

# D(2750)

$$I(J^P) = \frac{1}{2}(3^-)$$

OMITTED FROM SUMMARY TABLE

$J^P$  determined by AAIJ 15Y from the Dalitz plot analysis of  $B^0 \rightarrow \bar{D}^0 \pi^+ \pi^-$  decays.  $J^P$  consistent with natural parity (AAIJ 13CC).

## D(2750) MASS

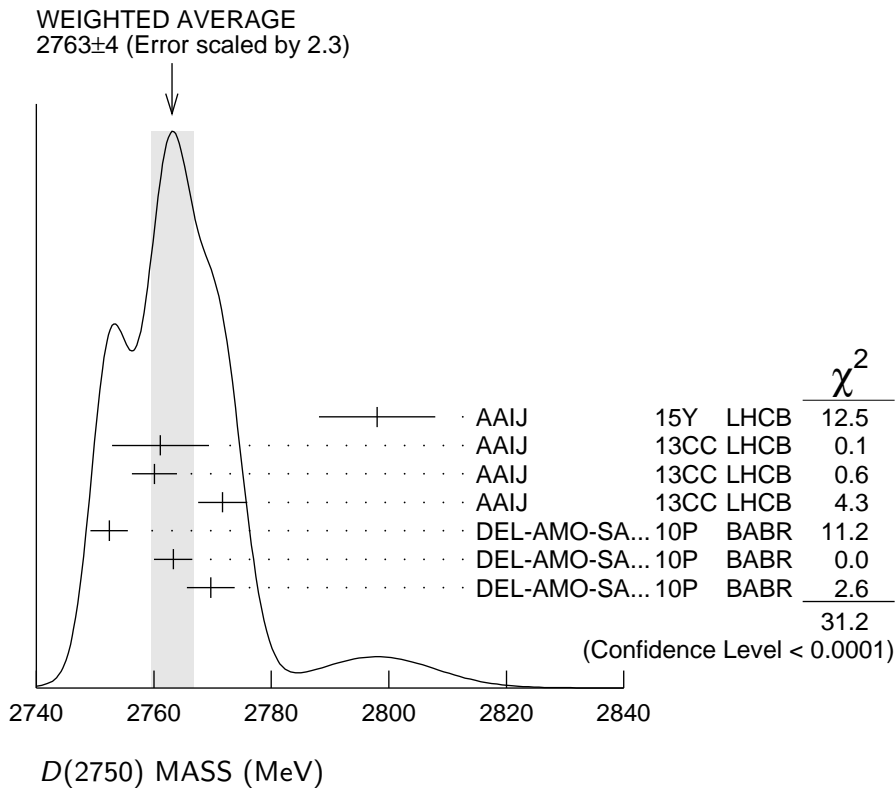
VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
<b>2763 ± 4</b>	<b>OUR AVERAGE</b>	Error includes scale factor of 2.3. See the ideogram below.			
2798 ± 7 ± 7		<sup>1</sup> AAIJ	15Y	LHCB	$B^0 \rightarrow \bar{D}^0 \pi^+ \pi^-$
2761.1 ± 5.1 ± 6.5	14k	AAIJ	13CC	LHCB 0	$pp \rightarrow D^{*+} \pi^- X$
2760.1 ± 1.1 ± 3.7	56k	AAIJ	13CC	LHCB 0	$pp \rightarrow D^+ \pi^- X$
2771.7 ± 1.7 ± 3.8	20k	AAIJ	13CC	LHCB +	$pp \rightarrow D^0 \pi^+ X$
2752.4 ± 1.7 ± 2.7	23.5k	<sup>2</sup> DEL-AMO-SA..10P	BABR	0	$e^+ e^- \rightarrow D^{*+} \pi^- X$
2763.3 ± 2.3 ± 2.3	11.3k	<sup>2</sup> DEL-AMO-SA..10P	BABR	0	$e^+ e^- \rightarrow D^+ \pi^- X$
2769.7 ± 3.8 ± 1.5	5.7k	<sup>2,3</sup> DEL-AMO-SA..10P	BABR	+	$e^+ e^- \rightarrow D^0 \pi^+ X$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
2802 ± 11 ± 10		<sup>4</sup> AAIJ	15Y	LHCB	$B^0 \rightarrow \bar{D}^0 \pi^+ \pi^-$

<sup>1</sup> Modeling the  $\pi^+ \pi^-$  S-wave with the Isobar formalism.

<sup>2</sup> The states observed in the  $D^* \pi$  and  $D \pi$  final states are not necessarily the same.

<sup>3</sup> At a fixed width of 60.9 MeV.

<sup>4</sup> Modeling the  $\pi^+ \pi^-$  S-wave with the K-matrix formalism.



**$D(2750)$  WIDTH**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>65 \pm 5</math></b>	<b>OUR AVERAGE</b>				
105 ± 18 ± 24		<sup>5</sup> AAIJ	15Y	LHCB	$B^0 \rightarrow \bar{D}^0 \pi^+ \pi^-$
74.4 ± 3.4 ± 37.0	14k	AAIJ	13CC	LHCB 0	$pp \rightarrow D^{*+} \pi^- X$
74.4 ± 3.4 ± 19.1	56k	AAIJ	13CC	LHCB 0	$pp \rightarrow D^+ \pi^- X$
66.7 ± 6.6 ± 10.5	20k	AAIJ	13CC	LHCB +	$pp \rightarrow D^0 \pi^+ X$
71 ± 6 ± 11	23.5k	<sup>6</sup> DEL-AMO-SA..10P	BABR		$e^+ e^- \rightarrow D^{*+} \pi^- X$
60.9 ± 5.1 ± 3.6	11.3k	<sup>6</sup> DEL-AMO-SA..10P	BABR		$e^+ e^- \rightarrow D^+ \pi^- X$

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

154 ± 27 ± 16		<sup>7</sup> AAIJ	15Y	LHCB	$B^0 \rightarrow \bar{D}^0 \pi^+ \pi^-$
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<sup>5</sup> Modeling the  $\pi^+ \pi^-$   $S$ -wave with the Isobar formalism.

<sup>6</sup> The states observed in the  $D^* \pi$  and  $D \pi$  final states are not necessarily the same.

<sup>7</sup> Modeling the  $\pi^+ \pi^-$   $S$ -wave with the K-matrix formalism.

 **$D(2750)$  DECAY MODES**

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $D \pi$	seen
$\Gamma_2$ $D^+ \pi^-$	seen
$\Gamma_3$ $D^0 \pi^\pm$	seen
$\Gamma_4$ $D^* \pi$	seen
$\Gamma_5$ $D^{*+} \pi^-$	seen

 **$D(2750)$  BRANCHING RATIOS**

$\Gamma(D^+ \pi^-)/\Gamma(D^{*+} \pi^-)$					$\Gamma_2/\Gamma_5$
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
<b><math>0.42 \pm 0.05 \pm 0.11</math></b>	34.8k	<sup>8</sup> DEL-AMO-SA..10P	BABR	$e^+ e^- \rightarrow D^{(*)+} \pi^- X$	

<sup>8</sup> The states observed in the  $D^* \pi$  and  $D \pi$  final states are not necessarily the same.

 **$D(2750)$  POLARIZATION AMPLITUDE  $A_D$** 

A polarization amplitude  $A_D$  is a parameter that depends on the initial polarization of the  $D(2750)$ . For  $D(2750)$  decays the helicity angle,  $\theta_H$ , distribution varies like  $1 + A_D \cos(\theta_H)$ , where  $\theta_H$  is the angle in the  $D^*$  rest frame between the two pions emitted by the  $D(2750) \rightarrow D^* \pi$  and  $D^* \rightarrow D \pi$ .

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$-0.33 \pm 0.28$	23.5k	<sup>9</sup> DEL-AMO-SA..10P	BABR	$e^+ e^- \rightarrow D^{*+} \pi^- X$

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

<sup>9</sup> Systematic uncertainties not estimated. The states observed in the  $D^* \pi$  and  $D \pi$  final states are not necessarily the same.

## ***D*(2750) REFERENCES**

AAIJ	15Y	PR D92 032002	R. Aaij <i>et al.</i>	(LHCb Collab.) JP
AAIJ	13CC	JHEP 1309 145	R. Aaij <i>et al.</i>	(LHCb Collab.)
DEL-AMO-SA...	10P	PR D82 111101	P. del Amo Sanchez <i>et al.</i>	(BABAR Collab.)

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