NODE=B018

$N(1700)\ 3/2^-$

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

NODE=B018

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

N(1700) POLE POSITION

NODE=B018215

REAL PART

NODE=B018RE
NODE=B018RE

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
1650 to 1750 (≈ 1700) OUR ESTIMATE				
1745±40	SARANTSEV	25	DPWA	Multichannel
1757± 4±1	[1] SVARC	14	L+P	$\pi N \to \pi N$
1660±30	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1647	HUNT	19	DPWA	Multichannel
1780±35	SOKHOYAN	15A	DPWA	Multichannel
1806±23	BATINIC	10	DPWA	$\pi N \to N\pi$, $N\eta$
1704	VRANA	00	DPWA	Multichannel
1700	HOEHLER	93	SPED	$\pi N \to \pi N$

→ UNCHECKED ←

[1] Fit to the amplitudes of HOEHLER 79.

NODE=B018RE;LINKAGE=SV

−2×IMAGINARY PART

NODE=B018IM
NODE=B018IM

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
100 to 300 (≈ 200) OUR ESTIMATE				
420± 50	SARANTSEV	25	DPWA	Multichannel
136± 7±4	[1] SVARC	14	L+P	$\pi N \to \pi N$
90± 40	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
79	HUNT	19	DPWA	Multichannel
420±140	SOKHOYAN	15A	DPWA	Multichannel
129± 33	BATINIC	10	DPWA	$\pi N \to N\pi$, $N\eta$
156	VRANA	00	DPWA	Multichannel
120	HOEHLER	93	SPED	$\pi N \to \pi N$

→ UNCHECKED ←

[1] Fit to the amplitudes of HOEHLER 79.

NODE=B018IM;LINKAGE=SV

N(1700) ELASTIC POLE RESIDUE

NODE=B018220

MODULUS |*r*|

NODE=B018RER
NODE=B018RER

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
5 to 50 (≈ 10) OUR ESTIMATE				
60±30	SOKHOYAN	15A	DPWA	Multichannel
7± 1±1	[1] SVARC	14	L+P	$\pi N \to \pi N$
6± 3	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
50±40	ANISOVICH	12A	DPWA	Multichannel
7	BATINIC	10	DPWA	$\pi N \to N\pi$, $N\eta$
5	HOEHLER	93	SPED	$\pi N \to \pi N$

→ UNCHECKED ←

[1] Fit to the amplitudes of HOEHLER 79.

NODE=B018RER;LINKAGE=SV

PHASE θ

NODE=B018IMR
NODE=B018IMR

VALUE (°)	*DOCUMENT ID*		*TECN*	*COMMENT*
−120 to 0 (≈ − 90) OUR ESTIMATE				
−115±30	SOKHOYAN	15A	DPWA	Multichannel
−113± 4±2	[1] SVARC	14	L+P	$\pi N \to \pi N$
0±50	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
−100±40	ANISOVICH	12A	DPWA	Multichannel
− 34	BATINIC	10	DPWA	$\pi N \to N\pi$, $N\eta$

→ UNCHECKED ←

[1] Fit to the amplitudes of HOEHLER 79.

NODE=B018IMR;LINKAGE=SV

N(1700) INELASTIC POLE RESIDUE

NODE=B018250

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

NODE=B018250

Normalized residue in $N\pi \to N(1700) \to \Delta\pi$, S-wave

NODE=B018RS1
NODE=B018RS1

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.33±0.10	−70 ± 25	SOKHOYAN	15A	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.34±0.21	−60 ± 40	ANISOVICH	12A	DPWA	Multichannel

Normalized residue in $N\pi \to N(1700) \to \Delta\pi$, D-wave

NODE=B018RS2
NODE=B018RS2

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.10±0.06	75 ± 30	SOKHOYAN	15A	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.08±0.06	90 ± 35	ANISOVICH	12A	DPWA	Multichannel

Normalized residue in $N\pi \to N(1700) \to N\sigma$

NODE=B018RS3
NODE=B018RS3

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.13±0.08	−100 ± 35	SOKHOYAN	15A	DPWA	Multichannel

Normalized residue in $N\pi \to N(1700) \to N(1440)\pi$

NODE=B018RS4
NODE=B018RS4

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.13±0.05	40 ± 35	SOKHOYAN	15A	DPWA	Multichannel

Normalized residue in $N\pi \to N(1700) \to N(1520)\pi$, P-wave

NODE=B018RS5
NODE=B018RS5

MODULUS	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.07±0.03	160 ± 45	SOKHOYAN	15A	DPWA	Multichannel

N(1700) BREIT-WIGNER MASS

NODE=B018M

NODE=B018M

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
1650 to 1800 (≈ 1720) OUR ESTIMATE				
1770±30	SARANTSEV	25	DPWA	Multichannel
1653± 5	[1] HUNT	19	DPWA	Multichannel
1675±25	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
1731±15	HOEHLER	79	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1800±35	SOKHOYAN	15A	DPWA	Multichannel
1665± 3	[1] SHRESTHA	12A	DPWA	Multichannel
1817±22	BATINIC	10	DPWA	$\pi N \to N\pi$, $N\eta$
1736±33	VRANA	00	DPWA	Multichannel

→ UNCHECKED ←

[1] Statistical error only.

NODE=B018M;LINKAGE=A

N(1700) BREIT-WIGNER WIDTH

NODE=B018W

NODE=B018W

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
100 to 300 (≈ 200) OUR ESTIMATE				
400± 50	SARANTSEV	25	DPWA	Multichannel
81± 13	[1] HUNT	19	DPWA	Multichannel
90± 40	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
110± 30	HOEHLER	79	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
400±100	SOKHOYAN	15A	DPWA	Multichannel
56± 8	[1] SHRESTHA	12A	DPWA	Multichannel
134± 37	BATINIC	10	DPWA	$\pi N \to N\pi$, $N\eta$
175±133	VRANA	00	DPWA	Multichannel

→ UNCHECKED ←

[1] Statistical error only.

NODE=B018W;LINKAGE=A

$N(1700)$ DECAY MODES

NODE=B018225;NODE=B018

The following branching fractions are our estimates, not fits or averages.

NODE=B018

	Mode	Fraction (Γ_i/Γ)	
Γ_1	$N\pi$	7–17 %	DESIG=1;OUR EST
Γ_2	$N\eta$	1–2 %	DESIG=2
Γ_3	$N\omega$	10–34 %	DESIG=186;OUR EST
Γ_4	ΛK	1–2 %	DESIG=187
Γ_5	$N\pi\pi$	>89 %	DESIG=171;OUR EST
Γ_6	$\Delta(1232)\pi$	55–85 %	DESIG=181;OUR EST
Γ_7	$\Delta(1232)\pi$, S-wave	50–80 %	DESIG=5;OUR EST
Γ_8	$\Delta(1232)\pi$, D-wave	4–14 %	DESIG=6;OUR EST
Γ_9	$N\rho$	(21 ±9) %	DESIG=192
Γ_{10}	$N\rho$, S=1/2	(5.0±3.0) %	DESIG=188
Γ_{11}	$N\rho$, S=3/2 , S-wave	32–44 %	DESIG=8;OUR EST
Γ_{12}	$N\rho$, S=3/2 , D-wave	(16 ±8) %	DESIG=189
Γ_{13}	$N\sigma$	2–14 %	DESIG=10;OUR EST
Γ_{14}	$N(1440)\pi$	3–11 %	DESIG=15;OUR EST
Γ_{15}	$N(1520)\pi$	<4 %	DESIG=16;OUR EST
Γ_{16}	$N(1535)\pi$	< 1 %	DESIG=191
Γ_{17}	$p\gamma$	0.01–0.05 %	DESIG=184;OUR EST
Γ_{18}	$p\gamma$, helicity=1/2	0.0–0.024 %	DESIG=11;OUR EST
Γ_{19}	$p\gamma$, helicity=3/2	0.002–0.026 %	DESIG=12;OUR EST
Γ_{20}	$n\gamma$	0.01–0.13 %	DESIG=185;OUR EST
Γ_{21}	$n\gamma$, helicity=1/2	0.0–0.09 %	DESIG=13;OUR EST
Γ_{22}	$n\gamma$, helicity=3/2	0.01–0.05 %	DESIG=14;OUR EST

$N(1700)$ BRANCHING RATIOS

NODE=B018230

$\Gamma(N\pi)/\Gamma_{total}$ — Γ_1/Γ

NODE=B018R1
NODE=B018R1

VALUE (%)	DOCUMENT ID		TECN	COMMENT
7 to 17 (≈ 12) OUR ESTIMATE				
20 ±8	SEIFEN	25	DPWA	Multichannel
3.7±0.1	[1] HUNT	19	DPWA	Multichannel
11 ±5	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
8 ±3	HOEHLER	79	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
15 ±6	SOKHOYAN	15A	DPWA	Multichannel
2.8±0.5	[1] SHRESTHA	12A	DPWA	Multichannel
9 ±6	BATINIC	10	DPWA	$\pi N \to N\pi$, $N\eta$
4 ±2	VRANA	00	DPWA	Multichannel

→ UNCHECKED ←

[1] Statistical error only.

NODE=B018R1;LINKAGE=A

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

NODE=B018R10
NODE=B018R10

VALUE (%)	DOCUMENT ID		TECN	COMMENT
1–2 % OUR ESTIMATE				
1 ±1	MUELLER	20	DPWA	Multichannel
1.1±0.6	[1] HUNT	19	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
14 ±5	BATINIC	10	DPWA	$\pi N \to N\pi$, $N\eta$
10 ±5	THOMA	08	DPWA	Multichannel
0 ±1	VRANA	00	DPWA	Multichannel

→ UNCHECKED ←

[1] Statistical error only.

NODE=B018R10;LINKAGE=A

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

NODE=B018R00
NODE=B018R00

VALUE (%)	DOCUMENT ID		TECN	COMMENT
22±12	DENISENKO	16	DPWA	Multichannel

OCCUR=3

$\Gamma(\Lambda K)/\Gamma_{total}$ — Γ_4/Γ

NODE=B018R01
NODE=B018R01

VALUE (%)	DOCUMENT ID		TECN	COMMENT
1–2 % OUR ESTIMATE				
1.3±0.7	[1] HUNT	19	DPWA	Multichannel

→ UNCHECKED ←

[1] Statistical error only.

NODE=B018R01;LINKAGE=A

$\Gamma(\Delta(1232)\pi)/\Gamma_{total}$ — Γ_6/Γ

NODE=B018R05

VALUE (%)	DOCUMENT ID		TECN	COMMENT
58±8	SARANTSEV	25	DPWA	Multichannel

$\Gamma(\Delta(1232)\pi, S\text{-wave})/\Gamma_{total}$ — Γ_7/Γ

NODE=B018R13

VALUE (%)	DOCUMENT ID		TECN	COMMENT
54± 8	SARANTSEV	25	DPWA	Multichannel
66±17	SEIFEN	25	DPWA	Multichannel
11± 8	[1] HUNT	19	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
65±15	SOKHOYAN	15A	DPWA	Multichannel
31± 9	[1] SHRESTHA	12A	DPWA	Multichannel
11± 1	VRANA	00	DPWA	Multichannel

[1] Statistical error only.

NODE=B018R13;LINKAGE=A

$\Gamma(\Delta(1232)\pi, D\text{-wave})/\Gamma_{total}$ — Γ_8/Γ

NODE=B018R12

VALUE (%)	DOCUMENT ID		TECN	COMMENT
4± 2	SARANTSEV	25	DPWA	Multichannel
7± 4	SEIFEN	25	DPWA	Multichannel
13± 5	[1] HUNT	19	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
9± 5	SOKHOYAN	15A	DPWA	Multichannel
3± 2	[1] SHRESTHA	12A	DPWA	Multichannel
79±56	VRANA	00	DPWA	Multichannel

[1] Statistical error only.

NODE=B018R12;LINKAGE=A

$\Gamma(N\rho)/\Gamma_{total}$ — Γ_9/Γ

NODE=B018R06

VALUE (%)	DOCUMENT ID		TECN	COMMENT
21±9	SARANTSEV	25	DPWA	Multichannel

$\Gamma(N\rho, S{=}1/2)/\Gamma_{total}$ — Γ_{10}/Γ

NODE=B018R03

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

$\Gamma(N\rho, S{=}3/2, S\text{-wave})/\Gamma_{total}$ — Γ_{11}/Γ

NODE=B018R11

VALUE (%)	DOCUMENT ID		TECN	COMMENT
7.5±3.6	[1] HUNT	19	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
38 ±6	[1] SHRESTHA	12A	DPWA	Multichannel
7 ±1	VRANA	00	DPWA	Multichannel

[1] Statistical error only.

NODE=B018R11;LINKAGE=A

$\Gamma(N\rho, S{=}3/2, D\text{-wave})/\Gamma_{total}$ — Γ_{12}/Γ

NODE=B018R02

VALUE (%)	DOCUMENT ID		TECN	COMMENT
16±8	SARANTSEV	25	DPWA	Multichannel

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

NODE=B018R14

VALUE (%)	DOCUMENT ID		TECN	COMMENT
2± 2	SARANTSEV	25	DPWA	Multichannel
6± 4	SEIFEN	25	DPWA	Multichannel
62± 9	[1] HUNT	19	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
8± 6	SOKHOYAN	15A	DPWA	Multichannel
24± 6	[1] SHRESTHA	12A	DPWA	Multichannel
18±12	THOMA	08	DPWA	Multichannel
0± 1	VRANA	00	DPWA	Multichannel

[1] Statistical error only.

NODE=B018R14;LINKAGE=A

$\Gamma(N(1440)\pi)/\Gamma_{total}$ — Γ_{14}/Γ

NODE=B018R15

VALUE (%)	DOCUMENT ID		TECN	COMMENT
9±5	SEIFEN	25	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
7±4	SOKHOYAN	15A	DPWA	Multichannel

$\Gamma(N(1520)\pi)/\Gamma_{total}$ Γ_{15}/Γ

NODE=B018R16

VALUE (%)	DOCUMENT ID		TECN	COMMENT
<2	SEIFEN	25	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<4	SOKHOYAN	15A	DPWA	Multichannel

$\Gamma(N(1535)\pi)/\Gamma_{total}$ Γ_{16}/Γ

NODE=B018R04

VALUE (%)	DOCUMENT ID		TECN	COMMENT
<1	SEIFEN	25	DPWA	Multichannel

N(1700) PHOTON DECAY AMPLITUDES AT THE POLE

NODE=B018260

$N(1700) \to p\gamma$, helicity-1/2 amplitude $A_{1/2}$

NODE=B018PA1

MODULUS ($GeV^{-1/2}$)	PHASE (°)	DOCUMENT ID		TECN	COMMENT
0.035 ± 0.014	-20 ± 35	SARANTSEV	25	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.047 ± 0.016	75 ± 30	SOKHOYAN	15A	DPWA	Multichannel

$N(1700) \to p\gamma$, helicity-3/2 amplitude $A_{3/2}$

NODE=B018PA2

MODULUS ($GeV^{-1/2}$)	PHASE (°)	DOCUMENT ID		TECN	COMMENT
-0.100 ± 0.030	5 ± 20	SARANTSEV	25	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •					
-0.041 ± 0.014	0 ± 20	SOKHOYAN	15A	DPWA	Multichannel

N(1700) BREIT-WIGNER PHOTON DECAY AMPLITUDES

NODE=B018235

$N(1700) \to p\gamma$, helicity-1/2 amplitude $A_{1/2}$

NODE=B018A1

VALUE ($GeV^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
0.032 ± 0.013	SARANTSEV	25	DPWA	Multichannel
0.032 ± 0.005	[1] HUNT	19	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.041 ± 0.017	ANISOVICH	12A	DPWA	Multichannel
0.021 ± 0.005	[1] SHRESTHA	12A	DPWA	Multichannel

[1] Statistical error only.

NODE=B018A1;LINKAGE=A

$N(1700) \to p\gamma$, helicity-3/2 amplitude $A_{3/2}$

NODE=B018A2

VALUE ($GeV^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
-0.090 ± 0.025	SARANTSEV	25	DPWA	Multichannel
0.034 ± 0.006	[1] HUNT	19	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
-0.037 ± 0.014	SOKHOYAN	15A	DPWA	Multichannel
0.050 ± 0.009	[1] SHRESTHA	12A	DPWA	Multichannel

[1] Statistical error only.

NODE=B018A2;LINKAGE=A

$N(1700) \to n\gamma$, helicity-1/2 amplitude $A_{1/2}$

NODE=B018A3

VALUE ($GeV^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
0.005 ± 0.011	[1] HUNT	19	DPWA	Multichannel
0.025 ± 0.010	ANISOVICH	13B	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
-0.049 ± 0.008	[1] SHRESTHA	12A	DPWA	Multichannel

[1] Statistical error only.

NODE=B018A3;LINKAGE=A

$N(1700) \to n\gamma$, helicity-3/2 amplitude $A_{3/2}$

NODE=B018A4

VALUE ($GeV^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
-0.094 ± 0.017	[1] HUNT	19	DPWA	Multichannel
-0.032 ± 0.018	ANISOVICH	13B	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •				
-0.092 ± 0.014	[1] SHRESTHA	12A	DPWA	Multichannel

[1] Statistical error only.

NODE=B018A4;LINKAGE=A

N(1700) REFERENCES

NODE=B018

For early references, see Physics Letters **111B** 1 (1982).

NODE=B018

SARANTSEV	25	PR C112 015202	A.V. Sarantsev *et al.*	(Bonn-Gatchina Collab.)	REFID=63294
SEIFEN	25	EPJ A61 173	T. Seifen *et al.*	(CBELSA/TAPS Collab.)	REFID=63593
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
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
PDG	14	CP C38 070001	K. Olive *et al.*	(PDG Collab.)	REFID=55687
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
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
BATINIC	10	PR C82 038203	M. Batinic *et al.*	(ZAGR)	REFID=53552
THOMA	08	PL B659 87	U. Thoma *et al.*	(CB-ELSA Collab.)	REFID=52087
VRANA	00	PRPL 328 181	T.P. Vrana, S.A. Dytman, T.-S.H. Lee	(PITT, ANL)	REFID=47593
HOEHLER	93	πN Newsletter 9 1	G. Hohler	(KARL)	REFID=43821
CUTKOSKY	80	Toronto Conf. 19	R.E. Cutkosky *et al.*	(CMU, LBL) IJP	REFID=30064
Also		PR D20 2839	R.E. Cutkosky *et al.*	(CMU, LBL) IJP	REFID=40096
HOEHLER	79	PDAT 12-1	G. Hohler *et al.*	(KARLT) IJP	REFID=30058
Also		Toronto Conf. 3	R. Koch	(KARLT) IJP	REFID=30859