

$\rho_3(2250)$

$$I^G(J^{PC}) = 1^+(3^{--})$$

OMITTED FROM SUMMARY TABLE

Contains results only from formation experiments. For production experiments see the $\bar{N}N(1100-3600)$ entry. See also $\rho(2150)$, $f_2(2150)$, $f_4(2300)$, $\rho_5(2350)$.

 $\rho_3(2250)$ MASS **$\bar{p}p \rightarrow \pi\pi$ or $K\bar{K}$**

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
~ 2232	HASAN	94	RVUE	$\bar{p}p \rightarrow \pi\pi$
~ 2007	HASAN	94	RVUE	$\bar{p}p \rightarrow \pi\pi$
~ 2090	¹ OAKDEN	94	RVUE	0.36–1.55 $\bar{p}p \rightarrow \pi\pi$
~ 2250	² MARTIN	80B	RVUE	
~ 2300	² MARTIN	80C	RVUE	
~ 2140	³ CARTER	78B	CNTR 0	0.7–2.4 $\bar{p}p \rightarrow K^- K^+$
~ 2150	⁴ CARTER	77	CNTR 0	0.7–2.4 $\bar{p}p \rightarrow \pi\pi$

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.

² $I(J^P) = 1(3^-)$ from simultaneous analysis of $p\bar{p} \rightarrow \pi^-\pi^+$ and $\pi^0\pi^0$.

³ $I = 0, 1$. $J^P = 3^-$ from Barrelet-zero analysis.

⁴ $I(J^P) = 1(3^-)$ from amplitude analysis.

S-CHANNEL $\bar{N}N$

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
~ 2190	⁵ CUTTS	78B	CNTR	0.97–3 $\bar{p}p \rightarrow \bar{N}N$
2155 ± 15	^{5,6} COUPLAND	77	CNTR 0	0.7–2.4 $\bar{p}p \rightarrow \bar{p}p$
2193 ± 2	^{5,7} ALSPECTOR	73	CNTR	$\bar{p}p$ S channel
2190 ± 10	⁸ ABRAMS	70	CNTR	S channel $\bar{p}N$

⁵ Isospins 0 and 1 not separated.

⁶ From a fit to the total elastic cross section.

⁷ Referred to as T or T region by ALSPECTOR 73.

⁸ Seen as bump in $I = 1$ state. See also COOPER 68. PEASLEE 75 confirm $\bar{p}p$ results of ABRAMS 70, no narrow structure.

 $\rho_3(2250)$ WIDTH

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

VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
• • •	We do not use the following data for averages, fits, limits, etc. • • •			
~ 220	HASAN	94	RVUE	$\bar{p}p \rightarrow \pi\pi$
~ 287	HASAN	94	RVUE	$\bar{p}p \rightarrow \pi\pi$
~ 60	⁹ OAKDEN	94	RVUE	0.36–1.55 $\bar{p}p \rightarrow \pi\pi$
~ 250	¹⁰ MARTIN	80B	RVUE	
~ 200	¹⁰ MARTIN	80C	RVUE	
~ 150	¹¹ CARTER	78B	CNTR 0	0.7–2.4 $\bar{p}p \rightarrow K^-K^+$
~ 200	¹² CARTER	77	CNTR 0	0.7–2.4 $\bar{p}p \rightarrow \pi\pi$

⁹See however KLOET 96 who fit $\pi^+\pi^-$ only and find waves only up to $J = 3$ to be important but not significantly resonant.

¹⁰ $I(J^P) = 1(3^-)$ from simultaneous analysis of $p\bar{p} \rightarrow \pi^-\pi^+$ and $\pi^0\pi^0$.

¹¹ $I = 0, 1$. $J^P = 3^-$ from Barrelet-zero analysis.

¹² $I(J^P) = 1(3^-)$ from amplitude analysis.

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	^{13,14} COUPLAND	77	CNTR 0	0.7–2.4 $\bar{p}p \rightarrow \bar{p}p$
98 ± 8	¹⁴ ALSPECTOR	73	CNTR	$\bar{p}p$ S channel
~ 85	¹⁵ ABRAMS	70	CNTR	S channel $\bar{p}N$

¹³From a fit to the total elastic cross section.

¹⁴Isospins 0 and 1 not separated.

¹⁵Seen as bump in $I = 1$ state. See also COOPER 68. PEASLEE 75 confirm $\bar{p}p$ results of ABRAMS 70, no narrow structure.

 $\rho_3(2250)$ REFERENCES

KLOET	96	PR D53 6120	+Myhrer	(RUTG, NORD)
HASAN	94	PL B334 215	+Bugg	(LOQM)
OAKDEN	94	NPA 574 731	+Pennington	(DURH)
MARTIN	80B	NP B176 355	+Morgan	(LOUC, RHEL) JP
MARTIN	80C	NP B169 216	+Pennington	(DURH) JP
CARTER	78B	NP B141 467		(LOQM)
CUTTS	78B	PR D17 16	+Good, Grannis, Green, Lee+	(STON, WISC)
CARTER	77	PL 67B 117	+Coupland, Eisenhandler, Astbury+	(LOQM, RHEL) JP
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

MARTIN	79B	PL 86B 93	+Pennington	(DURH)
CARTER	78	NP B132 176		(LOQM) JP
CARTER	77B	PL 67B 122		(LOQM) JP
CARTER	77C	NP B127 202	+Coupland, Atkinson+	(LOQM, DARE, RHEL)
ZEMANY	76	NP B103 537	+MingMa, Mountz, Smith	(MSU)
BERTANZA	74	NC 23A 209	+Bigi, Casali, Lariccia+	(PISA, PADO, TORI)
BETTINI	73	NC 15A 563	+Alston-Garnjost, Bigi+	(PADO, LBL, PISA, TORI)
DONNACHIE	73	LNC 7 285	+Thomas	(MCHS)
NICHOLSON	73	PR D7 2572	+Delorme, Carroll+	(CIT, ROCH, BNL)
FIELDS	71	PRL 27 1749	+Cooper, Rhines, Allison	(ANL, OXF)
YOH	71	PRL 26 922	+Barish, Carroll, Lobkowicz+	(CIT, BNL, ROCH)
ABRAMS	67C	PRL 18 1209	+Cool, Giacomelli, Kycia, Leontic, Li+	(BNL)