NODE=B132

$N(2100)\ 1/2^+$

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

N(2100) POLE POSITION

NODE=B132215

REAL PART

NODE=B132RE
NODE=B132RE

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
2050 to 2150 (≈ 2100) OUR ESTIMATE				→ UNCHECKED ←
2055±25	SARANTSEV	25	DPWA	Multichannel
2052± 6±3	[1] SVARC	14	L+P	$\pi N \to \pi N$
2120±40	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2217	HUNT	19	DPWA	Multichannel
2120±25	SOKHOYAN	15A	DPWA	Multichannel
2120±47	BATINIC	10	DPWA	$\pi N \to N\pi,\ N\eta$
1810	VRANA	00	DPWA	Multichannel

[1] Fit to the amplitudes of HOEHLER 79.

NODE=B132RE;LINKAGE=SV

−2×IMAGINARY PART

NODE=B132IM
NODE=B132IM

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
240 to 340 (≈ 300) OUR ESTIMATE				→ UNCHECKED ←
430±65	SARANTSEV	25	DPWA	Multichannel
337±10±4	[1] SVARC	14	L+P	$\pi N \to \pi N$
240±80	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
545	HUNT	19	DPWA	Multichannel
290±30	SOKHOYAN	15A	DPWA	Multichannel
346±80	BATINIC	10	DPWA	$\pi N \to N\pi,\ N\eta$
622	VRANA	00	DPWA	Multichannel

[1] Fit to the amplitudes of HOEHLER 79.

NODE=B132IM;LINKAGE=SV

N(2100) ELASTIC POLE RESIDUE

NODE=B132220

MODULUS $|r|$

NODE=B132RER
NODE=B132RER

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
15 to 30 (≈ 20) OUR ESTIMATE				→ UNCHECKED ←
23±5	SOKHOYAN	15A	DPWA	Multichannel
30±1±1	[1] SVARC	14	L+P	$\pi N \to \pi N$
14±7	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
33	BATINIC	10	DPWA	$\pi N \to N\pi,\ N\eta$

[1] Fit to the amplitudes of HOEHLER 79.

NODE=B132RER;LINKAGE=SV

PHASE θ

NODE=B132IMR
NODE=B132IMR

VALUE (°)	DOCUMENT ID		TECN	COMMENT
−100 to −60 (≈ −80) OUR ESTIMATE				→ UNCHECKED ←
− 70±25	SOKHOYAN	15A	DPWA	Multichannel
− 92± 3±2	[1] SVARC	14	L+P	$\pi N \to \pi N$
35±25	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
− 59	BATINIC	10	DPWA	$\pi N \to N\pi,\ N\eta$

[1] Fit to the amplitudes of HOEHLER 79.

NODE=B132IMR;LINKAGE=SV

N(2100) INELASTIC POLE RESIDUE

NODE=B132240

Normalized residue in $N\pi \to N(2100) \to \Delta(1232)\pi$

NODE=B132RS1
NODE=B132RS1

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.11±0.05	20 ± 60	SOKHOYAN	15A	DPWA	Multichannel

Normalized residue in $N\pi \to N(2100) \to N\sigma$

NODE=B132RS2
NODE=B132RS2

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.18±0.06	125 ± 25	SOKHOYAN	15A	DPWA	Multichannel

Normalized residue in $N\pi \rightarrow N(2100) \rightarrow N(1535)\pi$

NODE=B132RS3
NODE=B132RS3

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.22±0.06	−40 ± 25	SOKHOYAN	15A	DPWA	Multichannel

N(2100) BREIT-WIGNER MASS

NODE=B132M

NODE=B132M

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
2050 to 2150 (≈ 2100) OUR ESTIMATE				
2070±35	SARANTSEV	25	DPWA	Multichannel
2221±92	[1] HUNT	19	DPWA	Multichannel
2125±75	CUTKOSKY	80	IPWA	$\pi N \rightarrow \pi N$
2050±20	HOEHLER	79	IPWA	$\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2115±20	SOKHOYAN	15A	DPWA	Multichannel
2157±42	BATINIC	10	DPWA	$\pi N \rightarrow N\pi,\ N\eta$
$2068\pm\ 3^{+15}_{-40}$	ABLIKIM	06K	BES2	$J/\psi \rightarrow (p\pi^-)\overline{n}$
2084±93	VRANA	00	DPWA	Multichannel

[1] Statistical error only.

NODE=B132M;LINKAGE=A

N(2100) BREIT-WIGNER WIDTH

NODE=B132W

NODE=B132W

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
200 to 320 (≈ 260) OUR ESTIMATE				
450± 60	SARANTSEV	25	DPWA	Multichannel
545±170	[1] HUNT	19	DPWA	Multichannel
260±100	CUTKOSKY	80	IPWA	$\pi N \rightarrow \pi N$
200± 30	HOEHLER	79	IPWA	$\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
290± 20	SOKHOYAN	15A	DPWA	Multichannel
355± 88	BATINIC	10	DPWA	$\pi N \rightarrow N\pi,\ N\eta$
165± 14±40	ABLIKIM	06K	BES2	$J/\psi \rightarrow (p\pi^-)\overline{n}$
1077±643	VRANA	00	DPWA	Multichannel

[1] Statistical error only.

NODE=B132W;LINKAGE=A

N(2100) DECAY MODES

NODE=B132225;NODE=B132

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$N\pi$	8–32 %	DESIG=1
Γ_2	$N\eta$	5–45 %	DESIG=4
Γ_3	$N\eta'$	5–11 %	DESIG=14
Γ_4	$N\omega$	10–25 %	DESIG=12
Γ_5	ΛK	<1.0 %	DESIG=5
Γ_6	$N\pi\pi$	>55 %	DESIG=3;OUR EST
Γ_7	$\Delta(1232)\pi$	6–14 %	DESIG=2
Γ_8	$N\rho$	(17 ±6) %	DESIG=18
Γ_9	$N\rho$, S=1/2	35–70 %	DESIG=6
Γ_{10}	$N\rho$, S=3/2	(5.0±3.0) %	DESIG=16
Γ_{11}	$N\sigma$	14–35 %	DESIG=7
Γ_{12}	$N(1535)\pi$	26–34 %	DESIG=8
Γ_{13}	$N(1520)\pi$, D-wave	< 2 %	DESIG=17
Γ_{14}	$\Lambda K^*(892)$	3–11 %	DESIG=13
Γ_{15}	$p\gamma$, helicity=1/2	0.001–0.13 %	DESIG=11;OUR EST
Γ_{16}	$n\gamma$, helicity=1/2	0.004–0.09 %	DESIG=15;OUR EST

N(2100) BRANCHING RATIOS

NODE=B132230

$\Gamma(N\pi)/\Gamma_{total}$ Γ_1/Γ

NODE=B132R1
NODE=B132R1

VALUE (%)	DOCUMENT ID		TECN	COMMENT
8–32 % OUR ESTIMATE				
17± 7	SEIFEN	25	DPWA	Multichannel
21±11	[1] HUNT	19	DPWA	Multichannel
12± 3	CUTKOSKY	80	IPWA	$\pi N \rightarrow \pi N$
10± 4	HOEHLER	79	IPWA	$\pi N \rightarrow \pi N$

• • • We do not use the following data for averages, fits, limits, etc. • • •

16± 5	SOKHOYAN	15A	DPWA	Multichannel
16± 5	BATINIC	10	DPWA	$\pi N \to N\pi,\ N\eta$
2± 5	VRANA	00	DPWA	Multichannel

[1] Statistical error only.

NODE=B132R1;LINKAGE=A

$\Gamma(N\eta)/\Gamma_{total}$ Γ_2/Γ

NODE=B132R4
NODE=B132R4

VALUE (%)	DOCUMENT ID		TECN	COMMENT
5–45 % OUR ESTIMATE				→ UNCHECKED ←
30 ±15	MUELLER	20	DPWA	Multichannel
< 4.7	[1] HUNT	19	DPWA	Multichannel

• • • We do not use the following data for averages, fits, limits, etc. • • •

83 ± 5	BATINIC	10	DPWA	$\pi N \to N\pi,\ N\eta$
61 ±61	VRANA	00	DPWA	Multichannel

[1] Statistical error only.

NODE=B132R4;LINKAGE=A

$\Gamma(N\eta')/\Gamma_{total}$ Γ_3/Γ

NODE=B132R03
NODE=B132R03

VALUE (%)	DOCUMENT ID		TECN	COMMENT
5–11 % OUR ESTIMATE				→ UNCHECKED ←
8±3	ANISOVICH	17C	DPWA	Multichannel

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

NODE=B132R00
NODE=B132R00

VALUE (%)	DOCUMENT ID		TECN	COMMENT
10–25 % OUR ESTIMATE				→ UNCHECKED ←
15±10	DENISENKO	16	DPWA	Multichannel

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

NODE=B132R5
NODE=B132R5

VALUE (%)	DOCUMENT ID		TECN	COMMENT
<1.0 % OUR ESTIMATE				→ UNCHECKED ←
< 1.0	[1] HUNT	19	DPWA	Multichannel

• • • We do not use the following data for averages, fits, limits, etc. • • •

21 ±20	VRANA	00	DPWA	Multichannel

[1] Statistical error only.

NODE=B132R5;LINKAGE=A

$\Gamma(\Delta(1232)\pi)/\Gamma_{total}$ Γ_7/Γ

NODE=B132R3
NODE=B132R3

VALUE (%)	DOCUMENT ID		TECN	COMMENT
6–14 % OUR ESTIMATE				→ UNCHECKED ←
10 ±4	SARANTSEV	25	DPWA	Multichannel
12 ±6	SEIFEN	25	DPWA	Multichannel
< 7.5	[1] HUNT	19	DPWA	Multichannel
10 ±4	SOKHOYAN	15A	DPWA	Multichannel

• • • We do not use the following data for averages, fits, limits, etc. • • •

2 ±1	VRANA	00	DPWA	Multichannel

[1] Statistical error only.

NODE=B132R3;LINKAGE=A

$\Gamma(N\rho)/\Gamma_{total}$ Γ_8/Γ

NODE=B132R06
NODE=B132R06

VALUE (%)	DOCUMENT ID		TECN	COMMENT
17±6	SARANTSEV	25	DPWA	Multichannel

$\Gamma(N\rho, S{=}1/2)/\Gamma_{total}$ Γ_9/Γ

NODE=B132R6
NODE=B132R6

VALUE (%)	DOCUMENT ID		TECN	COMMENT
35–70 % OUR ESTIMATE [35–70% OUR 2025 ESTIMATE]				NEW;→ UNCHECKED ←
12± 6	SARANTSEV	25	DPWA	Multichannel
52±19	[1] HUNT	19	DPWA	Multichannel

• • • We do not use the following data for averages, fits, limits, etc. • • •

4± 1	VRANA	00	DPWA	Multichannel

[1] Statistical error only.

NODE=B132R6;LINKAGE=A

$\Gamma(N\rho, S{=}3/2)/\Gamma_{total}$ Γ_{10}/Γ

NODE=B132R04
NODE=B132R04

VALUE (%)	DOCUMENT ID		TECN	COMMENT
5±3	SARANTSEV	25	DPWA	Multichannel

$\Gamma(N\sigma)/\Gamma_{total}$ Γ_{11}/Γ

NODE=B132R7
NODE=B132R7

VALUE (%)	DOCUMENT ID		TECN	COMMENT
14–35 % OUR ESTIMATE				→ UNCHECKED ←
28±6	SARANTSEV	25	DPWA	Multichannel
28±7	SEIFEN	25	DPWA	Multichannel
<35	[1] HUNT	19	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
20±6	SOKHOYAN	15A	DPWA	Multichannel
10±1	VRANA	00	DPWA	Multichannel

[1] Statistical error only.

NODE=B132R7;LINKAGE=A

$\Gamma(N(1535)\pi)/\Gamma_{total}$ Γ_{12}/Γ

NODE=B132R01
NODE=B132R01

VALUE (%)	DOCUMENT ID		TECN	COMMENT
26–34 % OUR ESTIMATE				→ UNCHECKED ←
< 1	SEIFEN	25	DPWA	Multichannel
30±4	SOKHOYAN	15A	DPWA	Multichannel

$\Gamma(N(1520)\pi$, D-wave$)/\Gamma_{total}$ Γ_{13}/Γ

NODE=B132R05
NODE=B132R05

VALUE (%)	DOCUMENT ID		TECN	COMMENT
<2	SEIFEN	25	DPWA	Multichannel

$\Gamma(\Lambda K^*(892))/\Gamma_{total}$ Γ_{14}/Γ

NODE=B132R02
NODE=B132R02

VALUE (%)	DOCUMENT ID		TECN	COMMENT
3–11 % OUR ESTIMATE				→ UNCHECKED ←
7±4	ANISOVICH	17B	DPWA	Multichannel

$N(2100)$ PHOTON DECAY AMPLITUDES AT THE POLE

NODE=B132260

$N(2100) \to p\gamma$, helicity-1/2 amplitude $A_{1/2}$

NODE=B132PA1
NODE=B132PA1

MODULUS (GeV$^{-1/2}$)	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.020±0.008	65 ± 20	SARANTSEV	25	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.011±0.004	65 ± 30	SOKHOYAN	15A	DPWA	Multichannel

$N(2100) \to n\gamma$, helicity-1/2 amplitude $A_{1/2}$

NODE=B132PA2
NODE=B132PA2

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.029±0.009	35 ± 20	ANISOVICH	17E	DPWA	Multichannel

$N(2100)$ BREIT-WIGNER PHOTON DECAY AMPLITUDES

NODE=B132235

$N(2100) \to p\gamma$, helicity-1/2 amplitude $A_{1/2}$

NODE=B132A1
NODE=B132A1

VALUE (GeV$^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
0.021±0.007	SARANTSEV	25	DPWA	Multichannel
0.032±0.014	[1] HUNT	19	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.010±0.004	SOKHOYAN	15A	DPWA	Multichannel

[1] Statistical error only.

NODE=B132A1;LINKAGE=A

$N(2100) \to n\gamma$, helicity-1/2 amplitude $A_{1/2}$

NODE=B132A00
NODE=B132A00

VALUE (GeV$^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
0.026±0.013	[1] HUNT	19	DPWA	Multichannel
0.029±0.010	ANISOVICH	17E	DPWA	Multichannel

[1] Statistical error only.

NODE=B132A00;LINKAGE=A

$N(2100)$ REFERENCES

NODE=B132

SARANTSEV	25	PR C112 015202	A.V. Sarantsev *et al.*	(Bonn-Gatchina Collab.)
SEIFEN	25	EPJ A61 173	T. Seifen *et al.*	(CBELSA/TAPS Collab.)
MUELLER	20	PL B803 135323	J. Mueller *et al.*	(CBELSA/TAPS Collab.)
HUNT	19	PR C99 055205	B.C. Hunt, D.M. Manley	
ANISOVICH	17B	PL B771 142	A.V. Anisovich *et al.*	
ANISOVICH	17C	PL B772 247	A.V. Anisovich *et al.*	
ANISOVICH	17E	PR C96 055202	A.V. Anisovich *et al.*	(BONN, PNPI, JLAB+)
DENISENKO	16	PL B755 97	I. Denisenko *et al.*	
SOKHOYAN	15A	EPJ A51 95	V. Sokhoyan *et al.*	(CBELSA/TAPS Collab.)
SVARC	14	PR C89 045205	A. Svarc *et al.*	(RBI Zagreb, UNI Tuzla)
BATINIC	10	PR C82 038203	M. Batinic *et al.*	(ZAGR)
ABLIKIM	06K	PRL 97 062001	M. Ablikim *et al.*	(BES II Collab.)
VRANA	00	PRPL 328 181	T.P. Vrana, S.A. Dytman, T.-S.H. Lee	(PITT, ANL)
CUTKOSKY	80	Toronto Conf. 19	R.E. Cutkosky *et al.*	(CMU, LBL) IJP
Also		PR D20 2839	R.E. Cutkosky *et al.*	(CMU, LBL)
HOEHLER	79	PDAT 12-1	G. Hohler *et al.*	(KARLT) IJP
Also		Toronto Conf. 3	R. Koch	(KARLT) IJP

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