

$$D_{s3}^*(2860)^\pm$$

$$I(J^P) = 0(3^-)$$

$J^P$  consistent with  $3^-$  from angular analysis of AAIJ 14AW. Observed by AUBERT, BE 06E and AUBERT 09AR in inclusive production of  $DK$  and  $D^*K$  in  $e^+e^-$  annihilation.

### $D_{s3}^*(2860)^+$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>2860.5 ± 2.6 ± 6.5</b>		<sup>1</sup> AAIJ	14AW LHCb	$B_S^0 \rightarrow \bar{D}^0 K^- \pi^+$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
2867.1 ± 4.3 ± 1.9	3.1k	AAIJ	16AW LHCb	$pp \rightarrow D^{*+} K_S^0 X$ at 7, 8 TeV
2866.1 ± 1.0 ± 6.3	36k	<sup>2,3</sup> AAIJ	12AU LHCb	$pp \rightarrow (DK)^+ X$ at 7 TeV
2862 ± 2 <sup>+5</sup> / <sub>-2</sub>	3122	<sup>2,4</sup> AUBERT	09AR BABR	$e^+e^- \rightarrow D^{(*)} K X$
2856.6 ± 1.5 ± 5.0		<sup>5</sup> AUBERT, BE	06E BABR	$e^+e^- \rightarrow DKX$

<sup>1</sup> Separated from the spin-1 component  $D_{s1}^*(2860)^-$  by a fit of the helicity angle of the  $\bar{D}^0 K^-$  system, with a statistical significance of the spin-3 and spin-1 components in excess of  $10\sigma$ .

<sup>2</sup> Possible contribution from the  $D_{s1}^*(2860)$  state.

<sup>3</sup> From the combined fit of the  $D^+ K_S^0$  and  $D^0 K^+$  modes in the model including the  $D_{s2}^*(2573)^+$ ,  $D_{s1}^*(2700)^+$  and spin-0  $D_{sJ}^*(2860)^+$ .

<sup>4</sup> From simultaneous fits to the two  $DK$  mass spectra and to the total  $D^*K$  mass spectrum.

<sup>5</sup> Superseded by AUBERT 09AR.

### $D_{s3}^*(2860)^+$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>53 ± 7 ± 7</b>		<sup>1</sup> AAIJ	14AW LHCb	$B_S^0 \rightarrow \bar{D}^0 K^- \pi^+$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
50 ± 11 ± 13	3.1k	AAIJ	16AW LHCb	$pp \rightarrow D^{*+} K_S^0 X$ at 7, 8 TeV
69.9 ± 3.2 ± 6.6	36k	<sup>2,3</sup> AAIJ	12AU LHCb	$pp \rightarrow (DK)^+ X$ at 7 TeV
48 ± 3 ± 6	3122	<sup>2,4</sup> AUBERT	09AR BABR	$e^+e^- \rightarrow D^{(*)} K X$
47 ± 7 ± 10		<sup>5</sup> AUBERT, BE	06E BABR	$e^+e^- \rightarrow DKX$

<sup>1</sup> Separated from the spin-1 component  $D_{s1}^*(2860)^-$  by a fit of the helicity angle of the  $\bar{D}^0 K^-$  system, with a statistical significance of the spin-3 and spin-1 components in excess of  $10\sigma$ .

<sup>2</sup> Possible contribution from the  $D_{s1}^*(2860)$  state.

<sup>3</sup> From the combined fit of the  $D^+ K_S^0$  and  $D^0 K^+$  modes in the model including the  $D_{s2}^*(2573)^+$ ,  $D_{s1}^*(2700)^+$  and spin-0  $D_{sJ}^*(2860)^+$ .

<sup>4</sup> From simultaneous fits to the two  $DK$  mass spectra and to the total  $D^*K$  mass spectrum.

<sup>5</sup> Superseded by AUBERT 09AR.

### $D_{s3}^*(2860)^\pm$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $DK$	
$\Gamma_2$ $D^0 K^+$	seen
$\Gamma_3$ $D^+ K_S^0$	seen
$\Gamma_4$ $D^* K$	
$\Gamma_5$ $D^{*0} K^+$	seen
$\Gamma_6$ $D^{*+} K_S^0$	seen

### $D_{s3}^*(2860)^\pm$ BRANCHING RATIOS

#### $\Gamma(D^* K)/\Gamma(DK)$ $\Gamma_4/\Gamma_1$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>1.10±0.15±0.19</b>	3122	<sup>1</sup> AUBERT	09AR BABR	$e^+ e^- \rightarrow D^{(*)} K X$

<sup>1</sup> From the average of the corresponding ratios with  $D^{(*)0} K^+$  and  $D^{(*)+} K_S^0$ .

#### $\Gamma(D^{*0} K^+)/\Gamma(D^0 K^+)$ $\Gamma_5/\Gamma_2$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>1.04±0.17±0.20</b>	2241	<sup>1</sup> AUBERT	09AR BABR	$e^+ e^- \rightarrow D^{(*)} K X$

<sup>1</sup> From the  $D^{*0} K^+$  and  $D^0 K^+$ , where  $D^{*0} \rightarrow D^0 \pi^0$ .

#### $\Gamma(D^{*+} K_S^0)/\Gamma(D^+ K_S^0)$ $\Gamma_6/\Gamma_3$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>1.38±0.35±0.49</b>	881	<sup>1</sup> AUBERT	09AR BABR	$e^+ e^- \rightarrow D^{(*)} K X$

<sup>1</sup> From the  $D^{*+} K_S^0$  and  $D^+ K_S^0$ , where  $D^{*+} \rightarrow D^+ \pi^0$ .

### $D_{s3}^*(2860)^\pm$ REFERENCES

AAIJ	16AW JHEP 1602 133	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	14AW PRL 113 162001	R. Aaij <i>et al.</i>	(LHCb Collab.) JP
AAIJ	12AU JHEP 1210 151	R. Aaij <i>et al.</i>	(LHCb Collab.)
AUBERT	09AR PR D80 092003	B. Aubert <i>et al.</i>	(BABAR Collab.)
AUBERT,BE	06E PRL 97 222001	B. Aubert <i>et al.</i>	(BABAR Collab.)