

$$N(2250) \ G_{19}$$

$$I(J^P) = \frac{1}{2}(\frac{9}{2}^-) \text{ Status: } ****$$

***N*(2250) BREIT-WIGNER MASS**

<i>VALUE</i> (MeV)	<i>DOCUMENT ID</i>	<i>TECN</i>	<i>COMMENT</i>
2170 to 2310 ($\approx$ 2250) OUR ESTIMATE			
2250 $\pm$ 80	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
2268 $\pm$ 15	HOEHLER	79	IPWA $\pi N \rightarrow \pi N$
2200 $\pm$ 100	HENDRY	78	MPWA $\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
2291	ARNDT	95	DPWA $\pi N \rightarrow N\pi$

***N*(2250) BREIT-WIGNER WIDTH**

<i>VALUE</i> (MeV)	<i>DOCUMENT ID</i>	<i>TECN</i>	<i>COMMENT</i>
290 to 470 ($\approx$ 400) OUR ESTIMATE			
480 $\pm$ 120	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
300 $\pm$ 40	HOEHLER	79	IPWA $\pi N \rightarrow \pi N$
350 $\pm$ 100	HENDRY	78	MPWA $\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
772	ARNDT	95	DPWA $\pi N \rightarrow N\pi$

***N*(2250) POLE POSITION**

REAL PART

<i>VALUE</i> (MeV)	<i>DOCUMENT ID</i>	<i>TECN</i>	<i>COMMENT</i>
2080 to 2200 ($\approx$ 2140) OUR ESTIMATE			
2087	ARNDT	95	DPWA $\pi N \rightarrow N\pi$
2187	¹ HOEHLER	93	SPED $\pi N \rightarrow \pi N$
2150 $\pm$ 50	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
2243	ARNDT	91	DPWA $\pi N \rightarrow \pi N$ Soln SM90

−2×IMAGINARY PART

<i>VALUE</i> (MeV)	<i>DOCUMENT ID</i>	<i>TECN</i>	<i>COMMENT</i>
280 to 680 ($\approx$ 480) OUR ESTIMATE			
680	ARNDT	95	DPWA $\pi N \rightarrow N\pi$
388	¹ HOEHLER	93	SPED $\pi N \rightarrow \pi N$
360 $\pm$ 100	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
650	ARNDT	91	DPWA $\pi N \rightarrow \pi N$ Soln SM90

***N*(2250) ELASTIC POLE RESIDUE**

MODULUS $|r|$

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
24	ARNDT	95	DPWA $\pi N \rightarrow N\pi$
21	HOEHLER	93	SPED $\pi N \rightarrow \pi N$
20±6	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
47	ARNDT	91	DPWA $\pi N \rightarrow \pi N$ Soln SM90

PHASE θ

<u>VALUE (°)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
−44	ARNDT	95	DPWA $\pi N \rightarrow N\pi$
−50±20	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
−37	ARNDT	91	DPWA $\pi N \rightarrow \pi N$ Soln SM90

***N*(2250) DECAY MODES**

The following branching fractions are our estimates, not fits or averages.

Mode	Fraction (Γ_i/Γ)
Γ_1 $N\pi$	5–15 %
Γ_2 $N\eta$	
Γ_3 ΛK	

***N*(2250) BRANCHING RATIOS**

$\Gamma(N\pi)/\Gamma_{\text{total}}$					Γ_1/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
0.05 to 0.15 OUR ESTIMATE					
0.10±0.02	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$		
0.10±0.02	HOEHLER	79	IPWA $\pi N \rightarrow \pi N$		
0.09±0.02	HENDRY	78	MPWA $\pi N \rightarrow \pi N$		
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.10	ARNDT	95	DPWA $\pi N \rightarrow N\pi$		

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow N(2250) \rightarrow N\eta$					$(\Gamma_1\Gamma_2)^{1/2}/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
• • • We do not use the following data for averages, fits, limits, etc. • • •					
−0.043	BAKER	79	DPWA $\pi^- p \rightarrow n\eta$		

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow N(2250) \rightarrow \Lambda K$					$(\Gamma_1\Gamma_3)^{1/2}/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
−0.02	BELL	83	DPWA $\pi^- p \rightarrow \Lambda K^0$		
not seen	SAXON	80	DPWA $\pi^- p \rightarrow \Lambda K^0$		

***N*(2250) FOOTNOTES**

¹ See HOEHLER 93 for a detailed discussion of the evidence for and the pole parameters of *N* and Δ resonances as determined from Argand diagrams of πN elastic partial-wave amplitudes and from plots of the speeds with which the amplitudes traverse the diagrams.

***N*(2250) REFERENCES**

ARNDT	95	PR C52 2120	R.A. Arndt <i>et al.</i>	(VPI, BRCO)
HOEHLER	93	πN Newsletter 9 1	G. Hohler	(KARL)
ARNDT	91	PR D43 2131	R.A. Arndt <i>et al.</i>	(VPI, TELE) IJP
BELL	83	NP B222 389	K.W. Bell <i>et al.</i>	(RL) IJP
CUTKOSKY	80	Toronto Conf. 19	R.E. Cutkosky <i>et al.</i>	(CMU, LBL) IJP
Also	79	PR D20 2839	R.E. Cutkosky <i>et al.</i>	(CMU, LBL) IJP
SAXON	80	NP B162 522	D.H. Saxon <i>et al.</i>	(RHEL, BRIS) IJP
BAKER	79	NP B156 93	R.D. Baker <i>et al.</i>	(RHEL) IJP
HOEHLER	79	PDAT 12-1	G. Hohler <i>et al.</i>	(KARLT) IJP
Also	80	Toronto Conf. 3	R. Koch	(KARLT) IJP
HENDRY	78	PRL 41 222	A.W. Hendry	(IND, LBL) IJP
Also	81	ANP 136 1	A.W. Hendry	(IND)
