

N(2250) G₁₉

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

N(2250) BREIT-WIGNER MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
2170 to 2310 (≈ 2250) OUR ESTIMATE			
2250 ± 80	CUTKOSKY	80	IPWA π N → π N
2268 ± 15	HOEHLER	79	IPWA π N → π N
2200 ± 100	HENDRY	78	MPWA π N → π N
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
2291	ARNDT	95	DPWA π N → N π

N(2250) BREIT-WIGNER WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
290 to 470 (≈ 400) OUR ESTIMATE			
480 ± 120	CUTKOSKY	80	IPWA π N → π N
300 ± 40	HOEHLER	79	IPWA π N → π N
350 ± 100	HENDRY	78	MPWA π N → π N
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
772	ARNDT	95	DPWA π N → N π

N(2250) POLE POSITION

REAL PART

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
2080 to 2200 (≈ 2140) OUR ESTIMATE			
2087	ARNDT	95	DPWA π N → N π
2187	¹ HOEHLER	93	SPED π N → π N
2150 ± 50	CUTKOSKY	80	IPWA π N → π N
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
2243	ARNDT	91	DPWA π N → π N Soln SM90

−2×IMAGINARY PART

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
280 to 680 (≈ 480) OUR ESTIMATE			
680	ARNDT	95	DPWA π N → N π
388	¹ HOEHLER	93	SPED π N → π N
360 ± 100	CUTKOSKY	80	IPWA π N → π N
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
650	ARNDT	91	DPWA π N → π 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>	$(\Gamma_1\Gamma_2)^{1/2}/\Gamma$
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● ● ● 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>	$(\Gamma_1\Gamma_3)^{1/2}/\Gamma$
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	-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)
