

$\Delta(2400) 9/2^-$  $I(J^P) = \frac{3}{2}(\frac{9}{2}^-)$  Status: \*\*

OMITTED FROM SUMMARY TABLE

 **$\Delta(2400)$  POLE POSITION****REAL PART**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2260±60	CUTKOSKY 80	IPWA	$\pi N \rightarrow \pi N$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
1931	ROENCHEN 15A	DPWA	Multichannel
1983	ARNDT 06	DPWA	$\pi N \rightarrow \pi N, \eta N$

**−2×IMAGINARY PART**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
320±160	CUTKOSKY 80	IPWA	$\pi N \rightarrow \pi N$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
442	ROENCHEN 15A	DPWA	Multichannel
878	ARNDT 06	DPWA	$\pi N \rightarrow \pi N, \eta N$

 **$\Delta(2400)$  ELASTIC POLE RESIDUE****MODULUS  $|r|$** 

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
8±4	CUTKOSKY 80	IPWA	$\pi N \rightarrow \pi N$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
13	ROENCHEN 15A	DPWA	Multichannel
24	ARNDT 06	DPWA	$\pi N \rightarrow \pi N, \eta N$

**PHASE  $\theta$** 

<u>VALUE (°)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
− 25±15	CUTKOSKY 80	IPWA	$\pi N \rightarrow \pi N$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
− 96	ROENCHEN 15A	DPWA	Multichannel
− 139	ARNDT 06	DPWA	$\pi N \rightarrow \pi N, \eta N$

 **$\Delta(2400)$  INELASTIC POLE RESIDUE**The “normalized residue” is the residue divided by  $\Gamma_{pole}/2$ .**Normalized residue in  $N\pi \rightarrow \Delta(2400) \rightarrow \Sigma K$** 

<u>MODULUS</u>	<u>PHASE (°)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
0.009	25	ROENCHEN 15A	DPWA	Multichannel

**Normalized residue in  $N\pi \rightarrow \Delta(2400) \rightarrow \Delta\pi$ , G-wave**

<u>MODULUS</u>	<u>PHASE (<math>^\circ</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.18	-110	ROENCHEN	15A DPWA	Multichannel

**Normalized residue in  $N\pi \rightarrow \Delta(2400) \rightarrow \Delta\pi$ , I-wave**

<u>MODULUS</u>	<u>PHASE (<math>^\circ</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.012	-1.0	ROENCHEN	15A DPWA	Multichannel

 **$\Delta(2400)$  BREIT-WIGNER MASS**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2643 $\pm$ 141	<sup>1</sup> ARNDT 06	DPWA	$\pi N \rightarrow \pi N, \eta N$
2300 $\pm$ 100	CUTKOSKY 80	IPWA	$\pi N \rightarrow \pi N$
2468 $\pm$ 50	HOEHLER 79	IPWA	$\pi N \rightarrow \pi N$

<sup>1</sup>Statistical error only. **$\Delta(2400)$  BREIT-WIGNER WIDTH**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
895 $\pm$ 432	<sup>2</sup> ARNDT 06	DPWA	$\pi N \rightarrow \pi N, \eta N$
330 $\pm$ 100	CUTKOSKY 80	IPWA	$\pi N \rightarrow \pi N$
480 $\pm$ 100	HOEHLER 79	IPWA	$\pi N \rightarrow \pi N$

<sup>2</sup>Statistical error only. **$\Delta(2400)$  DECAY MODES**

<u>Mode</u>	<u>Fraction (<math>\Gamma_i/\Gamma</math>)</u>
$\Gamma_1$ $N\pi$	3-9 %

 **$\Delta(2400)$  BRANCHING RATIOS**

<u><math>\Gamma(N\pi)/\Gamma_{\text{total}}</math></u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	<u><math>\Gamma_1/\Gamma</math></u>
6.4 $\pm$ 2.2	<sup>3</sup> ARNDT 06	DPWA	$\pi N \rightarrow \pi N, \eta N$	
5 $\pm$ 2	CUTKOSKY 80	IPWA	$\pi N \rightarrow \pi N$	
6 $\pm$ 3	HOEHLER 79	IPWA	$\pi N \rightarrow \pi N$	

<sup>3</sup>Statistical error only. **$\Delta(2400)$  PHOTON DECAY AMPLITUDES AT THE POLE** **$\Delta(2400) \rightarrow N\gamma$ , helicity-1/2 amplitude  $A_{1/2}$** 

<u>MODULUS (<math>\text{GeV}^{-1/2}</math>)</u>	<u>PHASE (<math>^\circ</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
-0.128 <sup>+0.046</sup> <sub>-0.012</sub>	118 <sup>+24</sup> <sub>-3</sub>	ROENCHEN	14 DPWA	
-0.034	63	ROENCHEN	15A DPWA	Multichannel

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

**$\Delta(2400) \rightarrow N\gamma$ , helicity-3/2 amplitude  $A_{3/2}$**

<u>MODULUS (<math>\text{GeV}^{-1/2}</math>)</u>	<u>PHASE (<math>^\circ</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
$-0.115^{+0.042}_{-0.024}$	$140^{+17}_{-28}$	ROENCHEN	14	DPWA
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
0.054	-75	ROENCHEN	15A	DPWA Multichannel

**$\Delta(2400)$  REFERENCES**

ROENCHEN	15A	EPJ A51 70	D. Roenchen <i>et al.</i>	
ROENCHEN	14	EPJ A50 101	D. Roenchen <i>et al.</i>	
Also		EPJ A51 63 (errat.)	D. Roenchen <i>et al.</i>	
ARNDT	06	PR C74 045205	R.A. Arndt <i>et al.</i>	(GWU)
CUTKOSKY	80	Toronto Conf. 19	R.E. Cutkosky <i>et al.</i>	(CMU, LBL) IJP
Also		PR D20 2839	R.E. Cutkosky <i>et al.</i>	(CMU, LBL)
HOEHLER	79	PDAT 12-1	G. Hohler <i>et al.</i>	(KARLT) IJP
Also		Toronto Conf. 3	R. Koch	(KARLT) IJP