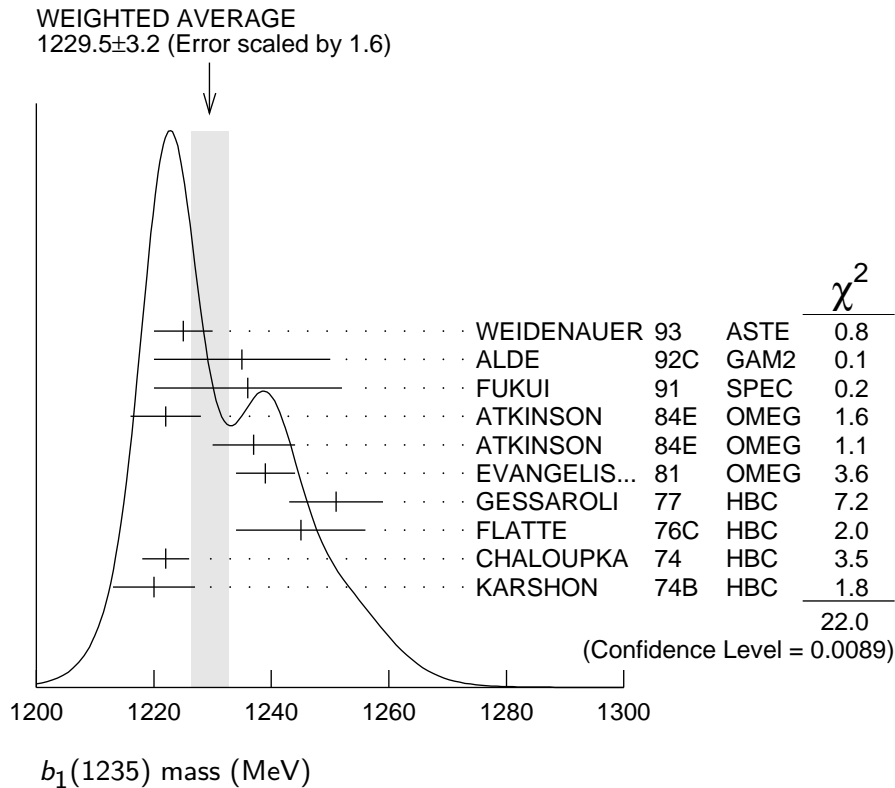


# $b_1(1235)$

$$I^G(J^{PC}) = 1^+(1^{+-})$$

## $b_1(1235)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
<b>1229.5 ± 3.2</b>	<b>OUR AVERAGE</b>	Error includes scale factor of 1.6. See the ideogram below.			
1225 ± 5		WEIDENAUER 93	ASTE		$\bar{p}p \rightarrow 2\pi^+ 2\pi^- \pi^0$
1235 ± 15		ALDE 92C	GAM2		38,100 $\pi^- p \rightarrow \omega \pi^0 n$
1236 ± 16		FUKUI 91	SPEC		8.95 $\pi^- p \rightarrow \omega \pi^0 n$
1222 ± 6		ATKINSON 84E	OMEG ±		25-55 $\gamma p \rightarrow \omega \pi X$
1237 ± 7		ATKINSON 84E	OMEG 0		25-55 $\gamma p \rightarrow \omega \pi X$
1239 ± 5		EVANGELIS...	OMEG -		12 $\pi^- p \rightarrow \omega \pi p$
1251 ± 8	450	GESSAROLI 77	HBC -		11 $\pi^- p \rightarrow \pi^- \omega p$
1245 ± 11	890	FLATTE 76C	HBC -		4.2 $K^- p \rightarrow \pi^- \omega \Sigma^+$
1222 ± 4	1400	CHALOUPKA 74	HBC -		3.9 $\pi^- p$
1220 ± 7	600	KARSHON 74B	HBC +		4.9 $\pi^+ p$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
1190 ± 10		AUGUSTIN 89	DM2 ±		$e^+ e^- \rightarrow 5\pi$
1213 ± 5		ATKINSON 84C	OMEG 0		20-70 $\gamma p$
1271 ± 11		COLLICK 84	SPEC +		200 $\pi^+ Z \rightarrow Z \pi \omega$



**$b_1(1235)$  WIDTH**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>142 \pm 9</math></b>	<b>OUR AVERAGE</b>	Error includes scale factor of 1.2.			
$113 \pm 12$		WEIDENAUER 93	ASTE		$\bar{p}p \rightarrow 2\pi^+ 2\pi^- \pi^0$
$160 \pm 30$		ALDE 92C	GAM2		$38,100 \pi^- p \rightarrow \omega \pi^0 n$
$151 \pm 31$		FUKUI 91	SPEC		$8.95 \pi^- p \rightarrow \omega \pi^0 n$
$170 \pm 15$		EVANGELIS...	81 OMEG	-	$12 \pi^- p \rightarrow \omega \pi p$
$170 \pm 50$	225	BALTAY 78B	HBC	+	$15 \pi^+ p \rightarrow p 4\pi$
$155 \pm 32$	450	GESSAROLI 77	HBC	-	$11 \pi^- p \rightarrow \pi^- \omega p$
$182 \pm 45$	890	FLATTE 76C	HBC	-	$4.2 K^- p \rightarrow \pi^- \omega \Sigma^+$
$135 \pm 20$	1400	CHALOUPKA 74	HBC	-	$3.9 \pi^- p$
$156 \pm 22$	600	KARSHON 74B	HBC	+	$4.9 \pi^+ p$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
$210 \pm 19$		AUGUSTIN 89	DM2	±	$e^+ e^- \rightarrow 5\pi$
$231 \pm 14$		ATKINSON 84C	OMEG	0	$20-70 \gamma p$
$232 \pm 29$		COLLICK 84	SPEC	+	$200 \pi^+ Z \rightarrow Z \pi \omega$

 **$b_1(1235)$  DECAY MODES**

Mode	Fraction ( $\Gamma_i/\Gamma$ )	Confidence level
$\Gamma_1$ $\omega \pi$ [ $D/S$ amplitude ratio = $0.277 \pm 0.027$ ]	seen	
$\Gamma_2$ $\pi^\pm \gamma$	$(1.6 \pm 0.4) \times 10^{-3}$	
$\Gamma_3$ $\eta \rho$	seen	
$\Gamma_4$ $\pi^+ \pi^+ \pi^- \pi^0$	< 50 %	84%
$\Gamma_5$ $K^*(892)^\pm K^\mp$	seen	
$\Gamma_6$ $(K\bar{K})^\pm \pi^0$	< 8 %	90%
$\Gamma_7$ $K_S^0 K_L^0 \pi^\pm$	< 6 %	90%
$\Gamma_8$ $K_S^0 K_S^0 \pi^\pm$	< 2 %	90%
$\Gamma_9$ $\phi \pi$	< 1.5 %	84%

 **$b_1(1235)$  PARTIAL WIDTHS**

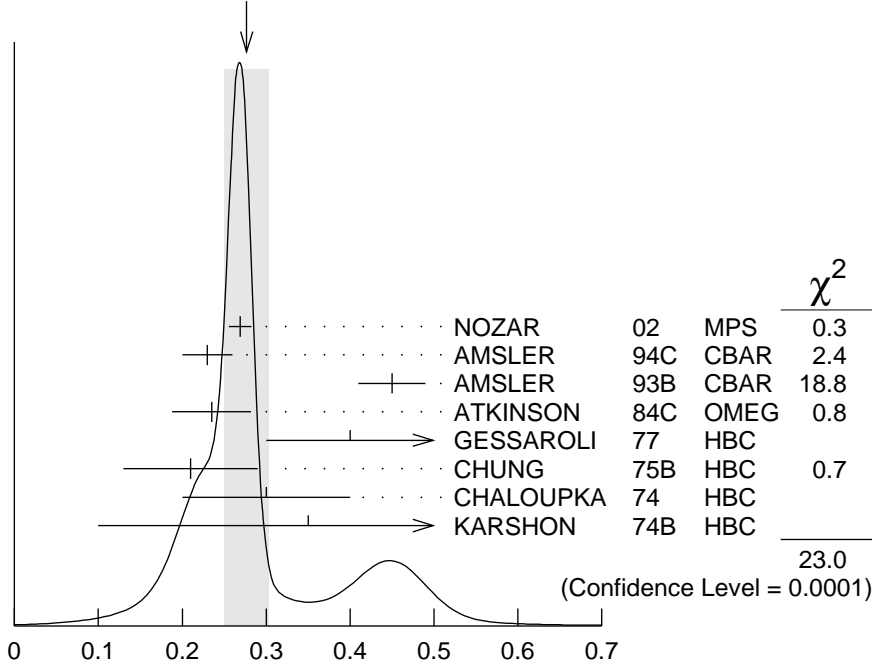
$\Gamma(\pi^\pm \gamma)$	VALUE (keV)	DOCUMENT ID	TECN	CHG	COMMENT	$\Gamma_2$
	<b><math>230 \pm 60</math></b>	COLLICK	84	SPEC	+	$200 \pi^+ Z \rightarrow Z \pi \omega$

 **$b_1(1235)$  D-wave/S-wave AMPLITUDE RATIO  
IN DECAY OF  $b_1(1235) \rightarrow \omega \pi$** 

VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>0.277 \pm 0.027</math></b>	<b>OUR AVERAGE</b>	Error includes scale factor of 2.4. See the ideogram below.			
$0.269 \pm 0.009 \pm 0.010$		NOZAR 02	MPS	-	$18 \pi^- p \rightarrow \omega \pi^- p$
$0.23 \pm 0.03$		AMSLER 94C	CBAR		$0.0 \bar{p}p \rightarrow \omega \eta \pi^0$
$0.45 \pm 0.04$		AMSLER 93B	CBAR		$0.0 \bar{p}p \rightarrow \omega \pi^0 \pi^0$
$0.235 \pm 0.047$		ATKINSON 84C	OMEG		$20-70 \gamma p$

0.4	+0.1 -0.1		GESSAROLI	77	HBC	-	11 $\pi^- p \rightarrow \pi^- \omega p$
0.21	$\pm 0.08$		CHUNG	75B	HBC	+	7.1 $\pi^+ p$
0.3	$\pm 0.1$		CHALOUPKA	74	HBC	-	3.9-7.5 $\pi^- p$
0.35	$\pm 0.25$	600	KARSHON	74B	HBC	+	4.9 $\pi^+ p$

WEIGHTED AVERAGE  
0.277 $\pm$ 0.027 (Error scaled by 2.4)



$b_1(1235)$  D-wave/S-wave amplitude ratio in decay of  $b_1(1235) \rightarrow \omega \pi$

**$b_1(1235)$  D-wave/S-wave AMPLITUDE PHASE DIFFERENCE  
IN DECAY OF  $b_1(1235) \rightarrow \omega \pi$**

VALUE (°)	DOCUMENT ID	TECN	CHG	COMMENT
<b>10.5<math>\pm</math>2.4<math>\pm</math>3.9</b>	NOZAR	02	MPS	- 18 $\pi^- p \rightarrow \omega \pi^- p$

**$b_1(1235)$  BRANCHING RATIOS**

$\Gamma(\eta\rho)/\Gamma(\omega\pi)$	DOCUMENT ID	TECN	COMMENT	$\Gamma_3/\Gamma_1$
<b>&lt;0.10</b>	ATKINSON	84D	OMEG 20-70 $\gamma p$	

$\Gamma(\pi^+ \pi^+ \pi^- \pi^0)/\Gamma(\omega\pi)$	DOCUMENT ID	TECN	CHG	COMMENT	$\Gamma_4/\Gamma_1$
<b>&lt;0.5</b>	ABOLINS	63	HBC	+ 3.5 $\pi^+ p$	

$\Gamma(K^*(892)^\pm K^\mp)/\Gamma_{\text{total}}$   $\Gamma_5/\Gamma$

VALUE	DOCUMENT ID	TECN	COMMENT
<b>seen</b>	<sup>1</sup> ABLIKIM	10E BES2	$J/\psi \rightarrow K^\pm K_S^0 \pi^\mp \pi^0$

<sup>1</sup> From a fit including ten additional resonances and energy-independent Breit-Wigner width.

$\Gamma((K\bar{K})^\pm \pi^0)/\Gamma(\omega\pi)$   $\Gamma_6/\Gamma_1$

VALUE	CL%	DOCUMENT ID	TECN	CHG	COMMENT
<b>&lt;0.08</b>	90	BALTAY	67	HBC	$\pm$ 0.0 $\bar{p}p$

$\Gamma(K_S^0 K_L^0 \pi^\pm)/\Gamma(\omega\pi)$   $\Gamma_7/\Gamma_1$

VALUE	CL%	DOCUMENT ID	TECN	CHG	COMMENT
<b>&lt;0.06</b>	90	BALTAY	67	HBC	$\pm$ 0.0 $\bar{p}p$

$\Gamma(K_S^0 K_S^0 \pi^\pm)/\Gamma(\omega\pi)$   $\Gamma_8/\Gamma_1$

VALUE	CL%	DOCUMENT ID	TECN	CHG	COMMENT
<b>&lt;0.02</b>	90	BALTAY	67	HBC	$\pm$ 0.0 $\bar{p}p$

$\Gamma(\phi\pi)/\Gamma(\omega\pi)$   $\Gamma_9/\Gamma_1$

VALUE	CL%	DOCUMENT ID	TECN	CHG	COMMENT
<b>&lt;0.004</b>	95	VIKTOROV	96	SPEC	0 32.5 $\pi^- p \rightarrow K^+ K^- \pi^0 n$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.04	95	BIZZARRI	69	HBC	$\pm$ 0.0 $\bar{p}p$
<0.015		DAHL	67	HBC	1.6–4.2 $\pi^- p$

**$b_1(1235)$  REFERENCES**

ABLIKIM	10E	PL B693 88	M. Ablikim <i>et al.</i>	(BES II Collab.)
NOZAR	02	PL B541 35	M. Nozar <i>et al.</i>	
VIKTOROV	96	PAN 59 1184	V.A. Viktorov <i>et al.</i>	(SERP)
		Translated from YAF 59 1239.		
AMSLER	94C	PL B327 425	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
AMSLER	93B	PL B311 362	C. Amsler <i>et al.</i>	(Crystal Barrel Collab.)
WEIDENAUER	93	ZPHY C59 387	P. Weidenauer <i>et al.</i>	(ASTERIX Collab.)
ALDE	92C	ZPHY C54 553	D.M. Alde <i>et al.</i>	(BELG, SERP, KEK, LANL+)
FUKUI	91	PL B257 241	S. Fukui <i>et al.</i>	(SUGI, NAGO, KEK, KYOT+)
AUGUSTIN	89	NP B320 1	J.E. Augustin, G. Cosme	(DM2 Collab.)
ATKINSON	84C	NP B243 1	M. Atkinson <i>et al.</i>	(BONN, CERN, GLAS+) JP
ATKINSON	84D	NP B242 269	M. Atkinson <i>et al.</i>	(BONN, CERN, GLAS+)
ATKINSON	84E	PL 138B 459	M. Atkinson <i>et al.</i>	(BONN, CERN, GLAS+)
COLLICK	84	PRL 53 2374	B. Collick <i>et al.</i>	(MINN, ROCH, FNAL)
EVANGELIS...	81	NP B178 197	C. Evangelista <i>et al.</i>	(BARI, BONN, CERN+)
BALTAY	78B	PR D17 62	C. Baltay <i>et al.</i>	(COLU, BING)
GESSAROLI	77	NP B126 382	R. Gessaroli <i>et al.</i>	(BGNA, FIRZ, GENO+) JP
FLATTE	76C	PL 64B 225	S.M. Flatte <i>et al.</i>	(CERN, AMST, NIJM+) JP
CHUNG	75B	PR D11 2426	S.U. Chung <i>et al.</i>	(BNL, LBL, UCSC) JP
CHALOUPKA	74	PL 51B 407	V. Chaloupka <i>et al.</i>	(CERN) JP
KARSHON	74B	PR D10 3608	U. Karshon <i>et al.</i>	(REHO) JP
BIZZARRI	69	NP B14 169	R. Bizzarri <i>et al.</i>	(CERN, CDEF)
BALTAY	67	PRL 18 93	C. Baltay <i>et al.</i>	(COLU)
DAHL	67	PR 163 1377	O.I. Dahl <i>et al.</i>	(LRL)
ABOLINS	63	PRL 11 381	M.A. Abolins <i>et al.</i>	(UCSD)