$N(1900)\ 3/2^+$

$I(J^P) = \frac{1}{2}(\frac{3}{2}^+)$ Status: ***

The latest GWU analysis (ARNDT 06) finds no evidence for this resonance.

N(1900) BREIT-WIGNER MASS

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
≈ 1900 OUR ESTIMATE				
1905±30	ANISOVICH	12A	DPWA	Multichannel
1915±60	NIKONOV	08	DPWA	Multichannel
1879±17	MANLEY	92	IPWA	$\pi N \to \pi N$ & $N\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1951±53	PENNER	02C	DPWA	Multichannel

N(1900) BREIT-WIGNER WIDTH

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
~ 250 OUR ESTIMATE				
$250^{+120}_{-\ 50}$	ANISOVICH	12A	DPWA	Multichannel
180± 40	NIKONOV	08	DPWA	Multichannel
498± 78	MANLEY	92	IPWA	$\pi N \to \pi N$ & $N\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
622± 42	PENNER	02C	DPWA	Multichannel

N(1900) POLE POSITION

REAL PART

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
1900±30	ANISOVICH	12A	DPWA	Multichannel

−2×IMAGINARY PART

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{200^{+100}_{-\ 60}}$	ANISOVICH	12A	DPWA	Multichannel

N(1900) ELASTIC POLE RESIDUE

MODULUS $|r|$

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
3±2	ANISOVICH	12A	DPWA	Multichannel

PHASE θ

VALUE (°)	*DOCUMENT ID*		*TECN*	*COMMENT*
10±35	ANISOVICH	12A	DPWA	Multichannel

N(1900) INELASTIC POLE RESIDUE

The "normalized residue" is the residue divided by Γ_{pole}.

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow N\eta$

MODULUS (%)	PHASE (°)	DOCUMENT ID		TECN	COMMENT
5±2	70 ± 60	ANISOVICH	12A	DPWA	Multichannel

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow \Lambda K$

MODULUS (%)	PHASE (°)	DOCUMENT ID		TECN	COMMENT
7±3	135 ± 25	ANISOVICH	12A	DPWA	Multichannel

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow \Sigma K$

MODULUS (%)	PHASE (°)	DOCUMENT ID		TECN	COMMENT
4±2	110 ± 30	ANISOVICH	12A	DPWA	Multichannel

N(1900) DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$N\pi$	~ 10 %
Γ_2	$N\pi\pi$	
Γ_3	$N\rho$, S=1/2, P-wave	
Γ_4	$N\eta$	~ 12 %
Γ_5	$N\omega$	(39 ±9) %
Γ_6	ΛK	0–10 %
Γ_7	ΣK	(5.0±2.0) %

N(1900) BRANCHING RATIOS

$\Gamma(N\pi)/\Gamma_{total}$ Γ_1/Γ

VALUE (%)	DOCUMENT ID		TECN	COMMENT
~ 10 OUR ESTIMATE				
3±2	ANISOVICH	12A	DPWA	Multichannel
26±6	MANLEY	92	IPWA	$\pi N \rightarrow \pi N$ & $N\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2 to 9	NIKONOV	08	DPWA	Multichannel
16±2	PENNER	02C	DPWA	Multichannel

$\Gamma(N\eta)/\Gamma_{total}$ Γ_4/Γ

VALUE (%)	DOCUMENT ID		TECN	COMMENT
~ 12 OUR ESTIMATE				
10±4	ANISOVICH	12A	DPWA	Multichannel
14±5	PENNER	02C	DPWA	Multichannel

$\Gamma(N\omega)/\Gamma_{total}$ Γ_5/Γ

VALUE (%)	DOCUMENT ID		TECN	COMMENT
39±9	PENNER	02C	DPWA	Multichannel

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(1900) \to N\rho$, S=1/2, P-wave $(\Gamma_1\Gamma_3)^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
-0.34 ± 0.03	MANLEY	92	IPWA	$\pi N \to \pi N$ & $N\pi\pi$

$\Gamma(\Lambda K)/\Gamma_{total}$ Γ_6/Γ

VALUE (%)	DOCUMENT ID		TECN	COMMENT
0 to 10 OUR ESTIMATE				
16 ±5	ANISOVICH	12A	DPWA	Multichannel
2.4 ± 0.3	SHKLYAR	05	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
5 to 15	NIKONOV	08	DPWA	Multichannel
0.1 ± 0.1	PENNER	02C	DPWA	Multichannel

$\Gamma(\Sigma K)/\Gamma_{total}$ Γ_7/Γ

VALUE (%)	DOCUMENT ID		TECN	COMMENT
5±2	ANISOVICH	12A	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1 ± 1	PENNER	02C	DPWA	Multichannel

$N(1900)$ PHOTON DECAY AMPLITUDES

Papers on γN amplitudes predating 1981 may be found in our 2006 edition, Journal of Physics, G **33** 1 (2006).

$N(1900) \to p\gamma$, helicity-1/2 amplitude $A_{1/2}$

VALUE ($GeV^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
0.026 ± 0.015	ANISOVICH	12A	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
-0.017	PENNER	02D	DPWA	Multichannel

$N(1900) \to p\gamma$, helicity-3/2 amplitude $A_{3/2}$

VALUE ($GeV^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
-0.065 ± 0.030	ANISOVICH	12A	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.031	PENNER	02D	DPWA	Multichannel

$N(1900) \to n\gamma$, helicity-1/2 amplitude $A_{1/2}$

VALUE ($GeV^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
-0.016	PENNER	02D	DPWA	Multichannel

$N(1900) \to n\gamma$, helicity-3/2 amplitude $A_{3/2}$

VALUE ($GeV^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
-0.002	PENNER	02D	DPWA	Multichannel

N(1900) REFERENCES

ANISOVICH	12A	EPJ A48 15	A.V. Anisovich *et al.*	(BONN, PNPI)
NIKONOV	08	PL B662 245	V.A. Nikonov *et al.*	(Bonn, Gatchina)
ARNDT	06	PR C74 045205	R.A. Arndt *et al.*	(GWU)
PDG	06	JPG 33 1	W.-M. Yao *et al.*	(PDG Collab.)
SHKLYAR	05	PR C72 015210	V. Shklyar, H. Lenske, U. Mosel	(GIES)
PENNER	02C	PR C66 055211	G. Penner, U. Mosel	(GIES)
PENNER	02D	PR C66 055212	G. Penner, U. Mosel	(GIES)
MANLEY	92	PR D45 4002	D.M. Manley, E.M. Saleski	(KENT)
Also		PR D30 904	D.M. Manley *et al.*	(VPI)