$N(2250)\ 9/2^-$

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

Older and obsolete values are listed and referenced in the 2014 edition, Chinese Physics **C38** 070001 (2014).

N(2250) POLE POSITION

REAL PART

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
2150 to 2250 (≈ 2200) OUR ESTIMATE				
2157± 3±14	[1] SVARC	14	L+P	$\pi N \to \pi N$
2195±45	ANISOVICH	12A	DPWA	Multichannel
2217	ARNDT	06	DPWA	$\pi N \to \pi N, \eta N$
2187	HOEHLER	93	SPED	$\pi N \to \pi N$
2150±50	CUTKOSKY	80	IPWA	$\pi N \to \pi N$

−2×IMAGINARY PART

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
350 to 550 (≈ 450) OUR ESTIMATE				
412± 7±44	[1] SVARC	14	L+P	$\pi N \to \pi N$
470± 50	ANISOVICH	12A	DPWA	Multichannel
431	ARNDT	06	DPWA	$\pi N \to \pi N, \eta N$
388	HOEHLER	93	SPED	$\pi N \to \pi N$
360±100	CUTKOSKY	80	IPWA	$\pi N \to \pi N$

N(2250) ELASTIC POLE RESIDUE

MODULUS $|r|$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
20 to 30 (≈ 25) OUR ESTIMATE				
24±1±5	[1] SVARC	14	L+P	$\pi N \to \pi N$
26±5	ANISOVICH	12A	DPWA	Multichannel
21	ARNDT	06	DPWA	$\pi N \to \pi N, \eta N$
21	HOEHLER	93	SPED	$\pi N \to \pi N$
20±6	CUTKOSKY	80	IPWA	$\pi N \to \pi N$

PHASE θ

VALUE (°)	*DOCUMENT ID*		*TECN*	*COMMENT*
−20 to −60 (≈ −40) OUR ESTIMATE				
−62± 1±11	[1] SVARC	14	L+P	$\pi N \to \pi N$
−38±25	ANISOVICH	12A	DPWA	Multichannel
−20	ARNDT	06	DPWA	$\pi N \to \pi N, \eta N$
−50±20	CUTKOSKY	80	IPWA	$\pi N \to \pi N$

N(2250) BREIT-WIGNER MASS

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
2250 to 2320 (≈ 2280) OUR ESTIMATE				
2280±40	ANISOVICH	12A	DPWA	Multichannel
2302± 6	ARNDT	06	DPWA	$\pi N \rightarrow \pi N, \eta N$
2250±80	CUTKOSKY	80	IPWA	$\pi N \rightarrow \pi N$
2268±15	HOEHLER	79	IPWA	$\pi N \rightarrow \pi N$

N(2250) BREIT-WIGNER WIDTH

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
300 to 600 (≈ 500) OUR ESTIMATE				
520± 50	ANISOVICH	12A	DPWA	Multichannel
628± 28	ARNDT	06	DPWA	$\pi N \rightarrow \pi N, \eta N$
480±120	CUTKOSKY	80	IPWA	$\pi N \rightarrow \pi N$
300± 40	HOEHLER	79	IPWA	$\pi N \rightarrow \pi N$

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 %

N(2250) BRANCHING RATIOS

$\Gamma(N\pi)/\Gamma_{total}$ Γ_1/Γ

VALUE (%)	DOCUMENT ID		TECN	COMMENT
5 to 15 OUR ESTIMATE				
12 ±4	ANISOVICH	12A	DPWA	Multichannel
8.9±0.1	ARNDT	06	DPWA	$\pi N \rightarrow \pi N, \eta N$
10 ±2	CUTKOSKY	80	IPWA	$\pi N \rightarrow \pi N$
10 ±2	HOEHLER	79	IPWA	$\pi N \rightarrow \pi N$

N(2250) PHOTON DECAY AMPLITUDES AT THE POLE

N(2250) → pγ, helicity-1/2 amplitude $A_{1/2}$

MODULUS ($GeV^{-1/2}$)	PHASE (°)	DOCUMENT ID		TECN
$-0.090^{+0.025}_{-0.022}$	-49^{+17}_{-11}	ROENCHEN	14	DPWA

N(2250) → pγ, helicity-3/2 amplitude $A_{3/2}$

MODULUS ($GeV^{-1/2}$)	PHASE (°)	DOCUMENT ID		TECN
$0.049^{+0.031}_{-0.019}$	171^{+36}_{-43}	ROENCHEN	14	DPWA

N(2250) FOOTNOTES

[1] Fit to the amplitudes of HOEHLER 79.

N(2250) REFERENCES

PDG	14	CP C38 070001	K. Olive *et al.*	(PDG Collab.)
ROENCHEN	14	EPJ A50 101	D. Roenchen *et al.*	
Also		EPJ A51 63 (errat.)	D. Roenchen *et al.*	
SVARC	14	PR C89 045205	A. Svarc *et al.*	
ANISOVICH	12A	EPJ A48 15	A.V. Anisovich *et al.*	(BONN, PNPI)
ARNDT	06	PR C74 045205	R.A. Arndt *et al.*	(GWU)
HOEHLER	93	πN Newsletter 9 1	G. Hohler	(KARL)
CUTKOSKY	80	Toronto Conf. 19	R.E. Cutkosky *et al.*	(CMU, LBL) IJP
Also		PR D20 2839	R.E. Cutkosky *et al.*	(CMU, LBL) IJP
HOEHLER	79	PDAT 12-1	G. Hohler *et al.*	(KARLT) IJP
Also		Toronto Conf. 3	R. Koch	(KARLT) IJP