

$N(2250) G_{19}$

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

$N(2250)$ BREIT-WIGNER MASS

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2170 to 2310 (≈ 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

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
290 to 470 (≈ 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

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2080 to 2200 (≈ 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

-2xIMAGINARY PART

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
280 to 680 (≈ 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

$\Gamma(N\pi)/\Gamma_{\text{total}}$	<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_1/Γ
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 $N\pi \rightarrow N(2250) \rightarrow N\eta$	<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	$(\Gamma_1\Gamma_2)^{1/2}/\Gamma$
● ● ● 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 $N\pi \rightarrow N(2250) \rightarrow \Lambda K$	<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	$(\Gamma_1\Gamma_3)^{1/2}/\Gamma$
	-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	+Strakovsky, Workman, Pavan	(VPI, BRCO)
HOEHLER	93	πN Newsletter 9 1		(KARL)
ARNDT	91	PR D43 2131	+Li, Roper, Workman, Ford	(VPI, TELE) IJP
BELL	83	NP B222 389	+Blissett, Broome, Daley, Hart, Lintern+	(RL) IJP
CUTKOSKY	80	Toronto Conf. 19	+Forsyth, Babcock, Kelly, Hendrick	(CMU, LBL) IJP
Also	79	PR D20 2839	Cutkosky, Forsyth, Hendrick, Kelly	(CMU, LBL) IJP
SAXON	80	NP B162 522	+Baker, Bell, Blissett, Bloodworth+	(RHEL, BRIS) IJP
BAKER	79	NP B156 93	+Brown, Clark, Davies, Depagter, Evans+	(RHEL) IJP
HOEHLER	79	PDAT 12-1	+Kaiser, Koch, Pietarinen	(KARLT) IJP
Also	80	Toronto Conf. 3	Koch	(KARLT) IJP
HENDRY	78	PRL 41 222		(IND, LBL) IJP
Also	81	ANP 136 1	Hendry	(IND)
