

X(4160)

$I^G(J^{PC}) = ?^?(^{??})$

OMITTED FROM SUMMARY TABLE

Seen by PAKHLOV 08 in  $e^+e^- \rightarrow J/\psi X$ ,  $X \rightarrow D^*\bar{D}^*$

A state with consistent mass and width is seen by AAIJ 21E in  $B^+ \rightarrow X(4160)K^+$  with  $X(4160) \rightarrow J/\psi\phi$  using an amplitude analysis of  $B^+ \rightarrow J/\psi\phi K^+$  with a significance (accounting for systematic uncertainties) of  $4.8\sigma$ . The  $J^{PC} = 2^{-+}$  assignment is favored over other assignments with a significance of more than  $4\sigma$ .

X(4160) MASS

| VALUE (MeV)                                         | EVTS | DOCUMENT ID       | TECN | COMMENT                               |
|-----------------------------------------------------|------|-------------------|------|---------------------------------------|
| <b>4153<sup>+23</sup><sub>-21</sub> OUR AVERAGE</b> |      |                   |      |                                       |
| 4146±18±33                                          | 24k  | <sup>1</sup> AAIJ | 21E  | LHCB $B^+ \rightarrow J/\psi\phi K^+$ |
| 4156 <sup>+25</sup> <sub>-20</sub> ±15              | 24   | PAKHLOV           | 08   | BELL $e^+e^- \rightarrow J/\psi X$    |

<sup>1</sup>From an amplitude analysis of the decay  $B^+ \rightarrow J/\psi\phi K^+$  with a significance of  $4.8\sigma$ .

X(4160) WIDTH

| VALUE (MeV)                                                               | EVTS | DOCUMENT ID       | TECN | COMMENT                               |
|---------------------------------------------------------------------------|------|-------------------|------|---------------------------------------|
| <b>136<sup>+</sup><sub>-</sub> <sup>60</sup><sub>35</sub> OUR AVERAGE</b> |      |                   |      |                                       |
| 135± 28 <sup>+59</sup> <sub>-30</sub>                                     | 24k  | <sup>1</sup> AAIJ | 21E  | LHCB $B^+ \rightarrow J/\psi\phi K^+$ |
| 139 <sup>+111</sup> <sub>-61</sub> ±21                                    | 24   | PAKHLOV           | 08   | BELL $e^+e^- \rightarrow J/\psi X$    |

<sup>1</sup>From an amplitude analysis of the decay  $B^+ \rightarrow J/\psi\phi K^+$  with a significance of  $4.8\sigma$ .

X(4160) DECAY MODES

| Mode                                  | Fraction ( $\Gamma_i/\Gamma$ ) |
|---------------------------------------|--------------------------------|
| $\Gamma_1$ $D\bar{D}$                 | not seen                       |
| $\Gamma_2$ $D^*\bar{D} + \text{c.c.}$ | not seen                       |
| $\Gamma_3$ $D^*\bar{D}^*$             | seen                           |
| $\Gamma_4$ $J/\psi\phi$               | seen                           |

X(4160) BRANCHING RATIOS

| $\Gamma(D\bar{D})/\Gamma(D^*\bar{D}^*)$ |     |             |      |                                    | $\Gamma_1/\Gamma_3$ |
|-----------------------------------------|-----|-------------|------|------------------------------------|---------------------|
| VALUE                                   | CL% | DOCUMENT ID | TECN | COMMENT                            |                     |
| <0.09                                   | 90  | PAKHLOV     | 08   | BELL $e^+e^- \rightarrow J/\psi X$ |                     |

| $\Gamma(D^*\bar{D} + \text{c.c.})/\Gamma(D^*\bar{D}^*)$ |     | $\Gamma_2/\Gamma_3$ |      |                                    |
|---------------------------------------------------------|-----|---------------------|------|------------------------------------|
| VALUE                                                   | CL% | DOCUMENT ID         | TECN | COMMENT                            |
| <0.22                                                   | 90  | PAKHLOV             | 08   | BELL $e^+e^- \rightarrow J/\psi X$ |

| $\Gamma(J/\psi\phi)/\Gamma_{\text{total}}$ |      | $\Gamma_4/\Gamma$ |      |                                       |
|--------------------------------------------|------|-------------------|------|---------------------------------------|
| VALUE                                      | EVTS | DOCUMENT ID       | TECN | COMMENT                               |
| seen                                       | 24k  | <sup>1</sup> AAIJ | 21E  | LHCB $B^+ \rightarrow J/\psi\phi K^+$ |

<sup>1</sup>From an amplitude analysis of the decay  $B^+ \rightarrow J/\psi\phi K^+$  with a significance of 4.8  $\sigma$ .

**X(4160) REFERENCES**

|         |     |                |                          |                 |
|---------|-----|----------------|--------------------------|-----------------|
| AAIJ    | 21E | PRL 127 082001 | R. Aaij <i>et al.</i>    | (LHCb Collab.)  |
| PAKHLOV | 08  | PRL 100 202001 | P. Pakhlov <i>et al.</i> | (BELLE Collab.) |