NODE=B144

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

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

N(1900) POLE POSITION

NODE=B144230

REAL PART

NODE=B144RE
NODE=B144RE

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
1900 to 1940 (≈ 1920) OUR ESTIMATE				→ UNCHECKED ←
1905 ± 2	ROENCHEN	22	DPWA	Multichannel
1945 ± 35	ANISOVICH	17A	DPWA	Multichannel
1928 ± 18 ± 2	[1] SVARC	14	L+P	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1856	HUNT	19	DPWA	Multichannel
1912 ± 30	[2] ANISOVICH	17A	L+P	$\gamma p, \pi^- p \to K \Lambda$
1910 ± 30	SOKHOYAN	15A	DPWA	Multichannel
1910 ± 30	GUTZ	14	DPWA	Multichannel
1910	SHKLYAR	13	DPWA	Multichannel
1900 ± 30	ANISOVICH	12A	DPWA	Multichannel

OCCUR=2

[1] Fit to the amplitudes of HOEHLER 79.
[2] Statistical error only.

NODE=B144RE;LINKAGE=SV
NODE=B144RE;LINKAGE=A

−2×IMAGINARY PART

NODE=B144IM
NODE=B144IM

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
90 to 160 (≈ 130) OUR ESTIMATE				→ UNCHECKED ←
93 ± 2	ROENCHEN	22	DPWA	Multichannel
135^{+70}_{-30}	ANISOVICH	17A	DPWA	Multichannel
152 ± 40 ± 9	[1] SVARC	14	L+P	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
241	HUNT	19	DPWA	Multichannel
166 ± 30	[2] ANISOVICH	17A	L+P	$\gamma p, \pi^- p \to K \Lambda$
280 ± 50	SOKHOYAN	15A	DPWA	Multichannel
280 ± 50	GUTZ	14	DPWA	Multichannel
173	SHKLYAR	13	DPWA	Multichannel
200^{+100}_{-60}	ANISOVICH	12A	DPWA	Multichannel

OCCUR=2

[1] Fit to the amplitudes of HOEHLER 79.
[2] Statistical error only.

NODE=B144IM;LINKAGE=SV
NODE=B144IM;LINKAGE=A

N(1900) ELASTIC POLE RESIDUE

NODE=B144240

MODULUS $|r|$

NODE=B144RER
NODE=B144RER

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
2 to 6 (≈ 4) OUR ESTIMATE				→ UNCHECKED ←
1.6 ± 0.2	ROENCHEN	22	DPWA	Multichannel
4 ± 2	SOKHOYAN	15A	DPWA	Multichannel
4 ± 1 ± 1	[1] SVARC	14	L+P	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
4 ± 2	GUTZ	14	DPWA	Multichannel
10	SHKLYAR	13	DPWA	Multichannel
3 ± 2	ANISOVICH	12A	DPWA	Multichannel

[1] Fit to the amplitudes of HOEHLER 79.

NODE=B144RER;LINKAGE=SV

PHASE θ

NODE=B144IMR
NODE=B144IMR

VALUE (°)	DOCUMENT ID		TECN	COMMENT
−40 to 20 (≈ −10) OUR ESTIMATE				→ UNCHECKED ←
44 ± 11	ROENCHEN	22	DPWA	Multichannel
−10 ± 40	SOKHOYAN	15A	DPWA	Multichannel
−29 ± 15 ± 2	[1] SVARC	14	L+P	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
−10 ± 40	GUTZ	14	DPWA	Multichannel
−64	SHKLYAR	13	DPWA	Multichannel
10 ± 35	ANISOVICH	12A	DPWA	Multichannel

[1] Fit to the amplitudes of HOEHLER 79.

NODE=B144IMR;LINKAGE=SV

$N(1900)$ INELASTIC POLE RESIDUE

NODE=B144250

The "normalized residue" is the residue divided by $\Gamma_{pole}/2$.

NODE=B144250

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

NODE=B144RS1
NODE=B144RS1

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.010±0.002	55 ± 15	ROENCHEN	22	DPWA	Multichannel
0.05 ±0.02	70 ± 60	ANISOVICH	12A	DPWA	Multichannel

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

NODE=B144RS2
NODE=B144RS2

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.029±0.003	5.4 ± 9.3	ROENCHEN	22	DPWA	Multichannel
0.03 ±0.02	90 ± 40	ANISOVICH	17A	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.07 ±0.03	135 ± 25	ANISOVICH	12A	DPWA	Multichannel

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

NODE=B144RS3
NODE=B144RS3

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.013±0.002	−40 ± 9	ROENCHEN	22	DPWA	Multichannel
0.04 ±0.02	110 ± 30	ANISOVICH	12A	DPWA	Multichannel

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow N(1535)\pi$

NODE=B144RS4
NODE=B144RS4

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.04±0.01	170 ± 30	GUTZ	14	DPWA	Multichannel

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow \Delta(1232)\pi$, P-wave

NODE=B144RS5
NODE=B144RS5

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.07±0.04	−65 ± 30	SOKHOYAN	15A	DPWA	Multichannel

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow \Delta(1232)\pi$, F-wave

NODE=B144RS6
NODE=B144RS6

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.10±0.05	80 ± 30	SOKHOYAN	15A	DPWA	Multichannel

Normalized residue in $N\pi \rightarrow N(1900) \rightarrow N(1520)\pi$

NODE=B144RS7
NODE=B144RS7

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.07±0.04	−105 ± 35	SOKHOYAN	15A	DPWA	Multichannel

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

NODE=B144RS8
NODE=B144RS8

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.03±0.02	−110 ± 35	SOKHOYAN	15A	DPWA	Multichannel

$N(1900)$ BREIT-WIGNER MASS

NODE=B144M

NODE=B144M

→ UNCHECKED ←

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
1890 to 1950 (≈ 1920) OUR ESTIMATE				
1911± 6	[1] HUNT	19	DPWA	Multichannel
1910±30	SOKHOYAN	15A	DPWA	Multichannel
1998± 3	[1] SHKLYAR	13	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1910±30	GUTZ	14	DPWA	Multichannel
1905±30	ANISOVICH	12A	DPWA	Multichannel
1900± 8	[1] SHRESTHA	12A	DPWA	Multichannel
1951±53	PENNER	02C	DPWA	Multichannel

[1] Statistical error only.

NODE=B144M;LINKAGE=A

$N(1900)$ BREIT-WIGNER WIDTH

NODE=B144W

NODE=B144W

→ UNCHECKED ←

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
100 to 320 (≈ 200) OUR ESTIMATE				
292± 16	[1] HUNT	19	DPWA	Multichannel
270± 50	SOKHOYAN	15A	DPWA	Multichannel
359± 10	[1] SHKLYAR	13	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
270± 50	GUTZ	14	DPWA	Multichannel
250^{+120}_{-50}	ANISOVICH	12A	DPWA	Multichannel
101± 15	[1] SHRESTHA	12A	DPWA	Multichannel
622± 42	PENNER	02C	DPWA	Multichannel

[1] Statistical error only. NODE=B144W;LINKAGE=A

$N(1900)$ DECAY MODES

NODE=B144215;NODE=B144

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$N\pi$	1–20 %	DESIG=1
Γ_2	$N\eta$	2–14 %	DESIG=4;OUR EST
Γ_3	$N\eta'$	4–8 %	DESIG=20
Γ_4	$N\omega$	7–13 %	DESIG=5;OUR EST
Γ_5	ΛK	2–20 %	DESIG=6;OUR EST
Γ_6	ΣK	3–7 %	DESIG=7;OUR EST
Γ_7	$N\pi\pi$	>56 %	DESIG=2;OUR EST
Γ_8	$\Delta(1232)\pi$	30–70 %	DESIG=3;OUR EST
Γ_9	$\Delta(1232)\pi$, P-wave	9–25 %	DESIG=18;OUR EST
Γ_{10}	$\Delta(1232)\pi$, F-wave	21–45 %	DESIG=17;OUR EST
Γ_{11}	$N\rho$, $S=1/2$	25–40 %	DESIG=22
Γ_{12}	$N\sigma$	1–7 %	DESIG=16;OUR EST
Γ_{13}	$N(1520)\pi$	7–23 %	DESIG=15;OUR EST
Γ_{14}	$N(1535)\pi$	4–10 %	DESIG=14;OUR EST
Γ_{15}	$\Lambda K^*(892)$	< 0.2 %	DESIG=19
Γ_{16}	$p\gamma$	0.001–0.025 %	DESIG=8;OUR EST
Γ_{17}	$p\gamma$, helicity=1/2	0.001–0.021 %	DESIG=9;OUR EST
Γ_{18}	$p\gamma$, helicity=3/2	<0.003 %	DESIG=10;OUR EST
Γ_{19}	$n\gamma$	<0.040 %	DESIG=11;OUR EST
Γ_{20}	$n\gamma$, helicity=1/2	<0.007 %	DESIG=12;OUR EST
Γ_{21}	$n\gamma$, helicity=3/2	<0.033 %	DESIG=13;OUR EST

$N(1900)$ BRANCHING RATIOS

NODE=B144220

$\Gamma(N\pi)/\Gamma_{total}$ — Γ_1/Γ

NODE=B144R1
NODE=B144R1

VALUE (%)	DOCUMENT ID		TECN	COMMENT
1–20 % OUR ESTIMATE				→ UNCHECKED ←
1.9±0.1	[1] HUNT	19	DPWA	Multichannel
3 ±2	SOKHOYAN	15A	DPWA	Multichannel
25 ±1	[1] SHKLYAR	13	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
3 ±2	GUTZ	14	DPWA	Multichannel
3 ±2	ANISOVICH	12A	DPWA	Multichannel
7 ±4	[1] SHRESTHA	12A	DPWA	Multichannel
16 ±2	PENNER	02C	DPWA	Multichannel

[1] Statistical error only. NODE=B144R1;LINKAGE=A

$\Gamma(N\eta)/\Gamma_{total}$ — Γ_2/Γ

NODE=B144R4
NODE=B144R4

VALUE (%)	DOCUMENT ID		TECN	COMMENT
2 ±2	MUELLER	20	DPWA	Multichannel
1.3±0.5	[1] HUNT	19	DPWA	Multichannel
2 ±2	[1] SHKLYAR	13	DPWA	Multichannel
10 ±4	ANISOVICH	12A	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
< 1	[1] SHRESTHA	12A	DPWA	Multichannel
14 ±5	PENNER	02C	DPWA	Multichannel

[1] Statistical error only. NODE=B144R4;LINKAGE=A

$\Gamma(N\eta')/\Gamma_{total}$ — Γ_3/Γ

NODE=B144R06
NODE=B144R06

VALUE (%)	DOCUMENT ID		TECN	COMMENT
4–8 % OUR ESTIMATE				→ UNCHECKED ←
6±2	ANISOVICH	17C	DPWA	Multichannel

$\Gamma(N\omega)/\Gamma_{total}$ — Γ_4/Γ

NODE=B144R5
NODE=B144R5

VALUE (%)	DOCUMENT ID		TECN	COMMENT
15±8	DENISENKO	16	DPWA	Multichannel
10±3	[1] SHKLYAR	13	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
39±9	PENNER	02C	DPWA	Multichannel

[1] Statistical error only. NODE=B144R5;LINKAGE=A

$\Gamma(\Lambda K)/\Gamma_{total}$ — Γ_5/Γ

NODE=B144R6
NODE=B144R6

VALUE (%)	DOCUMENT ID		TECN	COMMENT
13.7±0.3	[1] HUNT	19	DPWA	Multichannel
16 ±5	ANISOVICH	12A	DPWA	Multichannel
2.4±0.3	[1] SHKLYAR	05	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
14 ±5	[1] SHRESTHA	12A	DPWA	Multichannel
5 to 15	NIKONOV	08	DPWA	Multichannel
0.1±0.1	PENNER	02C	DPWA	Multichannel

[1] Statistical error only.

NODE=B144R6;LINKAGE=A

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

NODE=B144R7
NODE=B144R7

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

$\Gamma(\Delta(1232)\pi, P\text{-wave})/\Gamma_{total}$ — Γ_9/Γ

NODE=B144R04
NODE=B144R04

VALUE (%)	DOCUMENT ID		TECN	COMMENT
17±8	SOKHOYAN	15A	DPWA	Multichannel

$\Gamma(\Delta(1232)\pi, F\text{-wave})/\Gamma_{total}$ — Γ_{10}/Γ

NODE=B144R05
NODE=B144R05

VALUE (%)	DOCUMENT ID		TECN	COMMENT
33±12	SOKHOYAN	15A	DPWA	Multichannel

$\Gamma(N\rho, S=1/2)/\Gamma_{total}$ — Γ_{11}/Γ

NODE=B144R07
NODE=B144R07

VALUE (%)	DOCUMENT ID		TECN	COMMENT
25–40 % OUR ESTIMATE				→ UNCHECKED ←
32±7	[1] HUNT	19	DPWA	Multichannel

[1] Statistical error only.

NODE=B144R07;LINKAGE=A

$\Gamma(N\sigma)/\Gamma_{total}$ — Γ_{12}/Γ

NODE=B144R02
NODE=B144R02

VALUE (%)	DOCUMENT ID		TECN	COMMENT
4±3	SOKHOYAN	15A	DPWA	Multichannel

$\Gamma(N(1520)\pi)/\Gamma_{total}$ — Γ_{13}/Γ

NODE=B144R03
NODE=B144R03

VALUE (%)	DOCUMENT ID		TECN	COMMENT
15±8	SOKHOYAN	15A	DPWA	Multichannel

$\Gamma(N(1535)\pi)/\Gamma_{total}$ — Γ_{14}/Γ

NODE=B144R01
NODE=B144R01

VALUE (%)	DOCUMENT ID		TECN	COMMENT
7±3	GUTZ	14	DPWA	Multichannel

$\Gamma(\Lambda K^*(892))/\Gamma_{total}$ — Γ_{15}/Γ

NODE=B144R00
NODE=B144R00

VALUE (%)	DOCUMENT ID		TECN	COMMENT
< 0.2 % OUR ESTIMATE				→ UNCHECKED ←
<0.2	ANISOVICH	17B	DPWA	Multichannel

$N(1900)$ PHOTON DECAY AMPLITUDES AT THE POLE

NODE=B144260

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

NODE=B144PA1
NODE=B144PA1

MODULUS ($GeV^{-1/2}$)	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.0091±0.0014	80 ± 12	ROENCHEN	22	DPWA	Multichannel
0.026 ±0.014	60 ± 35	SOKHOYAN	15A	DPWA	Multichannel

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

NODE=B144PA2
NODE=B144PA2

MODULUS ($GeV^{-1/2}$)	PHASE (°)	DOCUMENT ID		TECN	COMMENT
−0.0077±0.0017	−42 ± 12	ROENCHEN	22	DPWA	Multichannel
−0.070 ±0.030	70 ± 50	SOKHOYAN	15A	DPWA	Multichannel

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

NODE=B144PA3
NODE=B144PA3

MODULUS ($GeV^{-1/2}$)	PHASE (°)	DOCUMENT ID		TECN	COMMENT
−0.098±0.020	−13 ± 20	ANISOVICH	17E	DPWA	Multichannel

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

NODE=B144PA4
NODE=B144PA4

MODULUS ($GeV^{-1/2}$)	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.074±0.015	5 ± 15	ANISOVICH	17E	DPWA	Multichannel

N(1900) BREIT-WIGNER PHOTON DECAY AMPLITUDES

NODE=B144225

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

NODE=B144A1
NODE=B144A1

VALUE ($GeV^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
0.040±0.004	[1] HUNT	19	DPWA	Multichannel
0.024±0.014	SOKHOYAN	15A	DPWA	Multichannel
−0.008±0.001	[1] SHKLYAR	13	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.024±0.014	GUTZ	14	DPWA	Multichannel
0.026±0.015	ANISOVICH	12A	DPWA	Multichannel
0.041±0.008	[1] SHRESTHA	12A	DPWA	Multichannel
−0.017	PENNER	02D	DPWA	Multichannel

[1] Statistical error only.

NODE=B144A1;LINKAGE=A

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

NODE=B144A2
NODE=B144A2

VALUE ($GeV^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
−0.094±0.007	[1] HUNT	19	DPWA	Multichannel
−0.067±0.030	SOKHOYAN	15A	DPWA	Multichannel
< 0.001	SHKLYAR	13	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
−0.067±0.030	GUTZ	14	DPWA	Multichannel
−0.065±0.030	ANISOVICH	12A	DPWA	Multichannel
−0.004±0.006	[1] SHRESTHA	12A	DPWA	Multichannel
0.031	PENNER	02D	DPWA	Multichannel

[1] Statistical error only.

NODE=B144A2;LINKAGE=A

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

NODE=B144A3
NODE=B144A3

VALUE ($GeV^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
0.007±0.014	[1] HUNT	19	DPWA	Multichannel
−0.102±0.020	ANISOVICH	17E	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.000±0.030	ANISOVICH	13B	DPWA	Multichannel
−0.010±0.004	[1] SHRESTHA	12A	DPWA	Multichannel
−0.016	PENNER	02D	DPWA	Multichannel

[1] Statistical error only.

NODE=B144A3;LINKAGE=A

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

NODE=B144A4
NODE=B144A4

VALUE ($GeV^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
0.007±0.011	[1] HUNT	19	DPWA	Multichannel
0.073±0.015	ANISOVICH	17E	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
−0.060±0.045	ANISOVICH	13B	DPWA	Multichannel
−0.011±0.007	[1] SHRESTHA	12A	DPWA	Multichannel
−0.002	PENNER	02D	DPWA	Multichannel

[1] Statistical error only.

NODE=B144A4;LINKAGE=A

N(1900) REFERENCES

NODE=B144

ROENCHEN	22	EPJ A58 229	D. Roenchen *et al.*	(JULI, GWU, BONN+)	REFID=61999
MUELLER	20	PL B803 135323	J. Mueller *et al.*	(CBELSA/TAPS Collab.)	REFID=60391
HUNT	19	PR C99 055205	B.C. Hunt, D.M. Manley		REFID=59985
ANISOVICH	17A	PRL 119 062004	A.V. Anisovich *et al.*		REFID=57949
ANISOVICH	17B	PL B771 142	A.V. Anisovich *et al.*		REFID=58101
ANISOVICH	17C	PL B772 247	A.V. Anisovich *et al.*		REFID=58174
ANISOVICH	17E	PR C96 055202	A.V. Anisovich *et al.*	(BONN, PNPI, JLAB+)	REFID=62311
DENISENKO	16	PL B755 97	I. Denisenko *et al.*		REFID=57504
SOKHOYAN	15A	EPJ A51 95	V. Sokhoyan *et al.*	(CBELSA/TAPS Collab.)	REFID=56757
GUTZ	14	EPJ A50 74	E. Gutz *et al.*	(CBELSA/TAPS Collab.)	REFID=55697
SVARC	14	PR C89 045205	A. Svarc *et al.*	(RBI Zagreb, UNI Tuzla)	REFID=55775
ANISOVICH	13B	EPJ A49 67	A.V. Anisovich *et al.*		REFID=56147
SHKLYAR	13	PR C87 015201	V. Shklyar, H. Lenske, U. Mosel	(GIES)	REFID=55104
ANISOVICH	12A	EPJ A48 15	A.V. Anisovich *et al.*	(BONN, PNPI)	REFID=54041
SHRESTHA	12A	PR C86 055203	M. Shrestha, D.M. Manley	(KSU)	REFID=54862
NIKONOV	08	PL B662 245	V.A. Nikonov *et al.*	(Bonn, Gatchina)	REFID=52243
SHKLYAR	05	PR C72 015210	V. Shklyar, H. Lenske, U. Mosel	(GIES)	REFID=50977
PENNER	02C	PR C66 055211	G. Penner, U. Mosel	(GIES)	REFID=49129
PENNER	02D	PR C66 055212	G. Penner, U. Mosel	(GIES)	REFID=49130
HOEHLER	79	PDAT 12-1	G. Hohler *et al.*	(KARLT)	REFID=30058