

$\Delta(2400) \ 9/2^-$

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

NODE=B124

OMITTED FROM SUMMARY TABLE

$\Delta(2400)$ POLE POSITION

NODE=B124215

REAL PART

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
2458 ± 2	ROENCHEN	22	DPWA Multichannel
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 $\pi N \rightarrow \pi N, \eta N$

 NODE=B124RE
 NODE=B124RE

−2×IMAGINARY PART

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
280 ± 2	ROENCHEN	22	DPWA Multichannel
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 $\pi N \rightarrow \pi N, \eta N$

 NODE=B124IM
 NODE=B124IM

$\Delta(2400)$ ELASTIC POLE RESIDUE

NODE=B124220

MODULUS $|r|$

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
5.4 ± 2.7	ROENCHEN	22	DPWA Multichannel
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 $\pi N \rightarrow \pi N, \eta N$

 NODE=B124RER
 NODE=B124RER

PHASE θ

VALUE (°)	DOCUMENT ID	TECN	COMMENT
8.4 ± 17	ROENCHEN	22	DPWA Multichannel
− 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 $\pi N \rightarrow \pi N, \eta N$

 NODE=B124IMR
 NODE=B124IMR

$\Delta(2400)$ INELASTIC POLE RESIDUE

NODE=B124240

The “normalized residue” is the residue divided by $\Gamma_{pole}/2$.

NODE=B124240

Normalized residue in $N\pi \rightarrow \Delta(2400) \rightarrow \Sigma K$

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
0.004 ± 0.003	17 ± 15	ROENCHEN	22	DPWA Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.009	25	ROENCHEN	15A	DPWA Multichannel

 NODE=B124A00
 NODE=B124A00

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

MODULUS	PHASE (°)	DOCUMENT ID	TECN	COMMENT
0.10 ± 0.05	17 ± 11	ROENCHEN	22	DPWA Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.18	− 110	ROENCHEN	15A	DPWA Multichannel

 NODE=B124A01
 NODE=B124A01

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

<u>MODULUS</u>	<u>PHASE ($^{\circ}$)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.019 ± 0.003	-120 ± 25	ROENCHEN	22 DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.012	-1.0	ROENCHEN	15A DPWA	Multichannel

NODE=B124A02
 NODE=B124A02

 $\Delta(2400)$ BREIT-WIGNER MASS

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

¹ Statistical error only.

NODE=B124M

NODE=B124M

NODE=B124M;LINKAGE=A

 $\Delta(2400)$ BREIT-WIGNER WIDTH

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

² Statistical error only.

NODE=B124W

NODE=B124W

NODE=B124W;LINKAGE=A

 $\Delta(2400)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 $N\pi$	3-9 %

NODE=B124225;NODE=B124

DESIG=1;OUR EST

 $\Delta(2400)$ BRANCHING RATIOS

$\Gamma(N\pi)/\Gamma_{\text{total}}$					Γ_1/Γ
<u>VALUE (%)</u>	<u>DOCUMENT ID</u>		<u>TECN</u>	<u>COMMENT</u>	
6.4 ± 2.2	³	ARNDT	06	DPWA	$\pi N \rightarrow \pi N, \eta N$
5 ± 2		CUTKOSKY	80	IPWA	$\pi N \rightarrow \pi N$
6 ± 3		HOEHLER	79	IPWA	$\pi N \rightarrow \pi N$

³ Statistical error only.

NODE=B124230

NODE=B124R1
 NODE=B124R1

NODE=B124R1;LINKAGE=A

 $\Delta(2400)$ PHOTON DECAY AMPLITUDES AT THE POLE **$\Delta(2400) \rightarrow N\gamma$, helicity-1/2 amplitude $A_{1/2}$**

<u>MODULUS ($\text{GeV}^{-1/2}$)</u>	<u>PHASE ($^{\circ}$)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.021 ± 0.007	-67 ± 12	ROENCHEN	22 DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
-0.034	63	ROENCHEN	15A DPWA	Multichannel

NODE=B124260

NODE=B124PA1
 NODE=B124PA1

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

<u>MODULUS ($\text{GeV}^{-1/2}$)</u>	<u>PHASE ($^{\circ}$)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.022 ± 0.007	122 ± 7	ROENCHEN	22 DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.054	-75	ROENCHEN	15A DPWA	Multichannel

NODE=B124PA2
 NODE=B124PA2

 $\Delta(2400)$ REFERENCES

ROENCHEN	22	EPJ A58 229	D. Roenchen <i>et al.</i>	(JULI, GWU, BONN+)
ROENCHEN	15A	EPJ A51 70	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

NODE=B124

REFID=61999
 REFID=58183
 REFID=51535
 REFID=30064
 REFID=40096
 REFID=30058
 REFID=30859