

$D(3000)^0$

$$I(J^P) = \frac{1}{2}(??)$$

OMITTED FROM SUMMARY TABLE  
Both natural- and unnatural-parity components observed depending on the decay mode (AAIJ 13CC).

**$D(3000)^0$  MASS**

| VALUE (MeV)                                                                   | EVTs  | DOCUMENT ID         | TECN      | COMMENT                           |
|-------------------------------------------------------------------------------|-------|---------------------|-----------|-----------------------------------|
| <b>3214 ±29 ±49</b>                                                           | 28k   | <sup>1</sup> AAIJ   | 16AH LHCB | $B^- \rightarrow D^+ \pi^- \pi^-$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • |       |                     |           |                                   |
| 2971.8± 8.7                                                                   | 9.5k  | <sup>2,3</sup> AAIJ | 13CC LHCB | $pp \rightarrow D^{*+} \pi^- X$   |
| 3008.1± 4.0                                                                   | 17.6k | <sup>2,4</sup> AAIJ | 13CC LHCB | $pp \rightarrow D^+ \pi^- X$      |

<sup>1</sup>From the amplitude analysis in the model describing the  $D^+ \pi^-$  wave together with virtual contributions from the  $D^*(2007)^0$  and  $B^{*0}$  states, and components corresponding to the  $D_2^*(2460)^0$ ,  $D_1^*(2680)^0$ ,  $D_3^*(2760)^0$ , and  $D_2^*(3000)^0$  resonances.  
<sup>2</sup>Systematic uncertainty not estimated.  
<sup>3</sup>Unnatural parity preferred.  
<sup>4</sup>Natural parity state. A state  $D(3000)^+$  is possibly seen in  $D^0 \pi^+$  final state.

**$D(3000)^0$  WIDTH**

| VALUE (MeV)                                                                   | EVTs  | DOCUMENT ID         | TECN      | COMMENT                           |
|-------------------------------------------------------------------------------|-------|---------------------|-----------|-----------------------------------|
| <b>186 ±38 ±72</b>                                                            | 28k   | <sup>5</sup> AAIJ   | 16AH LHCB | $B^- \rightarrow D^+ \pi^- \pi^-$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • |       |                     |           |                                   |
| 188.1±44.8                                                                    | 9.5k  | <sup>6,7</sup> AAIJ | 13CC LHCB | $pp \rightarrow D^{*+} \pi^- X$   |
| 110.5±11.5                                                                    | 17.6k | <sup>6,8</sup> AAIJ | 13CC LHCB | $pp \rightarrow D^+ \pi^- X$      |

<sup>5</sup>From the amplitude analysis in the model describing the  $D^+ \pi^-$  wave together with virtual contributions from the  $D^*(2007)^0$  and  $B^{*0}$  states, and components corresponding to the  $D_2^*(2460)^0$ ,  $D_1^*(2680)^0$ ,  $D_3^*(2760)^0$ , and  $D_2^*(3000)^0$  resonances.  
<sup>6</sup>Systematic uncertainty not estimated.  
<sup>7</sup>Unnatural parity preferred.  
<sup>8</sup>Natural parity state. A state  $D(3000)^+$  is possibly seen in  $D^0 \pi^+$  final state.

**$D(3000)^0$  DECAY MODES**

| Mode                          | Fraction ( $\Gamma_i/\Gamma$ ) |
|-------------------------------|--------------------------------|
| $\Gamma_1 \quad D^{*+} \pi^-$ | seen                           |

**$D(3000)^0$  POLARIZATION AMPLITUDE  $A_{D_J}$**

A polarization amplitude  $A_{D_J}$  is a parameter that depends on the initial polarization of the  $D_J$ . For  $D_J$  decays the helicity angle,  $\theta_H$ , distribution varies like  $1 + A_{D_J} \cos^2(\theta_H)$ , where  $\theta_H$  is the angle in the  $D_J$  rest frame between the two pions emitted in the  $D_J \rightarrow D^* \pi$  and  $D^* \rightarrow D \pi$  decays.

| <i>VALUE</i>                                                                  | <i>EVTS</i> | <i>DOCUMENT ID</i> | <i>TECN</i> | <i>COMMENT</i>                  |
|-------------------------------------------------------------------------------|-------------|--------------------|-------------|---------------------------------|
| • • • We do not use the following data for averages, fits, limits, etc. • • • |             |                    |             |                                 |
| $1.5 \pm 0.9$                                                                 | 9.5k        | <sup>9</sup> AAIJ  | 13CC LHCB   | $pp \rightarrow D^{*+} \pi^- X$ |
| <sup>9</sup> Systematic uncertainty not estimated.                            |             |                    |             |                                 |

**$D(3000)^0$  REFERENCES**

|      |                    |                       |                |
|------|--------------------|-----------------------|----------------|
| AAIJ | 16AH PR D94 072001 | R. Aaij <i>et al.</i> | (LHCb Collab.) |
| AAIJ | 13CC JHEP 1309 145 | R. Aaij <i>et al.</i> | (LHCb Collab.) |