

$\Delta(2000) 5/2^+$ $I(J^P) = \frac{3}{2}(\frac{5}{2}^+)$ 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 \pm 61	VRANA	00	DPWA Multichannel
1752 \pm 32	MANLEY	92	IPWA $\pi N \rightarrow \pi N$ & $N\pi\pi$
2200 \pm 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 \pm 68	VRANA	00	DPWA Multichannel
251 \pm 93	MANLEY	92	IPWA $\pi N \rightarrow \pi N$ & $N\pi\pi$
400 \pm 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 \pm 100	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

-2xIMAGINARY PART

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
112	VRANA	00	DPWA Multichannel
350 \pm 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 \pm 5	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

PHASE θ

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

$\Delta(2000)$ DECAY MODES

Mode	
Γ_1	$N\pi$
Γ_2	$N\pi\pi$
Γ_3	$\Delta(1232)\pi$, <i>P</i> -wave
Γ_4	$\Delta(1232)\pi$, <i>F</i> -wave
Γ_5	$N\rho$, $S=3/2$, <i>P</i> -wave

 $\Delta(2000)$ BRANCHING RATIOS

$\Gamma(N\pi)/\Gamma_{\text{total}}$				Γ_1/Γ
VALUE (%)	DOCUMENT ID	TECN	COMMENT	
0 ± 1	VRANA	00	DPWA	Multichannel
2 ± 1	MANLEY	92	IPWA	$\pi N \rightarrow \pi N$ & $N\pi\pi$
7 ± 4	CUTKOSKY	80	IPWA	$\pi N \rightarrow \pi N$
$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow \Delta(2000) \rightarrow \Delta(1232)\pi$, <i>P</i>-wave				$(\Gamma_1\Gamma_3)^{1/2}/\Gamma$
VALUE	DOCUMENT ID	TECN	COMMENT	
$+0.07 \pm 0.03$	MANLEY	92	IPWA	$\pi N \rightarrow \pi N$ & $N\pi\pi$
$\Gamma(\Delta(1232)\pi, \textit{P}\text{-wave})/\Gamma_{\text{total}}$				Γ_3/Γ
VALUE (%)	DOCUMENT ID	TECN	COMMENT	
0 ± 1	VRANA	00	DPWA	Multichannel
$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow \Delta(2000) \rightarrow \Delta(1232)\pi$, <i>F</i>-wave				$(\Gamma_1\Gamma_4)^{1/2}/\Gamma$
VALUE	DOCUMENT ID	TECN	COMMENT	
$+0.09 \pm 0.04$	MANLEY	92	IPWA	$\pi N \rightarrow \pi N$ & $N\pi\pi$
$\Gamma(\Delta(1232)\pi, \textit{F}\text{-wave})/\Gamma_{\text{total}}$				Γ_4/Γ
VALUE (%)	DOCUMENT ID	TECN	COMMENT	
40 ± 1	VRANA	00	DPWA	Multichannel
$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow \Delta(2000) \rightarrow N\rho$, $S=3/2$, <i>P</i>-wave				$(\Gamma_1\Gamma_5)^{1/2}/\Gamma$
VALUE	DOCUMENT ID	TECN	COMMENT	
-0.06 ± 0.01	MANLEY	92	IPWA	$\pi N \rightarrow \pi N$ & $N\pi\pi$
$\Gamma(N\rho, S=3/2, \textit{P}\text{-wave})/\Gamma_{\text{total}}$				Γ_5/Γ
VALUE (%)	DOCUMENT ID	TECN	COMMENT	
60 ± 60	VRANA	00	DPWA	Multichannel

 $\Delta(2000)$ 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)