# $f_4(2300)$

$I^G(J^{PC}) = 0^+(4^{++})$

OMITTED FROM SUMMARY TABLE

This entry was previously called $U_0(2350)$. Contains results only from formation experiments. For production experiments see the $\overline{N}N(1100\text{–}3600)$ entry. See also $\rho(2150)$, $f_2(2150)$, $\rho_3(2250)$, $\rho_5(2350)$.

## $f_4(2300)$ MASS

### $\overline{p}p \rightarrow \pi\pi$ or $\overline{K}K$

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $\sim 2314$ | HASAN | 94 | RVUE | $\overline{p}p \rightarrow \pi\pi$ |
| $\sim 2300$ | [1] MARTIN | 80B | RVUE | |
| $\sim 2300$ | [1] MARTIN | 80C | RVUE | |
| $\sim 2340$ | [2] CARTER | 78B | CNTR | 0.7–2.4 $\overline{p}p \rightarrow K^-K^+$ |
| $\sim 2330$ | DULUDE | 78B | OSPK | 1–2 $\overline{p}p \rightarrow \pi^0\pi^0$ |
| $\sim 2310$ | [3] CARTER | 77 | CNTR | 0.7–2.4 $\overline{p}p \rightarrow \pi\pi$ |

[1] $I(J^P) = 0(4^+)$ from simultaneous analysis of $p\overline{p} \rightarrow \pi^-\pi^+$ and $\pi^0\pi^0$.
[2] $I(J^P) = 0(4^+)$ from Barrelet-zero analysis.
[3] $I(J^P) = 0(4^+)$ from amplitude analysis.

### S-CHANNEL $\overline{p}p$ or $\overline{N}N$

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $\sim 2380$ | [4] CUTTS | 78B | CNTR | 0.97–3 $\overline{p}p \rightarrow \overline{N}N$ |
| $2345 \pm 15$ | [4,5] COUPLAND | 77 | CNTR | 0.7–2.4 $\overline{p}p \rightarrow \overline{p}p$ |
| $2359 \pm 2$ | [4,6] ALSPECTOR | 73 | CNTR | $\overline{p}p$ *S* channel |
| $2375 \pm 10$ | ABRAMS | 70 | CNTR | *S* channel $\overline{N}N$ |

[4] Isospins 0 and 1 not separated.
[5] From a fit to the total elastic cross section.
[6] Referred to as *U* or *U* region by ALSPECTOR 73.

## $f_4(2300)$ WIDTH

### $\overline{p}p \rightarrow \pi\pi$ or $\overline{K}K$

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $\sim 278$ | HASAN | 94 | RVUE | $\overline{p}p \rightarrow \pi\pi$ |
| $\sim 200$ | [7] MARTIN | 80C | RVUE | |
| $\sim 150$ | [8] CARTER | 78B | CNTR | 0.7–2.4 $\overline{p}p \rightarrow K^-K^+$ |
| $\sim 210$ | [9] CARTER | 77 | CNTR | 0.7–2.4 $\overline{p}p \rightarrow \pi\pi$ |

[7] $I(J^P) = 0(4^+)$ from simultaneous analysis of $p\overline{p} \rightarrow \pi^-\pi^+$ and $\pi^0\pi^0$.
[8] $I(J^P) = 0(4^+)$ from Barrelet-zero analysis.
[9] $I(J^P) = 0(4^+)$ from amplitude analysis.

### S-CHANNEL $\overline{p}p$ or $\overline{N}N$

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $135^{+150}_{-65}$ | [10,11] COUPLAND | 77 | CNTR | 0.7–2.4 $\overline{p}p \rightarrow \overline{p}p$ |
| $165^{+18}_{-8}$ | [11] ALSPECTOR | 73 | CNTR | $\overline{p}p$ *S* channel |
| $\sim 190$ | ABRAMS | 70 | CNTR | *S* channel $\overline{N}N$ |

[10] From a fit to the total elastic cross section.
[11] Isospins 0 and 1 not separated.

## $f_4(2300)$ REFERENCES


| | | | | |
|---|---|---|---|---|
| HASAN | 94 | PL B334 215 | +Bugg | (LOQM) |
| 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) |
| DULUDE | 78B | PL 79B 335 | +Lanou, Massimo, Peaslee+ | (BROW, MIT, BARI) JP |
| CARTER | 77 | PL 67B 117 | +Coupland, Eisenhandler, Astbury+ | (LOQM, RHEL) JP |
| COUPLAND | 77 | PL 71B 460 | +Eisenhandler, Gibson, Astbury+ | (LOQM, RHEL) |
| ALSPECTOR | 73 | PRL 30 511 | +Cohen, Cvijanovich+ | (RUTG, UPNJ) |
| ABRAMS | 70 | PR D1 1917 | +Cool, Giacomelli, Kycia, Leontic, Li+ | (BNL) |


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