

$B_J^*(5732)$   
or  $B^{**}$

$I(J^P) = ?(??)$   
 $I, J, P$  need confirmation.

OMITTED FROM SUMMARY TABLE

Signal can be interpreted as stemming from several narrow and broad resonances. Needs confirmation.

**$B_J^*(5732)$  MASS**

| VALUE (MeV)                        | EVTS                                | DOCUMENT ID           | TECN     | COMMENT                   |
|------------------------------------|-------------------------------------|-----------------------|----------|---------------------------|
| <b>5698 ± 8 OUR AVERAGE</b>        | Error includes scale factor of 1.2. |                       |          |                           |
| 5710 ± 20                          |                                     | <sup>1</sup> AFFOLDER | 01F CDF  | $p\bar{p}$ at 1.8 TeV     |
| 5695 <sup>+17</sup> <sub>-19</sub> |                                     | <sup>2</sup> BARATE   | 98L ALEP | $e^+e^- \rightarrow Z$    |
| 5704 ± 4 ± 10                      | 1944                                | <sup>3</sup> BUSKULIC | 96D ALEP | $E_{cm}^{ee} = 88-94$ GeV |
| 5732 ± 5 ± 20                      | 2157                                | ABREU                 | 95B DLPH | $E_{cm}^{ee} = 88-94$ GeV |
| 5681 ± 11                          | 1738                                | AKERS                 | 95E OPAL | $E_{cm}^{ee} = 88-94$ GeV |

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

|          |  |                       |        |                        |
|----------|--|-----------------------|--------|------------------------|
| 5713 ± 2 |  | <sup>4</sup> ACCIARRI | 99N L3 | $e^+e^- \rightarrow Z$ |
|----------|--|-----------------------|--------|------------------------|

<sup>1</sup> AFFOLDER 01F uses the reconstructed  $B$  meson through semileptonic decay channels. The fraction of light  $B$  mesons that are produced at  $L=1$   $B^{**}$  states is measured to be  $0.28 \pm 0.06 \pm 0.03$ .

<sup>2</sup> BARATE 98L uses fully reconstructed  $B$  mesons to search for  $B^{**}$  production in the  $B\pi^\pm$  system. In the framework of heavy quark symmetry (HQS), they also measured the mass of  $B_2^*$  to be  $5739^{+8+6}_{-11-4}$  MeV/ $c^2$  and the relative production rate of  $B(b \rightarrow B_2^* \rightarrow B^{(*)}\pi)/B(b \rightarrow B_{u,d}) = (31 \pm 9^{+6}_{-5})\%$ .

<sup>3</sup> Using  $m_{B\pi} - m_B = 424 \pm 4 \pm 10$  MeV.

<sup>4</sup> ACCIARRI 99N uses inclusive reconstructed  $B$  mesons to search for  $B^{**}$  production in the  $B^{(*)}\pi^\pm$  system. In the framework of HQET, they measured the mass of  $B_1^*$  and  $B_2^*$  to be  $5670 \pm 10 \pm 13$  MeV and  $5768 \pm 5 \pm 6$  with the  $B(b \rightarrow B^{**}) = (32 \pm 3 \pm 6) \times 10^{-2}$ . They also reported the evidence for the existence of an excited  $B$ -meson state or mixture of states in the region 5.9–6.0 GeV.

**$B_J^*(5732)$  WIDTH**

| VALUE (MeV)                 | EVTS | DOCUMENT ID | TECN     | COMMENT                   |
|-----------------------------|------|-------------|----------|---------------------------|
| <b>128 ± 18 OUR AVERAGE</b> |      |             |          |                           |
| 145 ± 28                    | 2157 | ABREU       | 95B DLPH | $E_{cm}^{ee} = 88-94$ GeV |
| 116 ± 24                    | 1738 | AKERS       | 95E OPAL | $E_{cm}^{ee} = 88-94$ GeV |

**$B_J^*(5732)$  DECAY MODES**

| Mode                       | Fraction ( $\Gamma_i/\Gamma$ ) |
|----------------------------|--------------------------------|
| $\Gamma_1$ $B^*\pi + B\pi$ | dominant                       |
| $\Gamma_2$ $B^*\pi(X)$     | [a] $(85 \pm 29)\%$            |

[a] X refers to decay modes with or without additional accompanying decay particles.

### $B_J^*(5732)$ BRANCHING RATIOS

X refers to decay modes with or without additional accompanying decay particles.

| $\Gamma(B^* \pi(X))/\Gamma_{\text{total}}$ | DOCUMENT ID | TECN | COMMENT | $\Gamma_2/\Gamma$       |
|--|-------------|------|---------|-------------------------|
| VALUE                                      |             |      |         |                         |
| $0.85^{+0.26}_{-0.27} \pm 0.12$            | ABBIENDI    | 02E  | OPAL    | $e^+ e^- \rightarrow Z$ |

### $B_J^*(5732)$ REFERENCES

|          |     |               |                           |                  |
|----------|-----|---------------|---------------------------|------------------|
| ABBIENDI | 02E | EPJ C23 437   | G. Abbiendi <i>et al.</i> | (OPAL Collab.)   |
| AFFOLDER | 01F | PR D64 072002 | T. Affolder <i>et al.</i> | (CDF Collab.)    |
| ACCIARRI | 99N | PL B465 323   | M. Acciari <i>et al.</i>  | (L3 Collab.)     |
| BARATE   | 98L | PL B425 215   | R. Barate <i>et al.</i>   | (ALEPH Collab.)  |
| BUSKULIC | 96D | ZPHY C69 393  | D. Buskulic <i>et al.</i> | (ALEPH Collab.)  |
| ABREU    | 95B | PL B345 598   | P. Abreu <i>et al.</i>    | (DELPHI Collab.) |
| AKERS    | 95E | ZPHY C66 19   | R. Akers <i>et al.</i>    | (OPAL Collab.)   |