

$\Delta(2000) F_{35}$

$$I(J^P) = \frac{3}{2}(\frac{5}{2}^+) \text{ Status: } **$$

OMITTED FROM SUMMARY TABLE

The latest GWU analysis (ARNDT 06) finds no evidence for this resonance.

$\Delta(2000)$ BREIT-WIGNER MASS

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
≈ 2000 OUR ESTIMATE			
1724 ± 61	VRANA	00	DPWA Multichannel
1752 ± 32	MANLEY	92	IPWA $\pi N \rightarrow \pi N$ & $N\pi\pi$
2200 ± 125	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

$\Delta(2000)$ BREIT-WIGNER WIDTH

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
138 ± 68	VRANA	00	DPWA Multichannel
251 ± 93	MANLEY	92	IPWA $\pi N \rightarrow \pi N$ & $N\pi\pi$
400 ± 125	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

$\Delta(2000)$ POLE POSITION

REAL PART

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1697	VRANA	00	DPWA Multichannel
2150 ± 100	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

−2×IMAGINARY PART

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
112	VRANA	00	DPWA Multichannel
350 ± 100	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

$\Delta(2000)$ ELASTIC POLE RESIDUE

MODULUS $|r|$

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
16 ± 5	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

PHASE θ

<u>VALUE (°)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
150 ± 90	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

Δ(2000) DECAY MODES

Mode
Γ ₁ <i>N</i> π
Γ ₂ <i>N</i> ππ
Γ ₃ Δ(1232)π, <i>P</i> -wave
Γ ₄ Δ(1232)π, <i>F</i> -wave
Γ ₅ <i>N</i> ρ, <i>S</i> =3/2, <i>P</i> -wave

Δ(2000) BRANCHING RATIOS

Γ(<i>N</i> π)/Γ _{total}	DOCUMENT ID	TECN	COMMENT	Γ ₁ /Γ
0.00±0.01	VRANA	00	DPWA	Multichannel
0.02±0.01	MANLEY	92	IPWA	π <i>N</i> → π <i>N</i> & <i>N</i> ππ
0.07±0.04	CUTKOSKY	80	IPWA	π <i>N</i> → π <i>N</i>
Γ_{<i>i</i>}Γ_{<i>f</i>}^{1/2}/Γ_{total} in <i>N</i>π → Δ(2000) → Δ(1232)π, <i>P</i>-wave (Γ₁Γ₃)^{1/2}/Γ				
VALUE	DOCUMENT ID	TECN	COMMENT	
+0.07±0.03	MANLEY	92	IPWA	π <i>N</i> → π <i>N</i> & <i>N</i> ππ
Γ(Δ(1232)π, <i>P</i>-wave)/Γ_{total} Γ₃/Γ				
VALUE	DOCUMENT ID	TECN	COMMENT	
0.00±0.01	VRANA	00	DPWA	Multichannel
Γ_{<i>i</i>}Γ_{<i>f</i>}^{1/2}/Γ_{total} in <i>N</i>π → Δ(2000) → Δ(1232)π, <i>F</i>-wave (Γ₁Γ₄)^{1/2}/Γ				
VALUE	DOCUMENT ID	TECN	COMMENT	
+0.09±0.04	MANLEY	92	IPWA	π <i>N</i> → π <i>N</i> & <i>N</i> ππ
Γ(Δ(1232)π, <i>F</i>-wave)/Γ_{total} Γ₄/Γ				
VALUE	DOCUMENT ID	TECN	COMMENT	
0.40±0.01	VRANA	00	DPWA	Multichannel
Γ_{<i>i</i>}Γ_{<i>f</i>}^{1/2}/Γ_{total} in <i>N</i>π → Δ(2000) → <i>N</i>ρ, <i>S</i>=3/2, <i>P</i>-wave (Γ₁Γ₅)^{1/2}/Γ				
VALUE	DOCUMENT ID	TECN	COMMENT	
−0.06±0.01	MANLEY	92	IPWA	π <i>N</i> → π <i>N</i> & <i>N</i> ππ
Γ(<i>N</i>ρ, <i>S</i>=3/2, <i>P</i>-wave)/Γ_{total} Γ₅/Γ				
VALUE	DOCUMENT ID	TECN	COMMENT	
0.60±0.60	VRANA	00	DPWA	Multichannel

Δ(2000) REFERENCES

ARNDT	06	PR C74 045205	R.A. Arndt <i>et al.</i>	(GWU)
VRANA	00	PRPL 328 181	T.P. Vrana, S.A. Dytman., T.-S.H. Lee	(PITT+)
MANLEY	92	PR D45 4002	D.M. Manley, E.M. Saleski	(KENT) IJP
Also		PR D30 904	D.M. Manley <i>et al.</i>	(VPI)
CUTKOSKY	80	Toronto Conf. 19	R.E. Cutkosky <i>et al.</i>	(CMU, LBL)
Also		PR D20 2839	R.E. Cutkosky <i>et al.</i>	(CMU, LBL)