

# $\rho(2150)$

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

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
<b>2149±17 OUR AVERAGE</b>	Includes data from the datablock that follows this one.			
2153±37	BIAGINI	91	RVUE	$e^+e^- \rightarrow \pi^+\pi^-$ ,
				$K^+K^-$
2110±50	<sup>2</sup> 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	<sup>1</sup> OAKDEN	94	RVUE 0.36–1.55 $\bar{p}p \rightarrow \pi\pi$
~ 2170	<sup>3</sup> MARTIN	80B	RVUE
~ 2100	<sup>3</sup> MARTIN	80C	RVUE

<sup>1</sup>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. ● ● ●				
2145±50	ANISOVICH	00J	SPEC	
~ 2190	<sup>4</sup> CUTTS	78B	CNTR	0.97–3 $\bar{p}p \rightarrow \bar{N}N$
2155±15	<sup>4,5</sup> COUPLAND	77	CNTR 0	0.7–2.4 $\bar{p}p \rightarrow \bar{p}p$
2193± 2	<sup>4,6</sup> ALSPECTOR	73	CNTR	$\bar{p}p$ S channel
2190±10	<sup>7</sup> 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	$\pi^-p \rightarrow \omega\pi^0n$

<sup>2</sup>Includes ATKINSON 85.

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

<sup>4</sup>Isospins 0 and 1 not separated.

<sup>5</sup>From a fit to the total elastic cross section.

<sup>6</sup>Referred to as  $T$  or  $T$  region by ALSPECTOR 73.

<sup>7</sup>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
<b>363 ± 50 OUR AVERAGE</b>	Includes data from the datablock that follows this one.			
389 ± 79	BIAGINI	91	RVUE	$e^+e^- \rightarrow \pi^+\pi^-, K^+K^-$
410 ± 100	<sup>9</sup> 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	<sup>8</sup> OAKDEN	94	RVUE 0.36–1.55 $\bar{p}p \rightarrow \pi\pi$
~ 250	<sup>10</sup> MARTIN	80B	RVUE
~ 200	<sup>10</sup> MARTIN	80C	RVUE

<sup>8</sup> 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. ● ● ●				
270 ± 100	ANISOVICH	00J	SPEC	
135 ± 75	<sup>11,12</sup> COUPLAND	77	CNTR 0	0.7–2.4 $\bar{p}p \rightarrow \bar{p}p$
98 ± 8	<sup>12</sup> ALSPECTOR	73	CNTR	$\bar{p}p$ S channel
~ 85	<sup>13</sup> 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.			

<b>320 ± 70</b>	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	$\pi^-p \rightarrow \omega\pi^0n$

<sup>9</sup> Includes ATKINSON 85.

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

<sup>11</sup> From a fit to the total elastic cross section.

<sup>12</sup> Isospins 0 and 1 not separated.

<sup>13</sup> 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

ANISOVICH	00J	PL B491 47	A.V. Anisovich <i>et al.</i>	
KLOET	96	PR D53 6120	W.M. Kloet, F. Myhrer	(RUTG, NORD)
ALDE	95	ZPHY C66 379	D.M. Alde <i>et al.</i>	(GAMS Collab.) JP
HASAN	94	PL B334 215	A. Hasan, D.V. Bugg	(LOQM)
OAKDEN	94	NPA 574 731	M.N. Oakden, M.R. Pennington	(DURH)
ALDE	92C	ZPHY C54 553	D.M. Alde <i>et al.</i>	(BELG, SERP, KEK, LANL+)
BIAGINI	91	NC 104A 363	M.E. Biagini <i>et al.</i>	(FRAS, PRAG)
CLEGG	90	ZPHY C45 677	A.B. Clegg, A. Donnachie	(LANC, MCHS)
ATKINSON	85	ZPHY C29 333	M. Atkinson <i>et al.</i>	(BONN, CERN, GLAS+)
MARTIN	80B	NP B176 355	B.R. Martin, D. Morgan	(LOUC, RHEL) JP
MARTIN	80C	NP B169 216	A.D. Martin, M.R. Pennington	(DURH) JP
CUTTS	78B	PR D17 16	D. Cutts <i>et al.</i>	(STON, WISC)
COUPLAND	77	PL 71B 460	M. Coupland <i>et al.</i>	(LOQM, RHEL)
PEASLEE	75	PL 57B 189	D.C. Peaslee <i>et al.</i>	(CANB, BARI, BROW+)
ALSPECTOR	73	PRL 30 511	J. Alspector <i>et al.</i>	(RUTG, UPNJ)
ABRAMS	70	PR D1 1917	R.J. Abrams <i>et al.</i>	(BNL)
COOPER	68	PRL 20 1059	W.A. Cooper <i>et al.</i>	(ANL)

## OTHER RELATED PAPERS

AMELIN	00	NP B668 83	D. Amelin <i>et al.</i>	(VES Collab.)
EISENHAND...	75	NP B96 109	E. Eisenhandler <i>et al.</i>	(LOQM, LIVP, DARE+)
BRICMAN	69	PL 29B 451	C. Bricman <i>et al.</i>	(CERN, CAEN, SACL)
ABRAMS	67C	PRL 18 1209	R.J. Abrams <i>et al.</i>	(BNL)