

$\rho(2150)$

$$I^G(J^{PC}) = 1^+(1^-)$$

OMITTED FROM SUMMARY TABLE

This entry was previously called $T_1(2190)$. **$\rho(2150)$ MASS** **$e^+e^- \rightarrow \pi^+\pi^-, K^+K^-, 6\pi$**

VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
2149 ± 17 OUR AVERAGE	Includes data from the datablock that follows this one.			
2153 ± 37	BIAGINI	91	RVUE	$e^+e^- \rightarrow \pi^+\pi^-, K^+K^-$
2110 ± 50	² CLEGG	90	RVUE 0	$e^+e^- \rightarrow 3(\pi^+\pi^-), 2(\pi^+\pi^-\pi^0)$

 $\bar{p}p \rightarrow \pi\pi$

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
••• We do not use the following data for averages, fits, limits, etc. •••			
~ 2191	HASAN	94	RVUE $\bar{p}p \rightarrow \pi\pi$
~ 1988	HASAN	94	RVUE $\bar{p}p \rightarrow \pi\pi$
~ 2070	¹ OAKDEN	94	RVUE $0.36-1.55 \bar{p}p \rightarrow \pi\pi$
~ 2170	³ MARTIN	80B	RVUE
~ 2100	³ MARTIN	80C	RVUE

¹ See however KLOET 96 who fit $\pi^+\pi^-$ only and find waves only up to $J = 3$ to be important but not significantly resonant.

S-CHANNEL $\bar{N}N$

VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
••• We do not use the following data for averages, fits, limits, etc. •••				
~ 2190	⁴ CUTTS	78B	CNTR	$0.97-3 \bar{p}p \rightarrow \bar{N}N$
2155 ± 15	^{4,5} COUPLAND	77	CNTR 0	$0.7-2.4 \bar{p}p \rightarrow \bar{p}p$
2193 ± 2	^{4,6} ALSPECTOR	73	CNTR	$\bar{p}p$ S channel
2190 ± 10	⁷ ABRAMS	70	CNTR	S channel $\bar{p}N$

 $\pi^-p \rightarrow \omega\pi^0n$

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
The data in this block is included in the average printed for a previous datablock.			

 2155 ± 21 OUR AVERAGE

2140 ± 30	ALDE	95	GAM2 38	$\pi^-p \rightarrow \omega\pi^0n$
2170 ± 30	ALDE	92C	GAM4 100	$\pi^-p \rightarrow \omega\pi^0n$

² Includes ATKINSON 85.

³ $I(J^P) = 1(1^-)$ from simultaneous analysis of $p\bar{p} \rightarrow \pi^-\pi^+$ and $\pi^0\pi^0$.

⁴ Isospins 0 and 1 not separated.

⁵ From a fit to the total elastic cross section.

⁶ Referred to as T or T region by ALSPECTOR 73.

⁷ Seen as bump in $I = 1$ state. See also COOPER 68. PEASLEE 75 confirm $\bar{p}p$ results of ABRAMS 70, no narrow structure.

$\rho(2150)$ WIDTH **$e^+e^- \rightarrow \pi^+\pi^-, K^+K^-, 6\pi$**

VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
363 ± 50 OUR AVERAGE	Includes data from the datablock that follows this one.			
389 ± 79	BIAGINI	91	RVUE	$e^+e^- \rightarrow \pi^+\pi^-, K^+K^-$
410 ± 100	⁹ CLEGG	90	RVUE 0	$e^+e^- \rightarrow 3(\pi^+\pi^-), 2(\pi^+\pi^-\pi^0)$

 $\bar{p}p \rightarrow \pi\pi$

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
~ 296	HASAN	94	RVUE $\bar{p}p \rightarrow \pi\pi$
~ 244	HASAN	94	RVUE $\bar{p}p \rightarrow \pi\pi$
~ 40	⁸ OAKDEN	94	RVUE $0.36-1.55 \bar{p}p \rightarrow \pi\pi$
~ 250	¹⁰ MARTIN	80B	RVUE
~ 200	¹⁰ MARTIN	80C	RVUE

⁸ See however KLOET 96 who fit $\pi^+\pi^-$ only and find waves only up to $J = 3$ to be important but not significantly resonant.

S-CHANNEL $\bar{N}N$

VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
135 ± 75	^{11,12} COUPLAND	77	CNTR 0	$0.7-2.4 \bar{p}p \rightarrow \bar{p}p$
98 ± 8	¹² ALSPECTOR	73	CNTR	$\bar{p}p$ S channel
~ 85	¹³ ABRAMS	70	CNTR	S channel $\bar{p}N$

 $\pi^-p \rightarrow \omega\pi^0n$

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
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The data in this block is included in the average printed for a previous datablock.

320 ± 70 ALDE 95 GAM2 38 $\pi^-p \rightarrow \omega\pi^0n$

● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●

~ 300 ALDE 92C GAM4 100 $\pi^-p \rightarrow \omega\pi^0n$

⁹ Includes ATKINSON 85.

¹⁰ $I(J^P) = 1(1^-)$ from simultaneous analysis of $p\bar{p} \rightarrow \pi^-\pi^+$ and $\pi^0\pi^0$.

¹¹ From a fit to the total elastic cross section.

¹² Isospins 0 and 1 not separated.

¹³ Seen as bump in $I = 1$ state. See also COOPER 68. PEASLEE 75 confirm $\bar{p}p$ results of ABRAMS 70, no narrow structure.

$\rho(2150)$ REFERENCES

KLOET	96	PR D53 6120	+Myhrer	(RUTG, NORD)
ALDE	95	ZPHY C66 379	+Binon, Bricman+	(GAMS Collab.) JP
HASAN	94	PL B334 215	+Bugg	(LOQM)
OAKDEN	94	NPA 574 731	+Pennington	(DURH)
ALDE	92C	ZPHY C54 553	+Bencheikh, Binon+	(BELG, SERP, KEK, LANL, LAPP)
BIAGINI	91	NC 104A 363	+Dubnicka+	(FRAS, PRAG)
CLEGG	90	ZPHY C45 677	+Donnachie	(LANC, MCHS)
ATKINSON	85	ZPHY C29 333	+	(BONN, CERN, GLAS, LANC, MCHS, IPNP+)
MARTIN	80B	NP B176 355	+Morgan	(LOUC, RHEL) JP
MARTIN	80C	NP B169 216	+Pennington	(DURH) JP
CUTTS	78B	PR D17 16	+Good, Grannis, Green, Lee+	(STON, WISC)
COUPLAND	77	PL 71B 460	+Eisenhandler, Gibson, Astbury+	(LOQM, RHEL)
PEASLEE	75	PL 57B 189	+Demarzo, Guerriero+	(CANB, BARI, BROW, MIT)
ALSPECTOR	73	PRL 30 511	+Cohen, Cvijanovich+	(RUTG, UPNJ)
ABRAMS	70	PR D1 1917	+Cool, Giacomelli, Kycia, Leontic, Li+	(BNL)
COOPER	68	PRL 20 1059	+Hyman, Manner, Musgrave+	(ANL)

OTHER RELATED PAPERS

BRICMAN	69	PL 29B 451	+Ferro-Luzzi, Bizard+	(CERN, CAEN, SACL)
ABRAMS	67C	PRL 18 1209	+Cool, Giacomelli, Kycia, Leontic, Li+	(BNL)