$N(1700)$ WIDTH

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
50 to 150 (≈ 100) OUR ESTIMATE				
250 ± 220	MANLEY	92	IPWA	$\pi N \to \pi N$ & $N\pi\pi$
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. • • •				
166	CRAWFORD	80	DPWA	$\gamma N \to \pi N$
70	SAXON	80	DPWA	$\pi^- p \to \Lambda K^0$
70 to 100	BAKER	78	DPWA	$\pi^- p \to \Lambda K^0$
126	BARBOUR	78	DPWA	$\gamma N \to \pi N$
90 ± 25	[1] BAKER	77	IPWA	$\pi^- p \to \Lambda K^0$
100	[1] BAKER	77	DPWA	$\pi^- p \to \Lambda K^0$
600	[2] LONGACRE	77	IPWA	$\pi N \to N\pi\pi$
300	[3] LONGACRE	75	IPWA	$\pi N \to N\pi\pi$

$N(1700)$ POLE POSITION

REAL PART

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
1700	[4] HOEHLER	93	SPED	$\pi N \to \pi N$
1660 ± 30	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
not seen	ARNDT	91	DPWA	$\pi N \to \pi N$ Soln SM90
1670	ARNDT	85	DPWA	See ARNDT 91
1710 or 1678	[5] LONGACRE	78	IPWA	$\pi N \to N\pi\pi$
1616 or 1613	[2] LONGACRE	77	IPWA	$\pi N \to N\pi\pi$

$-2\times$IMAGINARY PART

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
120	[4] HOEHLER	93	SPED	$\pi N \to \pi N$
90 ± 40	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
not seen	ARNDT	91	DPWA	$\pi N \to \pi N$ Soln SM90
80	ARNDT	85	DPWA	See ARNDT 91
607 or 567	[5] LONGACRE	78	IPWA	$\pi N \to N\pi\pi$
577 or 575	[2] LONGACRE	77	IPWA	$\pi N \to N\pi\pi$

$N(1700)$ ELASTIC POLE RESIDUE

MODULUS $|r|$

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
5	HOEHLER	93	SPED	$\pi N \to \pi N$
6 ± 3	CUTKOSKY	80	IPWA	$\pi N \to \pi N$

PHASE θ

VALUE (°)	DOCUMENT ID		TECN	COMMENT
0 ± 50	CUTKOSKY	80	IPWA	$\pi N \to \pi N$

$N(1700)$ DECAY MODES

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

	Mode	Fraction (Γ_i/Γ)
Γ_1	$N\pi$	5–15 %
Γ_2	$N\eta$	
Γ_3	ΛK	<3 %
Γ_4	ΣK	
Γ_5	$N\pi\pi$	85–95 %
Γ_6	$\Delta\pi$	
Γ_7	$\Delta(1232)\pi$, S-wave	
Γ_8	$\Delta(1232)\pi$, D-wave	
Γ_9	$N\rho$	<35 %
Γ_{10}	$N\rho$, S=1/2, D-wave	
Γ_{11}	$N\rho$, S=3/2, S-wave	
Γ_{12}	$N\rho$, S=3/2, D-wave	
Γ_{13}	$N(\pi\pi)^{I=0}_{S\text{-wave}}$	
Γ_{14}	$p\gamma$	~ 0.01 %
Γ_{15}	$p\gamma$, helicity=1/2	
Γ_{16}	$p\gamma$, helicity=3/2	
Γ_{17}	$n\gamma$	
Γ_{18}	$n\gamma$, helicity=1/2	
Γ_{19}	$n\gamma$, helicity=3/2	

$N(1700)$ BRANCHING RATIOS

$\Gamma(N\pi)/\Gamma_{total}$ — Γ_1/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.05 to 0.15 OUR ESTIMATE				
0.01 ± 0.02	MANLEY	92	IPWA	$\pi N \to \pi N$ & $N\pi\pi$
0.11 ± 0.05	CUTKOSKY	80	IPWA	$\pi N \to \pi N$
0.08 ± 0.03	HOEHLER	79	IPWA	$\pi N \to \pi N$

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(1700) \to \Lambda K$ — $(\Gamma_1\Gamma_3)^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
−0.06 to +0.04 OUR ESTIMATE				
−0.012	BELL	83	DPWA	$\pi^- p \to \Lambda K^0$
−0.012	SAXON	80	DPWA	$\pi^- p \to \Lambda K^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
−0.04	[6] BAKER	78	DPWA	See SAXON 80
-0.03 ± 0.004	[1] BAKER	77	IPWA	$\pi^- p \to \Lambda K^0$
−0.03	[1] BAKER	77	DPWA	$\pi^- p \to \Lambda K^0$
$+0.026\pm0.019$	DEVENISH	74B		Fixed-t dispersion rel.

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(1700) \to \Sigma K$ — $(\Gamma_1\Gamma_4)^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
not seen	LIVANOS	80	DPWA	$\pi p \to \Sigma K$
<0.017	[7] DEANS	75	DPWA	$\pi N \to \Sigma K$

Note: Signs of couplings from $\pi N \to N\pi\pi$ analyses were changed in the 1986 edition to agree with the baryon-first convention; the overall phase ambiguity is resolved by choosing a negative sign for the $\Delta(1620)$ S_{31} coupling to $\Delta(1232)\pi$.

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(1700) \to \Delta(1232)\pi$, S-wave — $(\Gamma_1\Gamma_7)^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
0.00 to ±0.08 OUR ESTIMATE				
$+0.02\pm0.03$	MANLEY	92	IPWA	$\pi N \to \pi N$ & $N\pi\pi$
0.00	[2] LONGACRE	77	IPWA	$\pi N \to N\pi\pi$
−0.16	[3] LONGACRE	75	IPWA	$\pi N \to N\pi\pi$

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(1700) \to \Delta(1232)\pi$, D-wave — $(\Gamma_1\Gamma_8)^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
±0.04 to ±0.20 OUR ESTIMATE				
$+0.10\pm0.09$	MANLEY	92	IPWA	$\pi N \to \pi N$ & $N\pi\pi$
−0.12	[2] LONGACRE	77	IPWA	$\pi N \to N\pi\pi$
+0.14	[3] LONGACRE	75	IPWA	$\pi N \to N\pi\pi$

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(1700) \to N\rho$, S=3/2, S-wave — $(\Gamma_1\Gamma_{11})^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
±0.01 to ±0.13 OUR ESTIMATE				
-0.04 ± 0.06	MANLEY	92	IPWA	$\pi N \to \pi N$ & $N\pi\pi$
−0.07	[2] LONGACRE	77	IPWA	$\pi N \to N\pi\pi$
+0.07	[3] LONGACRE	75	IPWA	$\pi N \to N\pi\pi$

$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{total}$ in $N\pi \to N(1700) \to N(\pi\pi)^{I=0}_{S\text{-wave}}$ — $(\Gamma_1\Gamma_{13})^{1/2}/\Gamma$

VALUE	DOCUMENT ID		TECN	COMMENT
±0.02 to ±0.28 OUR ESTIMATE				
$+0.02\pm0.02$	MANLEY	92	IPWA	$\pi N \to \pi N$ & $N\pi\pi$
0.00	[2] LONGACRE	77	IPWA	$\pi N \to N\pi\pi$
+0.2	[3] LONGACRE	75	IPWA	$\pi N \to N\pi\pi$

$N(1700)$ PHOTON DECAY AMPLITUDES

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

VALUE (GeV$^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
-0.017 ± 0.012 OUR ESTIMATE				
-0.016 ± 0.014	CRAWFORD	83	IPWA	$\gamma N \to \pi N$
-0.002 ± 0.013	AWAJI	81	DPWA	$\gamma N \to \pi N$
-0.028 ± 0.007	ARAI	80	DPWA	$\gamma N \to \pi N$ (fit 1)
-0.029 ± 0.006	ARAI	80	DPWA	$\gamma N \to \pi N$ (fit 2)
-0.024 ± 0.019	CRAWFORD	80	DPWA	$\gamma N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
-0.033 ± 0.021	BARBOUR	78	DPWA	$\gamma N \to \pi N$
-0.014 ± 0.025	FELLER	76	DPWA	$\gamma N \to \pi N$

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

VALUE (GeV$^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
$+0.002\pm0.020$ OUR ESTIMATE				
-0.009 ± 0.012	CRAWFORD	83	IPWA	$\gamma N \to \pi N$
0.029 ± 0.014	AWAJI	81	DPWA	$\gamma N \to \pi N$
-0.002 ± 0.005	ARAI	80	DPWA	$\gamma N \to \pi N$ (fit 1)
0.014 ± 0.005	ARAI	80	DPWA	$\gamma N \to \pi N$ (fit 2)
-0.017 ± 0.014	CRAWFORD	80	DPWA	$\gamma N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
-0.014 ± 0.025	BARBOUR	78	DPWA	$\gamma N \to \pi N$
0.0 ± 0.014	FELLER	76	DPWA	$\gamma N \to \pi N$

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

VALUE (GeV$^{-1/2}$)	DOCUMENT ID		TECN	COMMENT
0.001 ± 0.043 OUR ESTIMATE				
0.006 ± 0.024	AWAJI	81	DPWA	$\gamma N \to \pi N$
-0.002 ± 0.013	FUJII	81	DPWA	$\gamma N \to \pi N$
-0.052 ± 0.030	ARAI	80	DPWA	$\gamma N \to \pi N$ (fit 1)
-0.055 ± 0.030	ARAI	80	DPWA	$\gamma N \to \pi N$ (fit 2)
0.052 ± 0.035	CRAWFORD	80	DPWA	$\gamma N \to \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$+0.050\pm0.042$	BARBOUR	78	DPWA	$\gamma N \to \pi N$