCB	see AAIJ 21X

[1] AAIJ 21X reports a value of $(-3.1 \pm 1.2 \pm 0.4 \pm 0.2) \times 10^{-2}$ where the third uncertainty is from $A_{CP}(K^+ K^-) = 0.04 \pm 0.12 \pm 0.10\%$, as measured by LHCb. We have added the systematic uncertainties in quadrature. Supersedes AAIJ 18AV.

[2] The systematic uncertainty is dominated by the uncertainty on A_{CP} in the control channel $D^0 \to K^0_S \pi^0$.

$A_{CP}(\pi^+\pi^-)$ in D^0, $\overline{D}^0 \to \pi^+\pi^-$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.13±0.14 OUR AVERAGE					
0.07±0.14±0.11		[1] AAIJ	17M	LHCB	pp 7, 8 TeV
0.22±0.24±0.11	215k	[2] AALTONEN	12B	CDF	$p\overline{p}$, $\sqrt{s}$=1.96 TeV
−0.24±0.52±0.22	63.7k	[3] AUBERT	08M	BABR	$e^+e^- \approx$ 10.6 GeV
0.43±0.52±0.12	51k	[4] STARIC	08	BELL	$e^+e^- \approx \Upsilon(4S)$
1.0 ±1.3 ±0.6		[5] ACOSTA	05C	CDF	$p\overline{p}$, $\sqrt{s}$=1.96 TeV
1.9 ±3.2 ±0.8	1136	[5] CSORNA	02	CLE2	$e^+e^- \approx \Upsilon(4S)$
4.8 ±3.9 ±2.5	1177	[5] LINK	00B	FOCS	
−4.9 ±7.8 ±3.0	343	[5] AITALA	98C	E791	$-0.186 < A_{CP} < +0.088$ (90% CL)

• • • We do not use the following data for averages, fits, limits, etc. • • •

−0.20±0.19±0.10	774k	[2,6] AAIJ	14AK	LHCB	See AAIJ 17M

[1] AAIJ 17M value combines $\Delta A_{CP}(\pi\pi, KK)$ from AAIJ 16D, $A_{CP}(KK)$ from AAIJ 17M, and $A_{CP}(\pi\pi)$ from AAIJ 14AK.

[2] See also "D^0 CP-violating asymmetry differences" at the end of the CP-violating asymmetries.

[3] AUBERT 08M uses corrected numbers of events directly, not ratios with $K^\mp \pi^\pm$ events.

[4] STARIC 08 uses $D^0 \to K^-\pi^+$ and $\overline{D}^0 \to K^+\pi^-$ decays to correct for detector-induced asymmetries.

[5] AITALA 98C, LINK 00B, CSORNA 02, and ACOSTA 05C measure $N(D^0 \to \pi^+\pi^-)/N(D^0 \to K^-\pi^+)$, the ratio of numbers of events observed, and similarly for the $\overline{D}^0$.

[6] AAIJ 14AK uses $\Delta A_{CP}(\pi\pi, KK)$ and $A_{CP}(KK)$ reported in the same paper.

$A_{CP}(\pi^0\pi^0)$ in D^0, $\overline{D}^0 \to \pi^0\pi^0$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.0 ±0.6 OUR AVERAGE					
−0.03±0.64±0.10	34k	NISAR	14	BELL	e^+e^- at/near Υ's
0.1 ±4.8	810	BONVICINI	01	CLE2	$e^+e^- \approx$ 10.6 GeV

$A_{CP}(\rho\gamma)$ in D^0, $\overline{D}^0 \to \rho\gamma$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
5.6±15.2±0.6	NANUT	17	BELL	e^+e^- at Υ(nS), n=2,3,4,5

$A_{CP}(\phi\gamma)$ in D^0, $\overline{D}^0 \to \phi\gamma$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
−9.4±6.6±0.1	NANUT	17	BELL	e^+e^- at Υ(nS), n=2,3,4,5

$A_{CP}(\overline{K}^*(892)^0\gamma)$ in D^0, $\overline{D}^0 \to \overline{K}^*(892)^0\gamma$

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
$-0.3\pm2.0\pm0.0$	NANUT	17	BELL	e^+e^- at Υ(nS), n=2,3,4,5

$A_{CP}(\pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \to \pi^+\pi^-\pi^0$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.3 $\pm$0.4 OUR AVERAGE					
0.43 ± 1.30	123k$\pm$490	ARINSTEIN	08	BELL	$e^+e^- \approx \Upsilon(4S)$
$0.31\pm0.41\pm0.17$	80 $\pm$ .3k	[1] AUBERT	08AO	BABR	$e^+e^- \approx$ 10.6 GeV
$1\ ^{+9}_{-7}\ \pm5$		CRONIN-HEN..	05	CLEO	$e^+e^- \approx$ 10 GeV

[1] AUBERT 08AO report their result using a different sign convention.

$A_{CP}(\eta\pi^+\pi^-)$ in D^0, $\overline{D}^0 \to \eta\pi^+\pi^-$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
$0.9\pm1.2\pm0.5$	13k	LI	21G	BELL	e^+e^- at Υ(nS)
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$9.6\pm5.4\pm1.8$	450	ABLIKIM	20G	BES3	e^+e^- at 3.773 GeV

$A_{CP}(\rho(770)^+\pi^- \to \pi^+\pi^-\pi^0)$ in $D^0 \to \rho^+\pi^-$, $\overline{D}^0 \to \rho^-\pi^+$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$+1.2\pm0.8\pm0.3$	AUBERT	08AO	BABR	Table 1, $-$Col.5/2$\times$Col.2

$A_{CP}(\rho(770)^0\pi^0 \to \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \to \rho^0\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$-3.1\pm2.7\pm1.2$	AUBERT	08AO	BABR	Table 1, $-$Col.5/2$\times$Col.2

$A_{CP}(\rho(770)^-\pi^+ \to \pi^+\pi^-\pi^0)$ in $D^0 \to \rho^-\pi^+$, $\overline{D}^0 \to \rho^+\pi^-$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$-1.0\pm1.6\pm0.7$	AUBERT	08AO	BABR	Table 1, $-$Col.5/2$\times$Col.2

$A_{CP}(\rho(1450)^+\pi^- \to \pi^+\pi^-\pi^0)$ in $D^0 \to \rho(1450)^+\pi^-$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$0\pm50\pm50$	AUBERT	08AO	BABR	Table 1, $-$Col.5/2$\times$Col.2

$A_{CP}(\rho(1450)^0\pi^0 \to \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \to \rho(1450)^0\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$-17\pm33\pm17$	AUBERT	08AO	BABR	Table 1, $-$Col.5/2$\times$Col.2

$A_{CP}(\rho(1450)^-\pi^+ \to \pi^+\pi^-\pi^0)$ in $D^0 \to \rho(1450)^-\pi^+$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$+6\pm8\pm3$	AUBERT	08AO	BABR	Table 1, $-$Col.5/2$\times$Col.2

$A_{CP}(\rho(1700)^+\pi^- \to \pi^+\pi^-\pi^0)$ in $D^0 \to \rho(1700)^+\pi^-$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$-5\pm13\pm5$	AUBERT	08AO	BABR	Table 1, $-$Col.5/2$\times$Col.2

$A_{CP}(\rho(1700)^0\pi^0 \to \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \to \rho(1700)^0\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$+13\pm8\pm3$	AUBERT	08AO	BABR	Table 1, $-$Col.5/2$\times$Col.2

$A_{CP}(\rho(1700)^- \pi^+ \to \pi^+\pi^-\pi^0)$ in $D^0 \to \rho(1700)^-\pi^+$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+8±10±5	AUBERT	08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(f_0(980)\pi^0 \to \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \to f_0(980)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0±25±25	AUBERT	08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(f_0(1370)\pi^0 \to \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \to f_0(1370)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+25±13±13	AUBERT	08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(f_0(1500)\pi^0 \to \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \to f_0(1500)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0±13±13	AUBERT	08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(f_0(1710)\pi^0 \to \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \to f_0(1710)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0±17±17	AUBERT	08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(f_2(1270)\pi^0 \to \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \to f_2(1270)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−4±4±4	AUBERT	08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(\sigma(400)\pi^0 \to \pi^+\pi^-\pi^0)$ in D^0, $\overline{D}^0 \to \sigma(400)\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+6±6±6	AUBERT	08AO	BABR	Table 1, −Col.5/2×Col.2

A_{CP}(nonresonant $\pi^+\pi^-\pi^0$) in D^0, $\overline{D}^0 \to$ nonresonant $\pi^+\pi^-\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−13±19±13	AUBERT	08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(2\pi^+2\pi^-)$ in D^0, $\overline{D}^0 \to 2\pi^+2\pi^-$

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
0.54±1.04±0.51	7.3k	[1,2] DARGENT	17	e^+e^- at $\psi(3770)$

[1] Decay rate asymmetry integrated in decay time and across full 4π phase space.
[2] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$A_{CP}(a_1(1260)^+\pi^- \to 2\pi^+2\pi^-)$ in $D^0 \to a_1(1260)^+\pi^-$, $\overline{D}^0 \to$ c.c.

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
4.7±2.6±4.9	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$A_{CP}(a_1(1260)^-\pi^+ \to 2\pi^+2\pi^-)$ in $D^0 \to a_1(1260)^-\pi^+$, $\overline{D}^0 \to$ c.c.

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
13.7±13.8±11.4	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$A_{CP}(\pi(1300)^+\pi^- \rightarrow 2\pi^+2\pi^-)$ in $D^0 \rightarrow \pi(1300)^+\pi^-$, $\overline{D}^0 \rightarrow$ c.c.

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
−1.6±12.9±6.7	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$A_{CP}(\pi(1300)^-\pi^+ \rightarrow 2\pi^+2\pi^-)$ in $D^0 \rightarrow \pi(1300)^-\pi^+$, $\overline{D}^0 \rightarrow$ c.c.

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
−5.6±11.9±27.7	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$A_{CP}(a_1(1640)^+\pi^- \rightarrow 2\pi^+2\pi^-)$ in $D^0 \rightarrow a_1(1640)^+\pi^-$, $\overline{D}^0 \rightarrow$ c.c.

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
8.6±17.8±19.3	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$A_{CP}(\pi_2(1670)^+\pi^- \rightarrow 2\pi^+2\pi^-)$ in $D^0 \rightarrow \pi_2(1670)^+\pi^-$, $\overline{D}^0 \rightarrow$ c.c.

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
7.3±15.1±10.4	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$A_{CP}(\sigma f_0(1370) \rightarrow 2\pi^+2\pi^-)$ in $D^0,\overline{D}^0 \rightarrow \sigma f_0(1370)$

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
−14.6±16.5±9.4	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$A_{CP}(\sigma \rho(770)^0 \rightarrow 2\pi^+2\pi^-)$ in $D^0,\overline{D}^0 \rightarrow \sigma \rho(770)^0$

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
2.5±16.8±20.8	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$A_{CP}(2\rho(770)^0 \rightarrow 2\pi^+2\pi^-)$ in $D^0,\overline{D}^0 \rightarrow 2\rho(770)^0$

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
−5.6±5.0±2.9	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$A_{CP}(2f_2(1270) \rightarrow 2\pi^+2\pi^-)$ in $D^0,\overline{D}^0 \rightarrow 2f_2(1270)$

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
−28.3±12.3±20.9	7.3k	[1] DARGENT	17	4-body fit, 4π evts

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

$A_{CP}(\pi^+\pi^-\pi^0\eta)$ in D^0, $\overline{D}^0 \rightarrow \pi^+\pi^-\pi^0\eta$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
−5.5±5.2±2.4	510	ABLIKIM	20V	BES3	e^+e^-, 3773 MeV

$A_{CP}(K^+K^-\pi^0)$ in D^0, $\overline{D}^0 \rightarrow K^+K^-\pi^0$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
−1.00±1.67±0.25	11 ± 0.11k	AUBERT	08AO	BABR	$e^+e^- \approx$ 10.6 GeV

$A_{CP}(K^*(892)^+ K^- \to K^+ K^- \pi^0)$ in $D^0 \to K^*(892)^+ K^-$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID	TECN	COMMENT
−0.9±1.2±0.4	[1] AUBERT 08AO	BABR	Table 1, −Col.5/2×Col.2

[1] AUBERT 08AO report their result using a different sign convention.

$A_{CP}(K^*(1410)^+ K^- \to K^+ K^- \pi^0)$ in $D^0 \to K^*(1410)^+ K^-$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID	TECN	COMMENT
−21±23±8	AUBERT 08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}((K^+ \pi^0)_{S-wave} K^- \to K^+ K^- \pi^0)$ in $D^0 \to (K^+ \pi^0)_S K^-$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID	TECN	COMMENT
+7±15±3	AUBERT 08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(\phi(1020)\pi^0 \to K^+ K^- \pi^0)$ in D^0, $\overline{D}^0 \to \phi(1020)\pi^0$

VALUE (%)	DOCUMENT ID	TECN	COMMENT
+1.1±2.1±0.5	AUBERT 08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(f_0(980)\pi^0 \to K^+ K^- \pi^0)$ in D^0, $\overline{D}^0 \to f_0(980)\pi^0$

VALUE (%)	DOCUMENT ID	TECN	COMMENT
−3±19±1	AUBERT 08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(a_0(980)^0\pi^0 \to K^+ K^- \pi^0)$ in D^0, $\overline{D}^0 \to a_0(980)^0\pi^0$

VALUE (%)	DOCUMENT ID	TECN	COMMENT
−5±16±2	[1] AUBERT 08AO	BABR	Table 1, −Col.5/2×Col.2

[1] This AUBERT 08AO value is obtained when the $a_0(980)^0$ replaces the $f_0(980)$ in the fit.

$A_{CP}(f_2'(1525)\pi^0 \to K^+ K^- \pi^0)$ in D^0, $\overline{D}^0 \to f_2'(1525)\pi^0$

VALUE (%)	DOCUMENT ID	TECN	COMMENT
0±50±150	AUBERT 08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(K^*(892)^- K^+ \to K^+ K^- \pi^0)$ in $D^0 \to K^*(892)^- K^+$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID	TECN	COMMENT
−5±4±1	AUBERT 08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(K^*(1410)^- K^+ \to K^+ K^- \pi^0)$ in $D^0 \to K^*(1410)^- K^+$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID	TECN	COMMENT
−17±28±7	AUBERT 08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}((K^- \pi^0)_{S-wave} K^+ \to K^+ K^- \pi^0)$ in $D^0 \to (K^- \pi^0)_S K^+$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID	TECN	COMMENT
−7±40±8	AUBERT 08AO	BABR	Table 1, −Col.5/2×Col.2

$A_{CP}(K^+ K^- \eta)$ in D^0, $\overline{D}^0 \to K^+ K^- \eta$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
−1.4±3.3±1.1	1.4k	LI 21G	BELL	$e^+ e^-$ at Υ(nS)

$A_{CP}(\phi(1020)\eta \to K^+K^-\eta)$ in D^0, $\overline{D}^0 \to \phi(1020)\eta$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
−1.9±4.4±0.6	1.4k	LI	21G	BELL	e^+e^- at Υ(nS)

$A_{CP}(K^0_S\pi^0)$ in D^0, $\overline{D}^0 \to K^0_S\pi^0$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
−0.20±0.17 OUR AVERAGE					
−0.21±0.16±0.07	467k	[1] NISAR	14	BELL	e^+e^- at/near Υ's
0.1 ±1.3	9099	BONVICINI	01	CLE2	$e^+e^- \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
−0.28±0.19±0.10	326k	KO	11	BELL	See NISAR 14
−1.8 ±3.0		BARTELT	95	CLE2	See BONVICINI 01

[1] After subtracting CPV in $K^0 - \overline{K}^0$ mixing, NISAR 14 gets $A_{CP} = (+0.12 \pm 0.16 \pm 0.07)\%$.

$A_{CP}(K^0_S\eta)$ in D^0, $\overline{D}^0 \to K^0_S\eta$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
+0.54±0.51±0.16	46k	KO	11	BELL	$e^+e^- \approx \Upsilon(4S)$

$A_{CP}(K^0_S\eta')$ in D^0, $\overline{D}^0 \to K^0_S\eta'$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
+0.98±0.67±0.14	27k	KO	11	BELL	$e^+e^- \approx \Upsilon(4S)$

$A_{CP}(K^0_S\phi)$ in D^0, $\overline{D}^0 \to K^0_S\phi$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−2.8±9.4	BARTELT	95	CLE2	$-18.2 < A_{CP} < +12.6\%$ (90%CL)

$A_{CP}(K^\mp\pi^\pm)$ in $D^0 \to K^-\pi^+$, $\overline{D}^0 \to K^+\pi^-$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.2 ±0.5 OUR AVERAGE					
−0.01±0.91		AAIJ	18K	LHCB	pp at 7, 8, 13 TeV
0.3 ±0.3 ±0.6		BONVICINI	14	CLEO	All CLEO-c runs
• • • We do not use the following data for averages, fits, limits, etc. • • •					
+0.5 ±0.4 ±0.9	150k	MENDEZ	10	CLEO	See BONVICINI 14
−0.4 ±0.5 ±0.9		DOBBS	07	CLEO	See BONVICINI 14

$A_{CP}(K^\pm\pi^\mp)$ in $D^0 \to K^+\pi^-$, $\overline{D}^0 \to K^-\pi^+$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
− 0.9± 1.4 OUR AVERAGE					
− 1.7± 1.6		[1,2] AAIJ	17AO	LHCB	pp at 7,8 TeV
− 2.1± 5.2±1.5	4.0k	AUBERT	07W	BABR	$e^+e^- \approx$ 10.6 GeV
+ 2.3± 4.7	4.0k	[3] ZHANG	06	BELL	e^+e^-
+18 ±14 ±4		[4] LINK	05H	FOCS	γ nucleus
+ 9.5± 6.1±8.3		[5] AUBERT	03Z	BABR	e^+e^-, 10.6 GeV
$+2\,^{+19}_{-20}\,\pm1$	45	[6] GODANG	00	CLE2	e^+e^-

• • • We do not use the following data for averages, fits, limits, etc. • • •

$-$ 0.7± 1.9		[1] AAIJ	13CE	LHCB	Repl. by AAIJ 17AO
$-$ 8.0± 7.7	0.8k	[7] LI	05A	BELL	See ZHANG 06

[1] Based on 3 fb^{-1} of data collected at $\sqrt{s}$ = 7, 8 TeV. Allowing for CP violation, the direct CP-violation in mixing is reported for the $D^0 \rightarrow K^+\pi^-$ and $\overline{D}^0 \rightarrow K^+\pi^-$.

[2] The CPV is derived from $A_{CP} = (R_D^+ - R_D^-)/(R_D^+ + R_D^-)$.

[3] This ZHANG 06 result allows mixing.

[4] This LINK 05H result assumes no mixing. If mixing is allowed, it becomes $0.13^{+0.33}_{-0.25} \pm 0.10$.

[5] This AUBERT 03Z limit assumes no mixing. If mixing is allowed, the 95% confidence-level interval is $(-2.8 < A_D < 4.9)\times10^{-3}$.

[6] This GODANG 00 result assumes no D^0-$\overline{D}^0$ mixing and becomes $-0.43 < A_{CP} < +0.34$ at 95% CL. If mixing is allowd $A_{CP} = -0.01^{+0.16}_{-0.17} \pm 0.01$.

[7] This LI 05A result allows mixing.

$A_{CP}(K^-\pi^+)$ in $D_{CP(\pm1)} \rightarrow K^\mp\pi^\pm$

$A_{CP}(K^-\pi^+)$ = [B($D_{CP(-)} \rightarrow K^-\pi^+$ + c.c.) $-$ B($D_{CP(+)} \rightarrow K^-\pi^+$ + c.c.)] / Sum

VALUE (%)	DOCUMENT ID		TECN	COMMENT
12.7±1.3±0.7	[1] ABLIKIM	14C	BES3	$e^+e^- \rightarrow D^0\overline{D}^0$, 3.77 GeV

[1] ABLIKIM 14C uses quantum correlations in $e^+e^- \rightarrow D^0\overline{D}^0$ at the $\psi(3770)$ to measure the asymmetry of the branching fraction of $D^0 \rightarrow K^-\pi^+$ in CP-odd and CP-even eigenstates. It then extracts the strong-phase difference $\delta_{K\pi}$.

$A_{CP}(K^\mp\pi^\pm\pi^0)$ in $D^0 \rightarrow K^-\pi^+\pi^0$, $\overline{D}^0 \rightarrow K^+\pi^-\pi^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0.1±0.5 OUR AVERAGE				
0.1±0.3±0.4	BONVICINI	14	CLEO	All CLEO-c runs
$-$3.1±8.6	[1] KOPP	01	CLE2	$e^+e^- \approx$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.2±0.4±0.8	DOBBS	07	CLEO	See BONVICINI 14

[1] KOPP 01 fits separately the D^0 and $\overline{D}^0$ Dalitz plots and then calculates the integrated difference of normalized densities divided by the integrated sum.

$A_{CP}(K^\pm\pi^\mp\pi^0)$ in $D^0 \rightarrow K^+\pi^-\pi^0$, $\overline{D}^0 \rightarrow K^-\pi^+\pi^0$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0 ± 5 OUR AVERAGE					
$-$0.6± 5.3	1978 ± 104	TIAN	05	BELL	$e^+e^- \approx \Upsilon(4S)$
$+9\ ^{+25}_{-22}$	38	BRANDENB...	01	CLE2	$e^+e^- \approx \Upsilon(4S)$

$A_{CP}(K^0_S\pi^+\pi^-)$ in D^0, $\overline{D}^0 \rightarrow K^0_S\pi^+\pi^-$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
$-$0.1 ±0.8 OUR AVERAGE					
$-$0.05±0.57±0.54	350k	[1] AALTONEN	12AD	CDF	
$-0.9 \pm2.1\ ^{+1.6}_{-5.7}$	4854	[2] ASNER	04A	CLEO	$e^+e^- \approx$ 10 GeV

[1] This is the overall result of AALTONEN 12AD. Following are the 15 CP fit-fraction asymmetries from the amplitude analysis of the D^0 and $\overline{D}^0 \rightarrow K^0_S\pi^+\pi^-$ Dalitz plots.

[2] This is the overall result of ASNER 04A; CP-violating limits are also given below for each of the 10 resonant submodes found in an amplitude analysis of the D^0 and $\overline{D}^0 \to K^0_S \pi^+ \pi^-$ Dalitz plots.

$A_{CP}(K^{\mp}\pi^{\pm}\eta)$ in D^0, $\overline{D}^0 \to K^{\mp}\pi^{\pm}\eta$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
−1.9±1.3±1.0	6.1k	ABLIKIM	20V	BES3	e^+e^-, 3773 MeV

$A_{CP}(K^0_S\pi^0\eta)$ in D^0, $\overline{D}^0 \to K^0_S\pi^0\eta$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
−3.9±3.2±0.8	1.1k	ABLIKIM	20V	BES3	e^+e^-, 3773 MeV

$A_{CP}(K^{\mp}\pi^{\pm}\pi^0\eta)$ in D^0, $\overline{D}^0 \to K^{\mp}\pi^{\pm}\pi^0\eta$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
−7.9±4.8±2.5	580	ABLIKIM	20V	BES3	e^+e^-, 3773 MeV

$A_{CP}(K^*(892)^{\mp}\pi^{\pm} \to K^0_S\pi^+\pi^-)$ in $D^0 \to K^{*-}\pi^+$, $\overline{D}^0 \to K^{*+}\pi^-$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+0.36±0.33±0.40	AALTONEN	12AD	CDF	Dalitz fit, ~ 350k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$+2.5 \pm 1.9 ^{+3.3}_{-0.8}$	ASNER	04A	CLEO	Dalitz fit, 4854 evts

$A_{CP}(K^*(892)^{\pm}\pi^{\mp} \to K^0_S\pi^+\pi^-)$ in $D^0 \to K^{*+}\pi^-$, $\overline{D}^0 \to K^{*-}\pi^+$

This is a doubly Cabibbo-suppressed mode.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+ 1.0± 5.7± 2.1	AALTONEN	12AD	CDF	Dalitz fit, ~ 350k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
−21 ±42 ±28	ASNER	04A	CLEO	Dalitz fit, 4854 evts

$A_{CP}(K^0_S\rho^0 \to K^0_S\pi^+\pi^-)$ in $D^0 \to \overline{K}^0\rho^0$, $\overline{D}^0 \to K^0\rho^0$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.05±0.50±0.08	AALTONEN	12AD	CDF	Dalitz fit, ~ 350k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$+3.1 \pm 3.8 ^{+2.7}_{-2.2}$	ASNER	04A	CLEO	Dalitz fit, 4854 evts

$A_{CP}(K^0_S\omega \to K^0_S\pi^+\pi^-)$ in $D^0 \to \overline{K}^0\omega$, $\overline{D}^0 \to K^0\omega$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−12.6± 6.0± 2.6	AALTONEN	12AD	CDF	Dalitz fit, ~ 350k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$-26 \pm 24 ^{+22}_{-\ 4}$	ASNER	04A	CLEO	Dalitz fit, 4854 evts

$A_{CP}(K^0_S f_0(980) \to K^0_S\pi^+\pi^-)$ in $D^0 \to \overline{K}^0 f_0(980)$, $\overline{D}^0 \to K^0 f_0(980)$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.4± 2.2± 1.6	AALTONEN	12AD	CDF	Dalitz fit, ~ 350k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$-4.7 \pm 11.0 ^{+24.9}_{-\ 8.8}$	ASNER	04A	CLEO	Dalitz fit, 4854 evts

$A_{CP}(K^0_S f_2(1270) \to K^0_S \pi^+\pi^-)$ in $D^0 \to \overline{K}^0 f_2(1270)$, $\overline{D}^0 \to K^0 f_2(1270)$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$-$ 4.0$\pm$ 3.4$\pm$ 3.0	AALTONEN	12AD	CDF	Dalitz fit, $\sim$ 350k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$+34 \pm 51 \ ^{+33}_{-79}$	ASNER	04A	CLEO	Dalitz fit, 4854 evts

$A_{CP}(K^0_S f_0(1370) \to K^0_S \pi^+\pi^-)$ in $D^0 \to \overline{K}^0 f_0(1370)$, $\overline{D}^0 \to K^0 f_0(1370)$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$-$ 0.5$\pm$ 4.6$\pm$ 7.7	AALTONEN	12AD	CDF	Dalitz fit, $\sim$ 350k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$+18 \pm 10 \ ^{+13}_{-22}$	ASNER	04A	CLEO	Dalitz fit, 4854 evts

$A_{CP}(K^0_S \rho^0(1450))$ in $D^0 \to \overline{K}^0 \rho^0(1450)$, $\overline{D}^0 \to K^0 \rho^0(1450)$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$-$4.1$\pm$5.2$\pm$8.1	AALTONEN	12AD	CDF	Dalitz fit, $\sim$ 350k evts

$A_{CP}(K^0_S f_0(600))$ in $D^0 \to \overline{K}^0 f_0(600)$, $\overline{D}^0 \to K^0 f_0(600)$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$-$2.7$\pm$2.7$\pm$3.6	AALTONEN	12AD	CDF	Dalitz fit, $\sim$ 350k evts

$A_{CP}(K^*(1410)^\mp \pi^\pm)$ in $D^0 \to K^*(1410)^- \pi^+$, $\overline{D}^0 \to K^*(1410)^+ \pi^-$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$-$2.3$\pm$5.7$\pm$6.4	AALTONEN	12AD	CDF	Dalitz fit, $\sim$ 350k evts

$A_{CP}(K^*_0(1430)^\mp \pi^\pm \to K^0_S \pi^+\pi^-)$ in $D^0 \to K^*_0(1430)^- \pi^+$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
4.0$\pm$ 2.4$\pm$3.8	AALTONEN	12AD	CDF	Dalitz fit, $\sim$ 350k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$-0.2 \pm 11.3 ^{+8.8}_{-5.0}$	ASNER	04A	CLEO	Dalitz fit, 4854 evts

$A_{CP}(K^*_0(1430)^\pm \pi^\mp)$ in $D^0 \to K^*_0(1430)^+ \pi^-$, $\overline{D}^0 \to K^*_0(1430)^- \pi^+$

This is a doubly Cabibbo-suppressed mode.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+12$\pm$11$\pm$10	AALTONEN	12AD	CDF	Dalitz fit, $\sim$ 350k evts

$A_{CP}(K^*_2(1430)^\mp \pi^\pm \to K^0_S \pi^+\pi^-)$ in $D^0 \to K^*_2(1430)^- \pi^+$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+2.9$\pm$ 4.0$\pm$ 4.1	AALTONEN	12AD	CDF	Dalitz fit, $\sim$ 350k evts
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$-7 \pm 25 \ ^{+13}_{-26}$	ASNER	04A	CLEO	Dalitz fit, 4854 evts

$A_{CP}(K^*_2(1430)^\pm \pi^\mp)$ in $D^0 \to K^*_2(1430)^+ \pi^-$, $\overline{D}^0 \to K^*_2(1430)^- \pi^+$

This is a doubly Cabibbo-suppressed mode.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
$-$10$\pm$14$\pm$29	AALTONEN	12AD	CDF	Dalitz fit, $\sim$ 350k evts

$A_{CP}(K^*(1680)^{\mp}\pi^{\pm} \to K^0_S\pi^+\pi^-)$ in $D^0 \to K^*(1680)^-\pi^+$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$-36\pm19^{+10}_{-35}$	ASNER	04A	CLEO	Dalitz fit, 4854 evts

$A_{CP}(K^-\pi^+\pi^+\pi^-)$ in $D^0 \to K^-\pi^+\pi^+\pi^-$, $\overline{D}^0 \to K^+\pi^-\pi^-\pi^+$

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0.2±0.3±0.4	BONVICINI	14	CLEO	All CLEO-c runs
• • • We do not use the following data for averages, fits, limits, etc. • • •				
+0.7±0.5±0.9	DOBBS	07	CLEO	See BONVICINI 14

$A_{CP}(K^{\pm}\pi^{\mp}\pi^+\pi^-)$ in $D^0 \to K^+\pi^-\pi^+\pi^-$, $\overline{D}^0 \to K^-\pi^+\pi^+\pi^-$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
−1.8±4.4	1721 ± 75	TIAN	05	BELL	$e^+e^- \approx \Upsilon(4S)$

$A_{CP}(K^+K^-\pi^+\pi^-)$ in D^0, $\overline{D}^0 \to K^+K^-\pi^+\pi^-$

See also AAIJ 13BR for a search for CP violation in $D^0 \to K^+K^-\pi^+\pi^-$ in binned phase space. No evidence of CP violation was found.

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.3 ±1.7 OUR AVERAGE					
1.84±1.74±0.3	2.9k	[1] DARGENT	17		e^+e^-
−8.2 ±5.6 ±4.7	828 ± 46	LINK	05E	FOCS	γ A, $\overline{E}_{\gamma}\approx$ 180 GeV

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$A_{CP}(K_1^*(1270)^+K^- \to K^+K^-\pi^+\pi^-)$ in $D^0 \to K_1^*(1270)^+K^-$, $\overline{D}^0 \to$ c.c.

Including the full $K_1^*(1270)^+$ phase space accessible in this decay chain, with its various resonance contributions.

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
− 2.3±1.7 OUR AVERAGE					
− 2.6±1.7± 0.2	163k	AAIJ	19C	LHCB	4-body fit, $KK\pi\pi$ evts
25.3±9.7±12.7	2.9k	[1] DARGENT	17		4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$A_{CP}(K_1^*(1270)^+K^- \to K^{*0}\pi^+K^-)$ in $D^0 \to K_1^*(1270)^+K^-$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−0.7±10.4	ARTUSO	12	CLEO	Amplitude fit, 2959 evts.

$A_{CP}(K_1^*(1270)^-K^+ \to \overline{K}^{*0}\pi^-K^+)$ in $D^0 \to K_1^*(1270)^-K^+$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−10.0±31.5	ARTUSO	12	CLEO	Amplitude fit, 2959 evts.

$A_{CP}(K_1^*(1270)^-K^+ \to K^+K^-\pi^+\pi^-)$ in $D^0 \to K_1^*(1270)^-K^+$, $\overline{D}^0 \to$ c.c.

Including the full $K_1^*(1270)^-$ phase space accessible in this decay chain, with its various resonance contributions.

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.7± 3.5 OUR AVERAGE					
3.3± 3.5± 0.5	163k	AAIJ	19C	LHCB	4-body fit, $KK\pi\pi$ evts
−50.4±12.0±16.1	2.9k	[1] DARGENT	17		4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$A_{CP}(K_1^*(1270)^+ K^- \to \rho^0 K^+ K^-)$ in $D^0 \to K_1^*(1270)^+ K^-$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−6.5±16.9	ARTUSO	12	CLEO	Amplitude fit, 2959 evts.

$A_{CP}(K_1^*(1270)^- K^+ \to \rho^0 K^- K^+)$ in $D^0 \to K_1^*(1270)^- K^+$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+9.6±12.9	ARTUSO	12	CLEO	Amplitude fit, 2959 evts.

$A_{CP}(K_1(1400)^+ K^- \to K^+ K^- \pi^+ \pi^-)$ in $D^0 \to K_1(1400)^+ K^-$, $\overline{D}^0 \to$ c.c.

Including the full $K_1(1400)^+$ phase space accessible in this decay chain, with its various resonance contributions.

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
−4.4± 2.1 OUR AVERAGE					
−4.5± 2.1± 0.3	163k	AAIJ	19C	LHCB	4-body fit, $KK\pi\pi$ evts
9.2±15.2±20.3	2.9k	[1] DARGENT	17		4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$A_{CP}(K^*(1410)^+ K^- \to K^{*0} \pi^+ K^-)$ in $D^0 \to K^*(1410)^+ K^-$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−20.0±16.8	ARTUSO	12	CLEO	Amplitude fit, 2959 evts.

$A_{CP}(K^*(1410)^- K^+ \to \overline{K}^{*0} \pi^- K^+)$ in $D^0 \to K^*(1410)^- K^+$, $\overline{D}^0 \to$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−1.1±13.7	ARTUSO	12	CLEO	Amplitude fit, 2959 evts.

$A_{CP}(K^*(1680)^+ K^- \to K^+ K^- \pi^+ \pi^-)$ in $D^0 \to K^*(1680)^+ K^-$, $\overline{D}^0 \to$ c.c.

Including the full $K^*(1680)^+$ phase space accessible in this decay chain, with its various resonance contributions.

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
−17.1±21.8±18.5	2.9k	[1] DARGENT	17	4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$A_{CP}(K^{*0} \overline{K}^{*0})$ in $D^0, \overline{D}^0 \to K^{*0} \overline{K}^{*0}$

Including S, P, D wave

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
−4.6±9.0±11.3	2.9k	[1] DARGENT	17	4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$A_{CP}(K^{*0} \overline{K}^{*0}$ S-wave) in $D^0, \overline{D}^0 \to K^{*0} \overline{K}^{*0}$ S-wave

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
−3.9± 2.2 OUR AVERAGE					
−4.3± 2.2±0.5	163k	AAIJ	19C	LHCB	4-body fit, $KK\pi\pi$ evts
+9.5±13.5	3k	ARTUSO	12	CLEO	4-body fit, $KK\pi\pi$ evts

$A_{CP}(\phi \rho^0)$ in $D^0, \overline{D}^0 \to \phi \rho^0$

Including S, P, D wave

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
1.5±4.6±8.0	2.9k	[1] DARGENT	17	4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$A_{CP}(\phi\rho^0$ S-wave) in D^0, $\overline{D}^0 \rightarrow \phi\rho^0$ S-wave

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−2.7±5.3	ARTUSO	12	CLEO	Amplitude fit, 2959 evts.

$A_{CP}(\phi\rho^0$ D-wave) in D^0, $\overline{D}^0 \rightarrow \phi\rho^0$ D-wave

VALUE (%)	DOCUMENT ID		TECN	COMMENT
−37.1±19.0	ARTUSO	12	CLEO	Amplitude fit, 2959 evts.

$A_{CP}(\phi(\pi^+\pi^-)_{S-wave})$ in D^0, $\overline{D}^0 \rightarrow \phi(\pi^+\pi^-)_{S-wave}$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
6 ± 6 OUR AVERAGE					
5.8± 6.1± 0.8	163k	AAIJ	19C	LHCB	4-body fit, $KK\pi\pi$ evts
−4.0±18.0±44.6	3k	[1] DARGENT	17		4-body fit, $KK\pi\pi$ evts
• • • We do not use the following data for averages, fits, limits, etc. • • •					
−8.6±10.4	3k	[2] ARTUSO	12	CLEO	4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.
[2] see DARGENT 17

$A_{CP}(K^*(892)^0(K^-\pi^+)_{S-wave})$ in D^0, $\overline{D}^0 \rightarrow K^*(892)^0(K^-\pi^+)_{S-wave}$

VALUE (%)	EVTS	DOCUMENT ID		COMMENT
−13.1±17.9±31.2	2.9k	[1] DARGENT	17	4-body fit, $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$A_{CP}(K^+K^-\pi^+\pi^-$ non-resonant) in D^0, $\overline{D}^0 \rightarrow K^+K^-\pi^+\pi^-$ non-resonant

VALUE (%)	DOCUMENT ID		COMMENT
+8.2±10.9±17.1	[1] DARGENT	17	4-body fit, 2.9k $KK\pi\pi$ evts

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

$A_{CP}((K^-\pi^+)_{P-wave}\ (K^+\pi^-)_{S-wave})$ in $D^0 \rightarrow (K^-\pi^+)_{P-wave}\ (K^+\pi^-)_{S-wave}$, $\overline{D}^0 \rightarrow$ c.c.

VALUE (%)	DOCUMENT ID		TECN	COMMENT
+2.7±10.6	ARTUSO	12	CLEO	Amplitude fit, 2959 evts.

$A_{CP}(K^+K^-\mu^+\mu^-)$ in D^0, $\overline{D}^0 \rightarrow K^+K^-\mu^+\mu^-$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0±11±2	110	AAIJ	18I	LHCB	pp at 7, 8, 13TeV

$A_{CP}(\pi^+\pi^-\mu^+\mu^-)$ in D^0, $\overline{D}^0 \rightarrow \pi^+\pi^-\mu^+\mu^-$

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
4.9±3.8±0.7	1.1k	AAIJ	18I	LHCB	pp at 7, 8, 13TeV

D^0 CP-EVEN FRACTIONS

The CP-even fraction F_+, defined for self-conjugate final states, like the coherence factor is useful for measuring the unitary triangle angle γ in

$B \rightarrow DK$ decays. A purely CP-even state has $F_+ = 1$, a CP-odd one has $F_+ = 0$. For details, see NAYAK 15.

CP-even fraction in $D^0 \rightarrow \pi^+\pi^-\pi^0$ decays

VALUE (%)	DOCUMENT ID		COMMENT
97.3±1.7	MALDE	15	Uses CLEO data
• • • We do not use the following data for averages, fits, limits, etc. • • •			
96.8±1.7±0.6	NAYAK	15	see MALDE 15

CP-even fraction in $D^0 \rightarrow K^+K^-\pi^0$ decays

VALUE (%)	DOCUMENT ID		COMMENT
73.2±5.5	MALDE	15	Uses CLEO data
• • • We do not use the following data for averages, fits, limits, etc. • • •			
73.1±5.8±2.1	NAYAK	15	see MALDE 15

CP-even fraction in $D^0 \rightarrow \pi^+\pi^-\pi^+\pi^-$ decays

VALUE (%)	DOCUMENT ID		TECN	COMMENT
76.9±2.1±1.0	[1] HARNEW	18		Uses CLEO-c data
• • • We do not use the following data for averages, fits, limits, etc. • • •				
72.9±0.9±1.8	[1,2] DARGENT	17		from amplitude model
73.7±2.8	MALDE	15	CLEO	amplitude model independent

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.
[2] MALDE 15 and DARGENT 17 use different CLEO data sets, so in principle their results could be averaged. However, given the importance that model-independence has in the use of this value, we exclude the amplitude model-derived result from the average.

CP-even fraction in $D^0 \rightarrow K^0_S\pi^+\pi^-\pi^0$ decays

VALUE (%)	DOCUMENT ID		COMMENT
23.8±1.2±1.2	[1] RESMI	18	Uses CLEO-c data

[1] Obtained by analyzing CLEO-c data but not authored by the CLEO Collaboration.

CP-even fraction in $D^0 \rightarrow K^+K^-\pi^+\pi^-$ decays

VALUE (%)	DOCUMENT ID		COMMENT
75.3±1.8±3.9	[1] DARGENT	17	from amplitude model

[1] Obtained by analyzing CLEO data but not authored by the CLEO Collaboration.

D^0 CP-VIOLATING ASYMMETRY DIFFERENCES

$\Delta A_{CP} = A_{CP}(K^+K^-) - A_{CP}(\pi^+\pi^-)$

CP violation in these modes can come from the decay amplitudes (direct) and/or from mixing or interference of mixing and decay (indirect). The difference ΔA_{CP} is primarily sensitive to the direct component, and only retains a second-order dependence on the indirect component for measurements where the mean decay time of the K^+K^- and $\pi^+\pi^-$ samples are not identical. The results below are averaged assuming the indirect component can be neglected.

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
−0.154±0.029	53M,17M	AAIJ	19D	LHCB	Time-integrated

• • • We do not use the following data for averages, fits, limits, etc. • • •

−0.10	±0.08	±0.03	6.5M,2.2M	AAIJ	16D	LHCB	See AAIJ 19D
0.14	±0.16	±0.08	2.2M,0.8M	AAIJ	14AK	LHCB	See AAIJ 19D
0.49	±0.30	±0.14	0.56M,0.22M	AAIJ	13AD	LHCB	See AAIJ 14AK
−0.82	±0.21	±0.11	1.4M,0.4M	AAIJ	12G	LHCB	See AAIJ 16D
−0.46	±0.31	±0.12		AALTONEN	12B	CDF	See AALTONEN 12O
−0.62	±0.21	±0.10		AALTONEN	12O	CDF	Time-integrated
0.24	±0.62	±0.26		[1] AUBERT	08M	BABR	Time-integrated
−0.86	±0.60	±0.07	120k	STARIC	08	BELL	Time-integrated

[1] Calculated from the AUBERT 08M values of $A_{CP}(K^+K^-)$ and $A_{CP}(\pi^+\pi^-)$. The systematic error here combines the systematic errors in quadrature, and therefore somewhat over-estimates it.

D^0 TESTS OF LOCAL *CP*-VIOLATION (*CPV*)

We list model-independent searches for local *CP* violation in phase-space distributions of multi-body decays.

Most of these searches divide phase space (Dalitz plot for 3-body decays, five-dimensional equivalent for 4-body decays) into bins, and perform a χ^2 test comparing normalised yields N_i, $\overline{N}_i$ in *CP*-conjugate bin pairs i: $\chi^2 = \Sigma_i(N_i - \alpha\,\overline{N}_i)/\sigma(N_i - \alpha\,\overline{N}_i)$. The factor $\alpha = (\Sigma_i N_i)/(\Sigma_i \overline{N}_i)$ removes the dependence on phase-space-integrated rate asymmetries. The result is used to obtain the probability (p-value) to obtain the measured χ^2 or larger under the assumption of CP conservation [AUBERT 08AO, BEDIAGA 09]. Alternative methods obtain p-values from other test variables based on unbinned analyses [WILLIAMS 11, AAIJ 14C]. Results can be combined using Fisher's method [MOSTELLER 48].

Local *CPV* in D^0, $\overline{D}^0 \to \pi^+\pi^-\pi^0$

p-value (%)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
4.9 OUR EVALUATION					
2.6	566k	[1] AAIJ	15A	LHCB	unbinned method
32.8	82k	AUBERT	08AO	BABR	χ^2

[1] Unusually, AAIJ 15A assigns an uncertainty on the p value of ±0.5%. This results from limited test statistics.

Local *CPV* in D^0, $\overline{D}^0 \to \pi^+\pi^-\pi^+\pi^-$

p-value (%)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.6±0.2	1.0M	[1] AAIJ	17AE	LHCB	unbinned, *P*-odd

• • • We do not use the following data for averages, fits, limits, etc. • • •

4.6±0.5	1.0M	[2,3] AAIJ	17AE	LHCB	unbinned, *P*-even
41	330k	[2,4] AAIJ	13BR	LHCB	χ^2, *P*-even

[1] This AAIJ 17AE value tests *CP* Violation in *P*-odd variables.
[2] This value tests *CP* Violation in *P*-even variables.
[3] Not included in average as correlation to *P*-odd measurement using the same data is unclear.
[4] See AAIJ 17AE.

Local CPV in D^0, $\overline{D}^0 \to K^0_S \pi^+ \pi^-$

p-value (%)	EVTS	DOCUMENT ID		TECN	COMMENT
96	350k	AALTONEN	12AD	CDF	χ^2

Local CPV in D^0, $\overline{D}^0 \to K^+ K^- \pi^0$

p-value (%)	EVTS	DOCUMENT ID		TECN	COMMENT
16.6	11k	AUBERT	08AO	BABR	χ^2

Local CPV in D^0, $\overline{D}^0 \to K^+ K^- \pi^+ \pi^-$

p-value (%)	EVTS	DOCUMENT ID		TECN	COMMENT
9.1	57k	AAIJ	13BR	LHCB	χ^2

CP VIOLATING ASYMMETRIES OF P-ODD (T-ODD) MOMENTS

The CP-sensitive P-odd (T-odd) correlation in D^0, $\overline{D}^0$ decays. The D^0 and $\overline{D}^0$ are distinguished by the charge of the parent D^*: $D^{*+} \to D^0 \pi^+$ and $D^{*-} \to \overline{D}^0 \pi^-$.

$A_{Tviol}(K^+ K^- \pi^+ \pi^-)$ in D^0, $\overline{D}^0 \to K^+ K^- \pi^+ \pi^-$

$C_T \equiv \vec{p}_{K^+} \cdot (\vec{p}_{\pi^+} \times \vec{p}_{\pi^-})$ is a parity-odd correlation of the K^+, π^+, and π^- momenta (evaluated in the D^0 rest frame) for the D^0. $\overline{C}_T \equiv \vec{p}_{K^-} \cdot (\vec{p}_{\pi^-} \times \vec{p}_{\pi^+})$ is the corresponding quantity for the $\overline{D}^0$. Then
$A_T \equiv [\Gamma(C_T > 0) - \Gamma(C_T < 0)] \,/\, [\Gamma(C_T > 0) + \Gamma(C_T < 0)]$, and
$\overline{A}_T \equiv [\Gamma(-\overline{C}_T > 0) - \Gamma(-\overline{C}_T < 0)] \,/\, [\Gamma(-\overline{C}_T > 0) + \Gamma(-\overline{C}_T < 0)]$, and
$A_{Tviol} \equiv \frac{1}{2}(A_T - \overline{A}_T)$. C_T and $\overline{C}_T$ are commonly referred to as T-odd moments, because they are odd under T reversal. However, the T-conjugate process $K^+ K^- \pi^+ \pi^- \to D^0$ is not accessible, while the P-conjugate process is.

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.9 ± 2.2 OUR AVERAGE					
5.2 ± 3.7 ± 0.7	110k	[1] KIM	19	BELL	$e^+ e^-$ at $\Upsilon(1S)$–$\Upsilon(6S)$
1.8 ± 2.9 ± 0.4	171k	AAIJ	14BC	LHCB	$B \to D^0 \mu^- X$
1.0 ± 5.1 ± 4.4	47k	DEL-AMO-SA...	10	BABR	$e^+ e^- \approx 10.6$ GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
10 ± 57 ± 37	0.8k	LINK	05E	FOCS	γ A, $\overline{E}_\gamma \approx 180$ GeV

[1] KIM 19 also study CP-violating asymmetries in several other kinematic variables. No evidence for CP violation is found in any of them.

$A_{Tviol}(K_S \pi^+ \pi^- \pi^0)$ in D^0, $\overline{D}^0 \to K_S \pi^+ \pi^- \pi^0$

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{-0.28 \pm 1.38^{+0.23}_{-0.76}}$	745k	[1] PRASANTH	17	BELL	$e^+ e^-$ at Υ(nS)'s

[1] PRASANTH 17 also measures $A_{\rm Tviol}$ in sub-regions of the $D^0 \to K_S \pi^+ \pi^- \pi^0$ phase-space. No evidence of T violation is found.

D^0 CPT-VIOLATING DECAY-RATE ASYMMETRIES

$A_{CPT}(K^{\mp}\pi^{\pm})$ in $D^0 \to K^-\pi^+$, $\overline{D}^0 \to K^+\pi^-$

A_{CPT}(t) is defined in terms of the time-dependent decay probabilities $P(D^0 \to K^-\pi^+)$ and $\overline{P}(\overline{D}^0 \to K^+\pi^-)$ by $A_{CPT}(t) = (\overline{P} - P)/(\overline{P} + P)$. For small mixing parameters x $\equiv \Delta m/\Gamma$ and y $\equiv \Delta\Gamma/2\Gamma$ (as is the case), and times t, A_{CPT}(t) reduces to [y $Re\,\xi$ - x $Im\,\xi$] Γt, where ξ is the CPT-violating parameter.

The following is actually y $Re\,\xi$ - x $Im\,\xi$.

VALUE	DOCUMENT ID		TECN	COMMENT
0.0083±0.0065±0.0041	LINK	03B	FOCS	γ nucleus, $\overline{E}_\gamma \approx 180$ GeV

$D^0 \to K^*(892)^-\ell^+\nu_\ell$ FORM FACTORS

$r_V \equiv V(0)/A_1(0)$ in $D^0 \to K^*(892)^-\ell^+\nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
1.46±0.07 OUR AVERAGE					
1.46±0.07±0.02	3k	ABLIKIM	19G	BES3	$K^*(892)^- e^+\nu_e$
1.71±0.68±0.34		LINK	05B	FOCS	$K^*(892)^- \mu^+\nu_\mu$

$r_2 \equiv A_2(0)/A_1(0)$ in $D^0 \to K^*(892)^-\ell^+\nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.68±0.06 OUR AVERAGE					
0.67±0.06±0.01	3k	ABLIKIM	19G	BES3	$K^*(892)^- e^+\nu_e$
0.91±0.37±0.10		LINK	05B	FOCS	$K^*(892)^- \mu^+\nu_\mu$

$D^0 \to K^-/\pi^-\ell^+\nu_\ell$ FORM FACTORS

$f_+(0)$ in $D^0 \to K^-\ell^+\nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.736 ±0.004 OUR AVERAGE					
0.7368±0.0026±0.0036	71k	ABLIKIM	15X	BES3	ℓ=e, 2-parameter fit
0.727 ±0.007 ±0.009		AUBERT	07BG	BABR	ℓ=e, 2-parameter fit

$f_+(0)|V_{cs}|$ in $D^0 \to K^-\ell^+\nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.7166±0.0030 OUR AVERAGE					
0.7133±0.0038±0.0029	47k	ABLIKIM	19B	BES3	ℓ=μ, 2-parameter fit
0.7172±0.0025±0.0035	71k	[1] ABLIKIM	15X	BES3	ℓ=e, 2-parameter fit
0.726 ±0.008 ±0.004		BESSON	09	CLEO	ℓ=e, 3-parameter fit

[1] The 3-parameter fit yields 0.7195 ± 0.0035 ± 0.0041.

$r_1 \equiv a_1/a_0$ in $D^0 \to K^-\ell^+\nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
−2.40±0.16 OUR AVERAGE					
−2.33±0.16±0.08	71k	[1] ABLIKIM	15X	BES3	ℓ=e, 3-parameter fit
−2.65±0.34±0.08		BESSON	09	CLEO	ℓ=e, 3-parameter fit

[1] The 2-parameter fit yields −2.23 ± 0.09 ± 0.06.

$r_2 \equiv a_2/a_0$ in $D^0 \to K^- \ell^+ \nu_\ell$

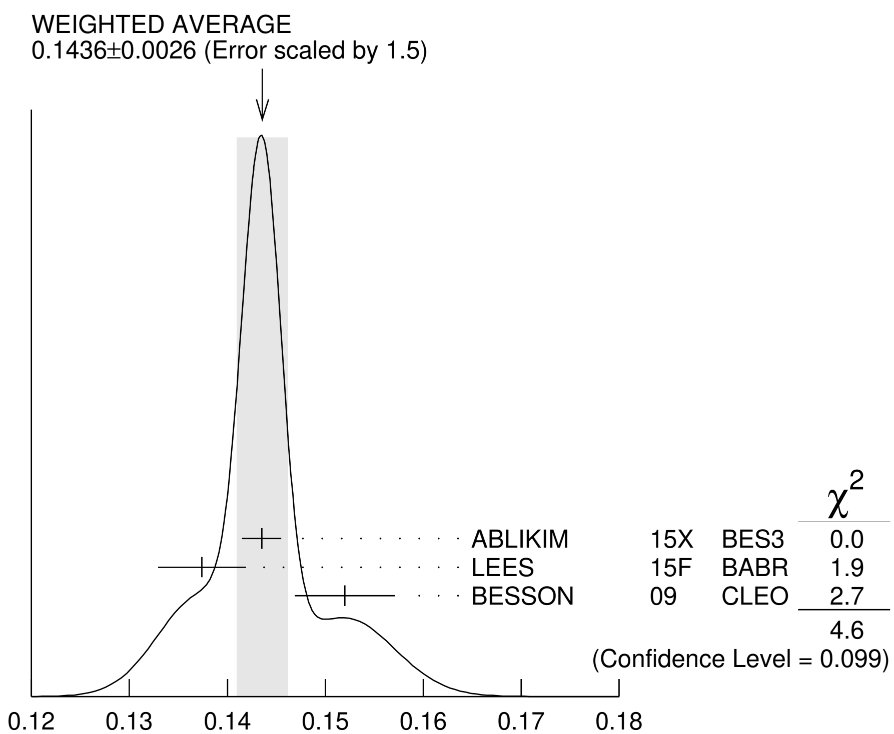
VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
5 ±4 OUR AVERAGE					
3.4±3.9±2.4	71k	ABLIKIM	15X	BES3	ℓ=e, 3-parameter fit
13 ±9 ±1		BESSON	09	CLEO	ℓ=e, 3-parameter fit

$f_+(0)$ in $D^0 \to \pi^- \ell^+ \nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.6372±0.0080±0.0044	6.3k	ABLIKIM	15X	BES3	ℓ=e, 2-parameter fit

$f_+(0)\left|V_{cd}\right|$ in $D^0 \to \pi^- \ell^+ \nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.1436±0.0026 OUR AVERAGE Error includes scale factor of 1.5. See the ideogram below.					
0.1435±0.0018±0.0009	6.3k	[1] ABLIKIM	15X	BES3	ℓ=e, 2-parameter fit
0.1374±0.0038±0.0024	5.3k	[2] LEES	15F	BABR	ℓ=e, 3-parameter fit
0.152 ±0.005 ±0.001		BESSON	09	CLEO	ℓ=e, 3-parameter fit



[1] The 3-parameter fit yields 0.1420 ± 0.0024 ± 0.0010.

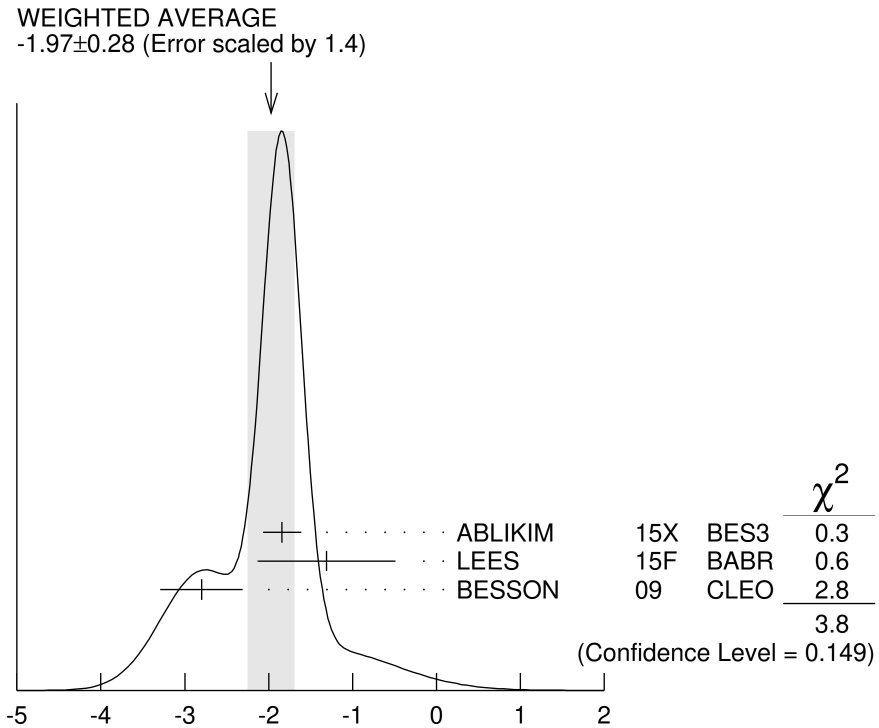
[2] LEES 15F reports a value 0.1374 ± 0.0038 ± 0.0022 ± 0.0009, where the last uncertainty is due to the uncertainties of the $D^0 \to K^- \pi^+$ branching fraction.

$f_+(0)\left|V_{cd}\right|$ in $D^0 \to \pi^- \ell^+ \nu_\ell$

$r_1 \equiv a_1/a_0$ in $D^0 \to \pi^- \ell^+ \nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
−1.97±0.28 OUR AVERAGE Error includes scale factor of 1.4. See the ideogram below.					
−1.84±0.22±0.07	6.3k	[1] ABLIKIM	15X	BES3	ℓ=e, 3-parameter fit

$-1.31\pm0.70\pm0.43$	5.3k	LEES	15F	BABR	ℓ=e, 3-parameter fit
$-2.80\pm0.49\pm0.04$		BESSON	09	CLEO	ℓ=e, 3-parameter fit

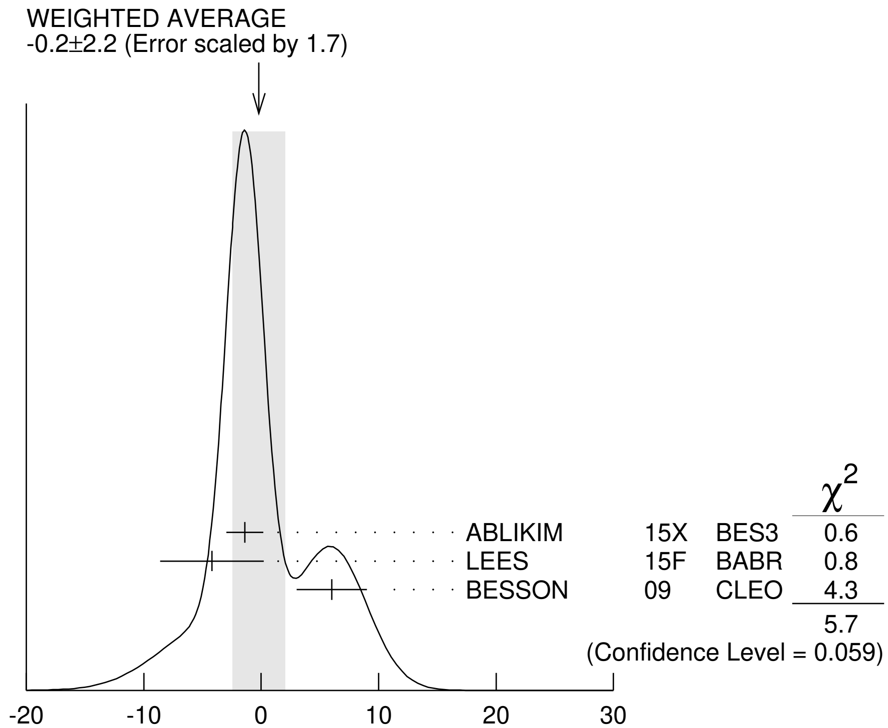


[1] The 2-parameter fit yields $-2.04 \pm 0.08 \pm 0.03$.

$r_1 \equiv a_1/a_0$ in $D^0 \to \pi^- \ell^+ \nu_\ell$

$r_2 \equiv a_1/a_0$ in $D^0 \to \pi^- \ell^+ \nu_\ell$

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
-0.2 ± 2.2 OUR AVERAGE	Error includes scale factor of 1.7. See the ideogram below.				
$-1.4\pm1.5\pm0.5$	6.3k	ABLIKIM	15X	BES3	ℓ=e, 3-parameter fit
$-4.2\pm4.0\pm1.9$	5.3k	LEES	15F	BABR	ℓ=e, 3-parameter fit
$6\pm3\pm0$		BESSON	09	CLEO	ℓ=e, 3-parameter fit



$r_2 \equiv a_1/a_0$ in $D^0 \rightarrow \pi^- \ell^+ \nu_\ell$

Amplitude analyses

$D \rightarrow K\pi\pi\pi$, $D \rightarrow KK\pi\pi$ partial wave analyses

Amplitude analyses of D^0 decays to a variety of 4-body kaon or pion final states, fitting simultaneously different partial wave components.

VALUE	DOCUMENT ID		TECN	COMMENT
	[1] AAIJ	19C	LHCB	$D^0 \rightarrow K^+ K^- \pi^+ \pi^-$
	ABLIKIM	19AK	BES3	$D^0 \rightarrow K^- \pi^+ \pi^0 \pi^0$
	AAIJ	18AI	LHCB	$D^0 \rightarrow K^- \pi^+ \pi^+ \pi^-$
	ABLIKIM	17O	BES3	$D^0 \rightarrow K^- \pi^+ \pi^+ \pi^-$

[1] AAIJ 19C also provides measurements of *CP* violation in $D^0 \rightarrow K^+ K^- \pi^+ \pi^-$, with results compatible with *CP* symmetry.

D^0 REFERENCES

ABLIKIM	22	PRL 128 011803	M. Ablikim *et al.*	(BESIII Collab.)
AAIJ	21AB	PRL 127 111801	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	21AI	PR D104 072010	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	21X	PR D104 L031102	R. Aaij *et al.*	(LHCb Collab.)
ABLIKIM	21AA	JHEP 2105 164	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	21AY	PRL 127 131801	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	21BA	PR D104 052008	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	21BC	PR D104 L091103	M. Ablikim *et al.*	(BESIII Collab.)
ABUDINEN	21A	PRL 127 211801	F. Abudinen *et al.*	(BELLE II Collab.)
LI	21G	JHEP 2109 075	L.K. Li *et al.*	(BELLE Collab.)
AAIJ	20	PR D101 012005	R. Aaij *et al.*	(LHCb Collab.)
ABLIKIM	20AA	PR D102 052003	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	20AC	PR D102 052006	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	20AF	PR D102 112005	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	20G	PR D101 052009	M. Ablikim *et al.*	(BESIII Collab.)

ABLIKIM	20V	PRL 124 241803	M. Ablikim *et al.*	(BESIII Collab.)
CHEN	20A	PR D102 012002	Y.Q. Chen *et al.*	(BELLE Collab.)
LEES	20A	PR D101 112003	J.P. Lees *et al.*	(BABAR Collab.)
LEES	20B	PRL 124 071802	J.P. Lees *et al.*	(BABAR Collab.)
NAYAK	20	PR D102 071102	M. Nayak *et al.*	(BELLE Collab.)
AAIJ	19	PRL 122 011802	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	19C	JHEP 1902 126	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	19D	PRL 122 211803	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	19X	PRL 122 231802	R. Aaij *et al.*	(LHCb Collab.)
ABLIKIM	19AK	PR D99 092008	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	19AL	PR D99 112002	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	19AY	PR D100 072006	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	19B	PRL 122 011804	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	19BI	PL B798 135017	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	19C	PRL 122 062001	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	19G	PR D99 011103	M. Ablikim *et al.*	(BESIII Collab.)
KIM	19	PR D99 011104	J.B. Kim *et al.*	(BELLE Collab.)
LEES	19A	PRL 122 081802	J.P. Lees *et al.*	(BABAR Collab.)
PDG	19	RPP 2019 at pdg.lbl.gov	M. Tanabashi *et al.*	(PDG Collab.)
AAIJ	18AI	EPJ C78 443	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	18AV	JHEP 1811 048	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	18I	PRL 121 091801	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	18K	PR D97 031101	R. Aaij *et al.*	(LHCb Collab.)
ABLIKIM	18AC	PR D98 092009	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	18AE	PRL 121 171803	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	18F	PRL 121 081802	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	18L	PR D97 052005	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	18P	PR D97 072015	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	18W	PR D97 072004	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	18X	PL B781 368	M. Ablikim *et al.*	(BESIII Collab.)
HARNEW	18	JHEP 1801 144	S. Harnew *et al.*	(BRIS, PNNL)
RESMI	18	JHEP 1801 082	P.K. Resmi *et al.*	
SMITH	18	PR D98 051101	M.J. Smith, D. Cinabro, P. Naik	(LTU, WAYN+)
AAIJ	17AE	PL B769 345	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	17AK	PRL 118 261803	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	17AO	PR D95 052004	R. Aaij *et al.*	(LHCb Collab.)
Also		PR D96 099907 (errat.)	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	17BG	PRL 119 181805	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	17M	PL B767 177	R. Aaij *et al.*	(LHCb Collab.)
ABLIKIM	17A	PL B765 231	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	17O	PR D95 072010	M. Ablikim *et al.*	(BESIII Collab.)
DARGENT	17	JHEP 1705 143	P. dArgent *et al.*	(HEID, BRIS)
DASH	17	PRL 119 171801	N. Dash *et al.*	(BELLE Collab.)
LAI	17	PR D95 011102	Y.-T. Lai *et al.*	(BELLE Collab.)
NANUT	17	PRL 118 051801	T. Nanut *et al.*	(BELLE Collab.)
PRASANTH	17	PR D95 091101	K. Prasanth *et al.*	(BELLE Collab.)
AAIJ	16D	PRL 116 191601	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	16F	PRL 116 241801	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	16H	PL B754 167	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	16I	PL B757 558	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	16N	PR D93 052018	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	16V	JHEP 1604 033	R. Aaij *et al.*	(LHCb Collab.)
ABLIKIM	16D	PRL 116 082001	M. Ablikim *et al.*	(BESIII Collab.)
EVANS	16	PL B757 520	T. Evans *et al.*	(OXF, BRIS, MDRA)
Also		PL B765 402 (errat.)	T. Evans *et al.*	(OXF, BRIS, MDRA)
LEES	16D	PR D93 112014	J.P. Lees *et al.*	(BABAR Collab.)
NISAR	16	PR D93 051102	N.K. Nisar *et al.*	(BELLE Collab.)
STARIC	16	PL B753 412	M. Staric *et al.*	(BELLE Collab.)
AAIJ	15A	PL B740 158	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	15AA	JHEP 1504 043	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	15AT	JHEP 1510 055	R. Aaij *et al.*	(LHCb Collab.)
ABLIKIM	15D	PL B744 339	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	15F	PR D91 112015	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	15X	PR D92 072012	M. Ablikiim *et al.*	(BESIII Collab.)
LEES	15F	PR D91 052022	J.P. Lees *et al.*	(BABAR Collab.)
MALDE	15	PL B747 9	S. Malde *et al.*	(BRIS, CERN, MDRA, OXF+)
NAYAK	15	PL B740 1	M. Nayak *et al.*	(MDRA, OXF, CERN, CMU+)
AAIJ	14AK	JHEP 1407 041	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	14AL	PRL 112 041801	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	14B	PL B728 234	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	14BC	JHEP 1410 005	R. Aaij *et al.*	(LHCb Collab.)

AAIJ	14C	PL B728 585	R. Aaij *et al.*	(LHCb Collab.)
AALTONEN	14Q	PR D90 111103	T. Aaltonen *et al.*	(CDF Collab.)
ABLIKIM	14C	PL B734 227	M. Ablikim *et al.*	(BESIII Collab.)
BONVICINI	14	PR D89 072002	G. Bonvicini *et al.*	(CLEO Collab.)
KO	14	PRL 112 111801	B.R. Ko *et al.*	(BELLE Collab.)
LIBBY	14	PL B731 197	J. Libby *et al.*	(MDRA, OXF, PNL, +)
NISAR	14	PRL 112 211601	N.K. Nisar *et al.*	(BELLE Collab.)
PENG	14	PR D89 091103	T. Peng *et al.*	(BELLE Collab.)
TOMARADZE	14	PR D89 031501	A. Tomaradze *et al.*	(NWES, WAYN)
AAIJ	13AD	PL B723 33	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	13AI	PL B725 15	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	13BR	PL B726 623	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	13CE	PRL 111 251801	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	13N	PRL 110 101802	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	13V	JHEP 1306 065	R. Aaij *et al.*	(LHCb Collab.)
AALTONEN	13AE	PRL 111 231802	T. Aaltonen *et al.*	(CDF Collab.)
DOBBS	13	PRL 110 131802	S. Dobbs *et al.*	(CLEO Collab.)
LEES	13	PR D87 012004	J.P. Lees *et al.*	(BABAR Collab.)
LEES	13S	PR D88 071104	J.P. Lees *et al.*	(BABAR Collab.)
WHITE	13	PR D88 051101	E. White *et al.*	(BELLE Collab.)
AAIJ	12G	PRL 108 111602	R. Aaij *et al.*	(LHCb Collab.)
AAIJ	12K	JHEP 1204 129	R. Aaij *et al.*	(LHCb Collab.)
AALTONEN	12AD	PR D86 032007	T. Aaltonen *et al.*	(CDF Collab.)
AALTONEN	12B	PR D85 012009	T. Aaltonen *et al.*	(CDF Collab.)
AALTONEN	12O	PRL 109 111801	T. Aaltonen *et al.*	(CDF Collab.)
ARTUSO	12	PR D85 122002	M. Artuso *et al.*	(CLEO Collab.)
ASNER	12	PR D86 112001	D.M. Asner	(CLEO Collab.)
INSLER	12	PR D85 092016	J. Insler *et al.*	(CLEO Collab.)
Also		PR D94 099905 (errat.)	J. Insler *et al.*	(CLEO Collab.)
LEES	12L	PR D85 091107	J.P. Lees *et al.*	(BABAR Collab.)
LEES	12Q	PR D86 032001	J.P. Lees *et al.*	(BABAR Collab.)
KO	11	PRL 106 211801	B.R. Ko *et al.*	(BELLE Collab.)
LOWREY	11	PR D84 092005	N. Lowrey *et al.*	(CLEO Collab.)
WILLIAMS	11	PR D84 054015	M. Williams	(LOIC)
AALTONEN	10X	PR D82 091105	T. Aaltonen *et al.*	(CDF Collab.)
ANASHIN	10A	PL B686 84	V.V. Anashin *et al.*	(VEPP-4M KEDR Collab.)
ASNER	10	PR D81 052007	D.M. Asner *et al.*	(CLEO Collab.)
BHATTACHAR...	10A	PR D81 096008	B. Bhattacharya, C.-W. Chiang, J.L. Rosner	(CHIC+)
DEL-AMO-SA...	10	PR D81 111103	P. del Amo Sanchez *et al.*	(BABAR Collab.)
DEL-AMO-SA...	10D	PRL 105 081803	P. del Amo Sanchez *et al.*	(BABAR Collab.)
MENDEZ	10	PR D81 052013	H. Mendez *et al.*	(CLEO Collab.)
PETRIC	10	PR D81 091102	M. Petric *et al.*	(BELLE Collab.)
AUBERT	09AI	PR D80 071103	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	09AN	PRL 103 211801	B. Aubert *et al.*	(BABAR Collab.)
BEDIAGA	09	PR D80 096006	I. Bediaga *et al.*	(CBPF, NDAM)
BESSON	09	PR D80 032005	D. Besson *et al.*	(CLEO Collab.)
Also		PR D79 052010	J.Y. Ge *et al.*	(CLEO Collab.)
LOWREY	09	PR D80 031105	N. Lowrey *et al.*	(CLEO Collab.)
RUBIN	09	PR D79 097101	P. Rubin *et al.*	(CLEO Collab.)
ZUPANC	09	PR D80 052006	A. Zupanc *et al.*	(BELLE Collab.)
AALTONEN	08E	PRL 100 121802	T. Aaltonen *et al.*	(CDF Collab.)
ABLIKIM	08L	PL B665 16	M. Ablikim *et al.*	(BES Collab.)
ARINSTEIN	08	PL B662 102	K. Arinstein *et al.*	(BELLE Collab.)
ARTUSO	08	PR D77 092003	M. Artuso *et al.*	(CLEO Collab.)
ASNER	08	PR D78 012001	D.M. Asner *et al.*	(CLEO Collab.)
AUBERT	08AL	PR D78 034023	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	08AO	PR D78 051102	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	08AZ	PR D78 071101	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	08L	PRL 100 051802	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	08M	PRL 100 061803	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	08U	PR D78 011105	B. Aubert *et al.*	(BABAR Collab.)
BITENC	08	PR D77 112003	U. Bitenc *et al.*	(BELLE Collab.)
BONVICINI	08	PR D77 091106	G. Bonvicini *et al.*	(CLEO Collab.)
DOBBS	08	PR D77 112005	S. Dobbs *et al.*	(CLEO Collab.)
Also		PRL 100 251802	D. Cronin-Hennessy *et al.*	(CLEO Collab.)
GASPERO	08	PR D78 014015	M. Gaspero *et al.*	(ROMA, CINN, TELA)
HE	08	PRL 100 091801	Q. He *et al.*	(CLEO Collab.)
PDG	08	PL B667 1	C. Amsler *et al.*	(PDG Collab.)
STARIC	08	PL B670 190	M. Staric *et al.*	(BELLE Collab.)
ABLIKIM	07G	PL B658 1	M. Ablikim *et al.*	(BES Collab.)
ARTUSO	07A	PRL 99 191801	M. Artuso *et al.*	(CLEO Collab.)

AUBERT	07AB	PR D76 014018	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	07BG	PR D76 052005	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	07BJ	PRL 99 251801	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	07T	PR D76 011102	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	07W	PRL 98 211802	B. Aubert *et al.*	(BABAR Collab.)
CAWLFIELD	07	PRL 98 092002	C. Cawlfield *et al.*	(CLEO Collab.)
DOBBS	07	PR D76 112001	S. Dobbs *et al.*	(CLEO Collab.)
LINK	07A	PR D75 052003	J.M. Link *et al.*	(FNAL FOCUS Collab.)
STARIC	07	PRL 98 211803	M. Staric *et al.*	(BELLE Collab.)
ZHANG	07B	PRL 99 131803	L.M. Zhang *et al.*	(BELLE Collab.)
ABLIKIM	06O	EPJ C47 31	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06U	PL B643 246	M. Ablikim *et al.*	(BES Collab.)
ABULENCIA	06X	PR D74 031109	A. Abulencia *et al.*	(CDF Collab.)
ADAM	06A	PRL 97 251801	N.E. Adam *et al.*	(CLEO Collab.)
AUBERT,B	06N	PRL 97 221803	B. Aubert *et al.*	(BABAR Collab.)
AUBERT,B	06X	PR D74 091102	B. Aubert *et al.*	(BABAR Collab.)
CAWLFIELD	06A	PR D74 031108	C. Cawlfield *et al.*	(CLEO Collab.)
HUANG	06B	PR D74 112005	G.S. Huang *et al.*	(CLEO Collab.)
PDG	06	JP G33 1	W.-M. Yao *et al.*	(PDG Collab.)
RUBIN	06	PRL 96 081802	P. Rubin *et al.*	(CLEO Collab.)
WIDHALM	06	PRL 97 061804	L. Widhalm *et al.*	(BELLE Collab.)
ZHANG	06	PRL 96 151801	L.M. Zhang *et al.*	(BELLE Collab.)
ABLIKIM	05F	PL B622 6	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	05P	PL B625 196	M. Ablikim *et al.*	(BES Collab.)
ACOSTA	05C	PRL 94 122001	D. Acosta *et al.*	(FNAL CDF Collab.)
ASNER	05	PR D72 012001	D.M. Asner *et al.*	(CLEO Collab.)
AUBERT,B	05J	PR D72 052008	B. Aubert *et al.*	(BABAR Collab.)
BITENC	05	PR D72 071101	U. Bitenc *et al.*	(BELLE Collab.)
CAWLFIELD	05	PR D71 077101	C. Cawlfield *et al.*	(CLEO Collab.)
COAN	05	PRL 95 181802	T.E. Coan *et al.*	(CLEO Collab.)
CRONIN-HEN...	05	PR D72 031102	D. Cronin-Hennessy *et al.*	(CLEO Collab.)
HE	05	PRL 95 121801	Q. He *et al.*	(CLEO Collab.)
Also		PRL 96 199903 (errat.)	Q. He *et al.*	(CLEO Collab.)
HUANG	05	PRL 94 011802	G.S. Huang *et al.*	(CLEO Collab.)
KAYIS-TOPAK...	05	PL B626 24	A. Kayis-Topaksu *et al.*	(CERN CHORUS Collab.)
LI	05A	PRL 94 071801	J. Li *et al.*	(BELLE Collab.)
LINK	05	PL B607 51	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	05A	PL B607 59	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	05B	PL B607 67	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	05E	PL B622 239	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	05G	PL B610 225	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	05H	PL B618 23	J.M. Link *et al.*	(FNAL FOCUS Collab.)
ONENGUT	05	PL B613 105	G. Onengut *et al.*	(CERN CHORUS Collab.)
TIAN	05	PRL 95 231801	X.C. Tian *et al.*	(BELLE Collab.)
ABLIKIM	04C	PL B597 39	M. Ablikim *et al.*	(BEPC BES Collab.)
ABT	04	PL B596 173	I. Abt *et al.*	(HERA B Collab.)
ASNER	04A	PR D70 091101	D.M. Asner *et al.*	(CLEO Collab.)
AUBERT	04Q	PR D69 051101	B. Aubert *et al.*	(BABAR Collab.)
AUBERT,B	04Q	PR D70 091102	B. Aubert *et al.*	(BABAR Collab.)
AUBERT,B	04Y	PRL 93 191801	B. Aubert *et al.*	(BABAR Collab.)
LINK	04B	PL B586 21	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	04D	PL B586 191	J.M. Link *et al.*	(FNAL FOCUS Collab.)
RUBIN	04	PRL 93 111801	P. Rubin *et al.*	(CLEO Collab.)
TAJIMA	04	PRL 92 101803	O. Tajima *et al.*	(BELLE Collab.)
ACOSTA	03F	PR D68 091101	D. Acosta *et al.*	(CDF Collab.)
AUBERT	03P	PRL 91 121801	B. Aubert *et al.*	(BABAR Collab.)
AUBERT	03Z	PRL 91 171801	B. Aubert *et al.*	(BABAR Collab.)
COAN	03	PRL 90 101801	T.E. Coan *et al.*	(CLEO Collab.)
LINK	03	PL B555 167	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	03B	PL B556 7	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	03G	PL B575 190	J.M. Link *et al.*	(FNAL FOCUS Collab.)
ABE	02I	PRL 88 162001	K. Abe *et al.*	(KEK BELLE Collab.)
CSORNA	02	PR D65 092001	S.E. Csorna *et al.*	(CLEO Collab.)
LINK	02F	PL B537 192	J.M. Link *et al.*	(FNAL FOCUS Collab.)
MURAMATSU	02	PRL 89 251802	H. Muramatsu *et al.*	(CLEO Collab.)
Also		PRL 90 059901 (errat.)	H. Muramatsu *et al.*	(CLEO Collab.)
AITALA	01C	PRL 86 3969	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	01D	PR D64 112003	E.M. Aitala *et al.*	(FNAL E791 Collab.)
BONVICINI	01	PR D63 071101	G. Bonvicini *et al.*	(CLEO Collab.)
BRANDENB...	01	PRL 87 071802	G. Brandenburg *et al.*	(CLEO Collab.)
DYTMAN	01	PR D64 111101	S.A. Dytman *et al.*	(CLEO Collab.)

KOPP	01	PR D63 092001	S. Kopp *et al.*	(CLEO Collab.)
KUSHNIR...	01	PRL 86 5243	A. Kushnirenko *et al.*	(FNAL SELEX Collab.)
LINK	01	PRL 86 2955	J.M. Link *et al.*	(FNAL FOCUS Collab.)
BAI	00C	PR D62 052001	J.Z. Bai *et al.*	(BEPC BES Collab.)
GODANG	00	PRL 84 5038	R. Godang *et al.*	(CLEO Collab.)
JUN	00	PRL 84 1857	S.Y. Jun *et al.*	(FNAL SELEX Collab.)
LINK	00	PL B485 62	J.M. Link *et al.*	(FNAL FOCUS Collab.)
LINK	00B	PL B491 232	J.M. Link *et al.*	(FNAL FOCUS Collab.)
Also		PL B495 443 (errat.)	J.M. Link *et al.*	(FNAL FOCUS Collab.)
PRIPSTEIN	00	PR D61 032005	D. Pripstein *et al.*	(FNAL E789 Collab.)
AITALA	99E	PRL 83 32	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	99G	PL B462 401	E.M. Aitala *et al.*	(FNAL E791 Collab.)
BONVICINI	99	PRL 82 4586	G. Bonvicini *et al.*	(CLEO Collab.)
AITALA	98	PR D57 13	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	98C	PL B421 405	E.M. Aitala *et al.*	(FNAL E791 Collab.)
AITALA	98D	PL B423 185	E.M. Aitala *et al.*	(FNAL E791 Collab.)
ARTUSO	98	PRL 80 3193	M. Artuso *et al.*	(CLEO Collab.)
ASNER	98	PR D58 092001	D.M. Asner *et al.*	(CLEO Collab.)
BARATE	98W	PL B436 211	R. Barate *et al.*	(ALEPH Collab.)
COAN	98	PRL 80 1150	T.E. Coan *et al.*	(CLEO Collab.)
PDG	98	EPJ C3 1	C. Caso *et al.*	(PDG Collab.)
ADAMOVICH	97	PL B408 469	M.I. Adamovich *et al.*	(CERN BEATRICE Collab.)
BARATE	97C	PL B403 367	R. Barate *et al.*	(ALEPH Collab.)
AITALA	96C	PRL 77 2384	E.M. Aitala *et al.*	(FNAL E791 Collab.)
ALBRECHT	96C	PL B374 249	H. Albrecht *et al.*	(ARGUS Collab.)
ALEXOPOU...	96	PRL 77 2380	T. Alexopoulos *et al.*	(FNAL E771 Collab.)
ASNER	96B	PR D54 4211	D.M. Asner *et al.*	(CLEO Collab.)
BARISH	96	PL B373 334	B.C. Barish *et al.*	(CLEO Collab.)
FRABETTI	96B	PL B382 312	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FREYBERGER	96	PRL 76 3065	A. Freyberger *et al.*	(CLEO Collab.)
Also		PRL 77 2147 (erratum)	A. Freyberger *et al.*	(CLEO Collab.)
KUBOTA	96B	PR D54 2994	Y. Kubota *et al.*	(CLEO Collab.)
ADAMOVICH	95	PL B353 563	M.I. Adamovich *et al.*	(CERN BEATRICE Collab.)
BARTELT	95	PR D52 4860	J.E. Bartelt *et al.*	(CLEO Collab.)
BUTLER	95	PR D52 2656	F. Butler *et al.*	(CLEO Collab.)
FRABETTI	95C	PL B354 486	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	95G	PL B364 127	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KODAMA	95	PL B345 85	K. Kodama *et al.*	(FNAL E653 Collab.)
ALBRECHT	94	PL B324 249	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	94F	PL B340 125	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	94I	ZPHY C64 375	H. Albrecht *et al.*	(ARGUS Collab.)
FRABETTI	94C	PL B321 295	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	94D	PL B323 459	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	94G	PL B331 217	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	94J	PL B340 254	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KODAMA	94	PL B336 605	K. Kodama *et al.*	(FNAL E653 Collab.)
MISHRA	94	PR D50 9	C.S. Mishra *et al.*	(FNAL E789 Collab.)
AKERIB	93	PRL 71 3070	D.S. Akerib *et al.*	(CLEO Collab.)
ALBRECHT	93D	PL B308 435	H. Albrecht *et al.*	(ARGUS Collab.)
ANJOS	93	PR D48 56	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BEAN	93C	PL B317 647	A. Bean *et al.*	(CLEO Collab.)
FRABETTI	93I	PL B315 203	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KODAMA	93B	PL B313 260	K. Kodama *et al.*	(FNAL E653 Collab.)
PROCARIO	93B	PR D48 4007	M. Procario *et al.*	(CLEO Collab.)
SELEN	93	PRL 71 1973	M.A. Selen *et al.*	(CLEO Collab.)
ADAMOVICH	92	PL B280 163	M.I. Adamovich *et al.*	(CERN WA82 Collab.)
ALBRECHT	92P	ZPHY C56 7	H. Albrecht *et al.*	(ARGUS Collab.)
ANJOS	92C	PR D46 1941	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BARLAG	92C	ZPHY C55 383	S. Barlag *et al.*	(ACCMOR Collab.)
Also		ZPHY C48 29	S. Barlag *et al.*	(ACCMOR Collab.)
COFFMAN	92B	PR D45 2196	D.M. Coffman *et al.*	(Mark III Collab.)
Also		PRL 64 2615	J. Adler *et al.*	(Mark III Collab.)
FRABETTI	92	PL B281 167	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
FRABETTI	92B	PL B286 195	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
ALVAREZ	91B	ZPHY C50 11	M.P. Alvarez *et al.*	(CERN NA14/2 Collab.)
AMMAR	91	PR D44 3383	R. Ammar *et al.*	(CLEO Collab.)
ANJOS	91	PR D43 635	J.C. Anjos *et al.*	(FNAL-TPS Collab.)
ANJOS	91D	PR D44 3371	J.C. Anjos *et al.*	(FNAL-TPS Collab.)
BAI	91	PRL 66 1011	Z. Bai *et al.*	(Mark III Collab.)
COFFMAN	91	PL B263 135	D.M. Coffman *et al.*	(Mark III Collab.)
CRAWFORD	91B	PR D44 3394	G. Crawford *et al.*	(CLEO Collab.)

DECAMP	91J	PL B266 218	D. Decamp *et al.*	(ALEPH Collab.)
FRABETTI	91	PL B263 584	P.L. Frabetti *et al.*	(FNAL E687 Collab.)
KINOSHITA	91	PR D43 2836	K. Kinoshita *et al.*	(CLEO Collab.)
KODAMA	91	PRL 66 1819	K. Kodama *et al.*	(FNAL E653 Collab.)
ALBRECHT	90C	ZPHY C46 9	H. Albrecht *et al.*	(ARGUS Collab.)
ALEXANDER	90	PRL 65 1184	J. Alexander *et al.*	(CLEO Collab.)
ALVAREZ	90	ZPHY C47 539	M.P. Alvarez *et al.*	(CERN NA14/2 Collab.)
ANJOS	90D	PR D42 2414	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BARLAG	90C	ZPHY C46 563	S. Barlag *et al.*	(ACCMOR Collab.)
ADLER	89	PRL 62 1821	J. Adler *et al.*	(Mark III Collab.)
ADLER	89C	PR D40 906	J. Adler *et al.*	(Mark III Collab.)
ALBRECHT	89D	ZPHY C43 181	H. Albrecht *et al.*	(ARGUS Collab.)
ANJOS	89F	PRL 62 1587	J.C. Anjos *et al.*	(FNAL E691 Collab.)
ABACHI	88	PL B205 411	S. Abachi *et al.*	(HRS Collab.)
ADLER	88	PR D37 2023	J. Adler *et al.*	(Mark III Collab.)
ADLER	88C	PRL 60 89	J. Adler *et al.*	(Mark III Collab.)
ALBRECHT	88G	PL B209 380	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	88I	PL B210 267	H. Albrecht *et al.*	(ARGUS Collab.)
ANJOS	88C	PRL 60 1239	J.C. Anjos *et al.*	(FNAL E691 Collab.)
BORTOLETTO	88	PR D37 1719	D. Bortoletto *et al.*	(CLEO Collab.)
Also		PR D39 1471 (erratum)	D. Bortoletto *et al.*	(CLEO Collab.)
HAAS	88	PRL 60 1614	P. Haas *et al.*	(CLEO Collab.)
RAAB	88	PR D37 2391	J.R. Raab *et al.*	(FNAL E691 Collab.)
ADLER	87	PL B196 107	J. Adler *et al.*	(Mark III Collab.)
AGUILAR-...	87E	ZPHY C36 551	M. Aguilar-Benitez *et al.*	(LEBC-EHS Collab.)
Also		ZPHY C40 321	M. Aguilar-Benitez *et al.*	(LEBC-EHS Collab.)
AGUILAR-...	87F	ZPHY C36 559	M. Aguilar-Benitez *et al.*	(LEBC-EHS Collab.)
Also		ZPHY C38 520 (erratum)	M. Aguilar-Benitez *et al.*	(LEBC-EHS Collab.)
BARLAG	87B	ZPHY C37 17	S. Barlag *et al.*	(ACCMOR Collab.)
BECKER	87C	PL B193 147	J.J. Becker *et al.*	(Mark III Collab.)
Also		PL B198 590 (erratum)	J.J. Becker *et al.*	(Mark III Collab.)
PALKA	87	PL B189 238	H. Palka *et al.*	(ACCMOR Collab.)
RILES	87	PR D35 2914	K. Riles *et al.*	(Mark II Collab.)
BAILEY	86	ZPHY C30 51	R. Bailey *et al.*	(ACCMOR Collab.)
BEBEK	86	PRL 56 1893	C. Bebek *et al.*	(CLEO Collab.)
LOUIS	86	PRL 56 1027	W.C. Louis *et al.*	(PRIN, CHIC, ISU)
ALBRECHT	85B	PL 158B 525	H. Albrecht *et al.*	(ARGUS Collab.)
ALBRECHT	85F	PL 150B 235	H. Albrecht *et al.*	(ARGUS Collab.)
AUBERT	85	PL 155B 461	J.J. Aubert *et al.*	(EMC Collab.)
BALTRUSAIT...	85E	PRL 55 150	R.M. Baltrusaitis *et al.*	(Mark III Collab.)
BENVENUTI	85	PL 158B 531	A.C. Benvenuti *et al.*	(BCDMS Collab.)
SUMMERS	84	PRL 52 410	D.J. Summers *et al.*	(UCSB, CARL, COLO+)
BAILEY	83B	PL 132B 237	R. Bailey *et al.*	(ACCMOR Collab.)
BODEK	82	PL 113B 82	A. Bodek *et al.*	(ROCH, CIT, CHIC, FNAL+)
SCHINDLER	81	PR D24 78	R.H. Schindler *et al.*	(Mark II Collab.)
AVERY	80	PRL 44 1309	P. Avery *et al.*	(ILL, FNAL, COLU)
ABRAMS	79D	PRL 43 481	G.S. Abrams *et al.*	(Mark II Collab.)
VUILLEMIN	78	PRL 41 1149	V. Vuillemin *et al.*	(LGW Collab.)
PERUZZI	77	PRL 39 1301	I. Peruzzi *et al.*	(LGW Collab.)
PICCOLO	77	PL 70B 260	M. Piccolo *et al.*	(Mark I Collab.)
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