

# D(3000)<sup>0</sup>

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

OMITTED FROM SUMMARY TABLE

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

## D(3000)<sup>0</sup> 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)<sup>0</sup> 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)<sup>0</sup> DECAY MODES

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

## D(3000)<sup>0</sup> 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.

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
● ● ● 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.)