

$\Delta(1750) \ 1/2^+$ $I(J^P) = \frac{3}{2}(\frac{1}{2}^+)$ Status: *

OMITTED FROM SUMMARY TABLE

Neither ARNDT 06 nor ANISOVICH 12A finds any evidence for this resonance.

 $\Delta(1750)$ BREIT-WIGNER MASS

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
≈ 1750 OUR ESTIMATE			
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
1712 \pm 1	PENNER	02C	DPWA Multichannel
1721 \pm 61	VRANA	00	DPWA Multichannel
1744 \pm 36	MANLEY	92	IPWA $\pi N \rightarrow \pi N$ & $N\pi\pi$
1715.2 \pm 21.0	¹ CHEW	80	BPWA $\pi^+ p \rightarrow \pi^+ p$
1778.4 \pm 9.0	¹ CHEW	80	BPWA $\pi^+ p \rightarrow \pi^+ p$

 $\Delta(1750)$ BREIT-WIGNER WIDTH

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
643 \pm 17	PENNER	02C	DPWA Multichannel
70 \pm 50	VRANA	00	DPWA Multichannel
300 \pm 120	MANLEY	92	IPWA $\pi N \rightarrow \pi N$ & $N\pi\pi$
93.3 \pm 55.0	¹ CHEW	80	BPWA $\pi^+ p \rightarrow \pi^+ p$
23.0 \pm 29.0	¹ CHEW	80	BPWA $\pi^+ p \rightarrow \pi^+ p$

 $\Delta(1750)$ POLE POSITION**REAL PART**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
1748	² ARNDT	04	DPWA $\pi N \rightarrow \pi N, \eta N$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
1714	VRANA	00	DPWA Multichannel

-2xIMAGINARY PART

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
524	² ARNDT	04	DPWA $\pi N \rightarrow \pi N, \eta N$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
68	VRANA	00	DPWA Multichannel

 $\Delta(1750)$ ELASTIC POLE RESIDUE**MODULUS $|r|$**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
48	² ARNDT	04	DPWA $\pi N \rightarrow \pi N, \eta N$

PHASE θ

VALUE ($^\circ$)	DOCUMENT ID	TECN	COMMENT
158	² ARNDT	04	DPWA $\pi N \rightarrow \pi N, \eta N$

$\Delta(1750)$ DECAY MODES

Mode
Γ_1 $N\pi$
Γ_2 $N\pi\pi$
Γ_3 $N(1440)\pi$
Γ_4 ΣK

$\Delta(1750)$ BRANCHING RATIOS

$\Gamma(N\pi)/\Gamma_{\text{total}}$ Γ_1/Γ

VALUE (%)	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
1 ± 1	PENNER	02C	DPWA Multichannel
6 ± 9	VRANA	00	DPWA Multichannel
8 ± 3	MANLEY	92	IPWA $\pi N \rightarrow \pi N \& N\pi\pi$
18	¹ CHEW	80	BPWA $\pi^+ p \rightarrow \pi^+ p$
20	¹ CHEW	80	BPWA $\pi^+ p \rightarrow \pi^+ p$

$(\Gamma_i \Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow \Delta(1700) \rightarrow N(1440)\pi$ $(\Gamma_1 \Gamma_3)^{1/2}/\Gamma$

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$+0.15 \pm 0.03$	MANLEY	92	IPWA $\pi N \rightarrow \pi N \& N\pi\pi$

$\Gamma(N(1440)\pi)/\Gamma_{\text{total}}$ Γ_3/Γ

VALUE (%)	DOCUMENT ID	TECN	COMMENT
83 ± 1	VRANA	00	DPWA Multichannel

$\Gamma(\Sigma K)/\Gamma_{\text{total}}$ Γ_4/Γ

VALUE (%)	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.1 ± 0.1	PENNER	02C	DPWA Multichannel

$\Delta(1750)$ PHOTON DECAY AMPLITUDES

Papers on γN amplitudes predating 1981 may be found in our 2006 edition, Journal of Physics **G33** 1 (2006).

$\Delta(1750) \rightarrow N\gamma$, helicity-1/2 amplitude $A_{1/2}$

VALUE ($\text{GeV}^{-1/2}$)	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.053	PENNER	02D	DPWA Multichannel

$\Delta(1750)$ FOOTNOTES

- ¹ CHEW 80 reports four resonances in the P_{31} wave — see also the $\Delta(1910)$. Problems with this analysis are discussed in section 2.1.11 of HOEHLER 83.
- ² ARNDT 04 gives no corresponding Breit-Wigner parameters for this state, because the mass so obtained is about 500 MeV higher than that suggested by the position of the pole.

$\Delta(1750)$ REFERENCES

ANISOVICH	12A	EPJ A48 15	A.V. Anisovich <i>et al.</i>	(BONN, PNPI)
ARNDT	06	PR C74 045205	R.A. Arndt <i>et al.</i>	(GWU)
PDG	06	JP G33 1	W.-M. Yao <i>et al.</i>	(PDG Collab.)
ARNDT	04	PR C69 035213	R.A. Arndt <i>et al.</i>	(GWU, TRIU)
PENNER	02C	PR C66 055211	G. Penner, U. Mosel	(GIES)
PENNER	02D	PR C66 055212	G. Penner, U. Mosel	(GIES)
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	(KSA)
Also		PR D30 904	D.M. Manley <i>et al.</i>	(VPI)
HOEHLER	83	Landolt-Boernstein 1/9B2	G. Hohler	(KARLT)
CHEW	80	Toronto Conf. 123	D.M. Chew	(LBL)
