

$N(1990) F_{17}$

$$I(J^P) = \frac{1}{2}(\frac{7}{2}^+) \text{ Status: } **$$

OMITTED FROM SUMMARY TABLE

Most of the results published before 1975 are now obsolete and have been omitted. They may be found in our 1982 edition, Physics Letters **111B** (1982).

The various analyses do not agree very well with one another.

$N(1990)$ BREIT-WIGNER MASS

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
≈ 1990 OUR ESTIMATE			
2086 ± 28	MANLEY	92	IPWA $\pi N \rightarrow \pi N$ & $N\pi\pi$
2018	CRAWFORD	80	DPWA $\gamma N \rightarrow \pi N$
1970 ± 50	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
2005 ± 150	HOEHLER	79	IPWA $\pi N \rightarrow \pi N$
1999	BARBOUR	78	DPWA $\gamma N \rightarrow \pi N$

$N(1990)$ BREIT-WIGNER WIDTH

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
535 ± 120	MANLEY	92	IPWA $\pi N \rightarrow \pi N$ & $N\pi\pi$
295	CRAWFORD	80	DPWA $\gamma N \rightarrow \pi N$
350 ± 120	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
350 ± 100	HOEHLER	79	IPWA $\pi N \rightarrow \pi N$
216	BARBOUR	78	DPWA $\gamma N \rightarrow \pi N$

$N(1990)$ POLE POSITION

REAL PART

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1900 ± 30	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
not seen	ARNDT	91	DPWA $\pi N \rightarrow \pi N$ Soln SM90

− 2×IMAGINARY PART

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
260 ± 60	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
not seen	ARNDT	91	DPWA $\pi N \rightarrow \pi N$ Soln SM90

$N(1990)$ ELASTIC POLE RESIDUE

MODULUS $|r|$

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
9 ± 3	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

PHASE θ

<u>VALUE (°)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
-60 ± 30	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

N(1990) DECAY MODES

Mode
Γ_1 $N\pi$
Γ_2 $N\eta$
Γ_3 ΛK
Γ_4 ΣK
Γ_5 $N\pi\pi$
Γ_6 $p\gamma$, helicity=1/2
Γ_7 $p\gamma$, helicity=3/2
Γ_8 $n\gamma$, helicity=1/2
Γ_9 $n\gamma$, helicity=3/2

N(1990) BRANCHING RATIOS

<u>$\Gamma(N\pi)/\Gamma_{\text{total}}$</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_1/Γ
0.06 ± 0.02	MANLEY	92	IPWA $\pi N \rightarrow \pi N$ & $N\pi\pi$	
0.06 ± 0.02	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$	
0.04 ± 0.02	HOEHLER	79	IPWA $\pi N \rightarrow \pi N$	

<u>$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow N(1990) \rightarrow N\eta$</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	$(\Gamma_1\Gamma_2)^{1/2}/\Gamma$
-0.043	BAKER	79	DPWA $\pi^- p \rightarrow n\eta$	

<u>$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow N(1990) \rightarrow \Lambda K$</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	$(\Gamma_1\Gamma_3)^{1/2}/\Gamma$
+0.01	BELL	83	DPWA $\pi^- p \rightarrow \Lambda K^0$	
not seen	SAXON	80	DPWA $\pi^- p \rightarrow \Lambda K^0$	
-0.021 ± 0.033	DEVENISH	74B	Fixed- t dispersion rel.	

<u>$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow N(1990) \rightarrow \Sigma K$</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	$(\Gamma_1\Gamma_4)^{1/2}/\Gamma$
0.010 to 0.023	¹ DEANS	75	DPWA $\pi N \rightarrow \Sigma K$	
0.06	LANGBEIN	73	IPWA $\pi N \rightarrow \Sigma K$ (sol. 1)	

<u>$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow N(1990) \rightarrow N\pi\pi$</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	$(\Gamma_1\Gamma_5)^{1/2}/\Gamma$
not seen	LONGACRE	75	IPWA $\pi N \rightarrow N\pi\pi$	

N(1990) PHOTON DECAY AMPLITUDES

N(1990) → pγ, helicity-1/2 amplitude A_{1/2}

VALUE (GeV ^{-1/2})	DOCUMENT ID	TECN	COMMENT
0.030 ± 0.029	AWAJI	81	DPWA γ N → π N
0.001 ± 0.040	CRAWFORD	80	DPWA γ N → π N
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
0.040	BARBOUR	78	DPWA γ N → π N

N(1990) → pγ, helicity-3/2 amplitude A_{3/2}

VALUE (GeV ^{-1/2})	DOCUMENT ID	TECN	COMMENT
0.086 ± 0.060	AWAJI	81	DPWA γ N → π N
0.004 ± 0.025	CRAWFORD	80	DPWA γ N → π N
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
+0.004	BARBOUR	78	DPWA γ N → π N

N(1990) → nγ, helicity-1/2 amplitude A_{1/2}

VALUE (GeV ^{-1/2})	DOCUMENT ID	TECN	COMMENT
-0.001	AWAJI	81	DPWA γ N → π N
-0.078 ± 0.030	CRAWFORD	80	DPWA γ N → π N
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
-0.069	BARBOUR	78	DPWA γ N → π N

N(1990) → nγ, helicity-3/2 amplitude A_{3/2}

VALUE (GeV ^{-1/2})	DOCUMENT ID	TECN	COMMENT
-0.178	AWAJI	81	DPWA γ N → π N
-0.116 ± 0.045	CRAWFORD	80	DPWA γ N → π N
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
-0.072	BARBOUR	78	DPWA γ N → π N

N(1990) FOOTNOTES

¹ The range given for DEANS 75 is from the four best solutions.

N(1990) REFERENCES

For early references, see Physics Letters **111B** 70 (1982).

MANLEY	92	PR D45 4002	+Saleski	(KENT) IJP
Also	84	PR D30 904	Manley, Arndt, Goradia, Teplitz	(VPI)
ARNDT	91	PR D43 2131	+Li, Roper, Workman, Ford	(VPI, TELE) IJP
BELL	83	NP B222 389	+Blissett, Broome, Daley, Hart, Lintern+	(RL) IJP
PDG	82	PL 111B	Roos, Porter, Aguilar-Benitez+	(HELS, CIT, CERN)
AWAJI	81	Bonn Conf. 352	+Kajikawa	(NAGO)
Also	82	NP B197 365	Fujii, Hayashii, Iwata, Kajikawa+	(NAGO)
CRAWFORD	80	Toronto Conf. 107		(GLAS)
CUTKOSKY	80	Toronto Conf. 19	+Forsyth, Babcock, Kelly, Hendrick	(CMU, LBL) IJP
Also	79	PR D20 2839	Cutkosky, Forsyth, Hendrick, Kelly	(CMU, LBL) IJP
SAXON	80	NP B162 522	+Baker, Bell, Blissett, Bloodworth+	(RHEL, BRIS) IJP

BAKER	79	NP B156 93	+Brown, Clark, Davies, Depagter, Evans+	(RHEL) IJP
HOEHLER	79	PDAT 12-1	+Kaiser, Koch, Pietarinen	(KARLT) IJP
Also	80	Toronto Conf. 3	Koch	(KARLT) IJP
BARBOUR	78	NP B141 253	+Crawford, Parsons	(GLAS)
DEANS	75	NP B96 90	+Mitchell, Montgomery+	(SFLA, ALAH) IJP
LONGACRE	75	PL 55B 415	+Rosenfeld, Lasinski, Smadja+	(LBL, SLAC) IJP
DEVENISH	74B	NP B81 330	+Froggatt, Martin	(DESY, NORD, LOUC)
LANGBEIN	73	NP B53 251	+Wagner	(MUNI) IJP
