

# $\chi_{c2}(3930)$

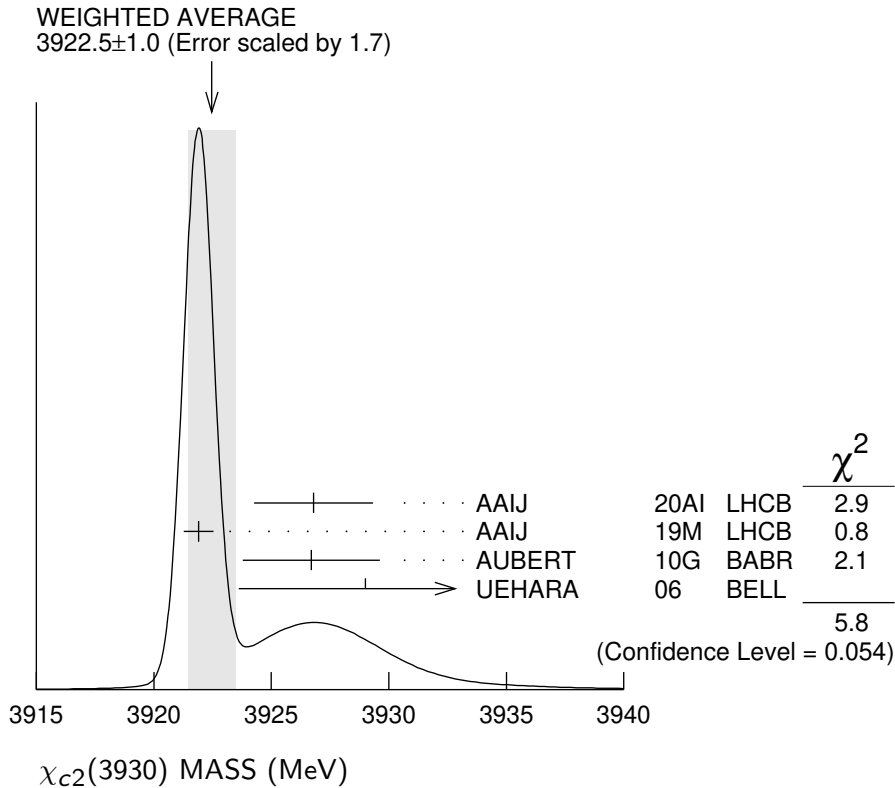
$$J^{PC} = 0^{+}(2^{++})$$

## $\chi_{c2}(3930)$ MASS

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>3922.5±1.0 OUR AVERAGE</b>		Error includes scale factor of 1.7. See the ideogram below.		
3926.8±2.4±0.8	1.2k	<sup>1</sup> AAIJ	20AI LHCb	$B^+ \rightarrow D^+ D^- K^+$
3921.9±0.6±0.2		<sup>2</sup> AAIJ	19M LHCb	$pp \rightarrow D\bar{D} + \text{anything}$
3926.7±2.7±1.1	76 ± 17	AUBERT	10G BABR	$10.6 e^+ e^- \rightarrow e^+ e^- D\bar{D}$
3929 ±5 ±2	64	UEHARA	06 BELL	$10.6 e^+ e^- \rightarrow e^+ e^- D\bar{D}$

<sup>1</sup> Obtained from the full amplitude analysis. Parameterized with the relativistic Breit-Wigner line shape. Previous measurements assumed a single state in this region. This analysis revealed the presence of  $\chi_{c0}(3930)$  with the same mass.

<sup>2</sup> Measured in prompt hadroproduction.



## $\chi_{c2}(3930)$ WIDTH

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b>35.2± 2.2 OUR AVERAGE</b>		Error includes scale factor of 1.2.		
34.2± 6.6±1.1	1.2k	<sup>1</sup> AAIJ	20AI LHCb	$B^+ \rightarrow D^+ D^- K^+$
36.6± 1.9±0.9		<sup>2</sup> AAIJ	19M LHCb	$pp \rightarrow D\bar{D} + \text{anything}$
21.3± 6.8±3.6	76 ± 17	AUBERT	10G BABR	$10.6 e^+ e^- \rightarrow e^+ e^- D\bar{D}$
29 ±10 ±2	64	UEHARA	06 BELL	$10.6 e^+ e^- \rightarrow e^+ e^- D\bar{D}$

<sup>1</sup>Obtained from the full amplitude analysis. Parameterized with the relativistic Breit-Wigner line shape. Previous measurements assumed a single state in this region. This analysis revealed the presence of  $\chi_{c0}(3930)$  with the same mass.

<sup>2</sup>Measured in prompt hadroproduction.

### $\chi_{c2}(3930)$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $\gamma\gamma$	seen
$\Gamma_2$ $K\bar{K}\pi$	not seen
$\Gamma_3$ $K^+K^-\pi^+\pi^-\pi^0$	not seen
$\Gamma_4$ $D\bar{D}$	seen
$\Gamma_5$ $D^+D^-$	seen
$\Gamma_6$ $D^0\bar{D}^0$	seen
$\Gamma_7$ $\pi^+\pi^-\eta_c(1S)$	not seen
$\Gamma_8$ $K\bar{K}$	not seen

### $\chi_{c2}(3930)$ PARTIAL WIDTHS

#### $\chi_{c2}(3930) \Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

$\Gamma(K\bar{K}\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$					$\Gamma_2\Gamma_1/\Gamma$
VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT	
<b>&lt;2.1</b>	90	DEL-AMO-SA..11M	BABR	$\gamma\gamma \rightarrow K_S^0 K^\pm \pi^\mp$	

$\Gamma(K^+K^-\pi^+\pi^-\pi^0) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$					$\Gamma_3\Gamma_1/\Gamma$
VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT	
<b>&lt;3.4</b>	90	DEL-AMO-SA..11M	BABR	$\gamma\gamma \rightarrow K^+K^-\pi^+\pi^-\pi^0$	

$\Gamma(D\bar{D}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$					$\Gamma_4\Gamma_1/\Gamma$
VALUE (keV)	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>0.21±0.04 OUR AVERAGE</b>					
0.24±0.05±0.04	76 ± 17	AUBERT	10G	BABR	10.6 $e^+e^- \rightarrow e^+e^-D\bar{D}$
0.18±0.05±0.03	64	<sup>1</sup> UEHARA	06	BELL	10.6 $e^+e^- \rightarrow e^+e^-D\bar{D}$
<sup>1</sup> Assuming $B(D^+D^-) = 0.89 B(D^0\bar{D}^0)$ .					

$\Gamma(\pi^+\pi^-\eta_c(1S)) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$					$\Gamma_7\Gamma_1/\Gamma$
VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT	
<b>&lt;18</b>	90	LEES	12AE	BABR	$e^+e^- \rightarrow e^+e^-\pi^+\pi^-\eta_c$

$\Gamma(K\bar{K}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$					$\Gamma_8\Gamma_1/\Gamma$
VALUE (eV)	CL%	DOCUMENT ID	TECN	COMMENT	
<b>&lt;0.256</b>	90	UEHARA	13	BELL	$\gamma\gamma \rightarrow K_S^0 K_S^0$

### $\chi_{c2}(3930)$ BRANCHING RATIOS

$\Gamma(D^+ D^-)/\Gamma(D^0 \bar{D}^0)$					$\Gamma_5/\Gamma_6$
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<b>0.74±0.43±0.16</b>	64	UEHARA	06	BELL	10.6 $e^+e^- \rightarrow e^+e^- D\bar{D}$

### $\chi_{c2}(3930)$ REFERENCES

AAIJ	20AI	PR D102 112003	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	19M	JHEP 1907 035	R. Aaij <i>et al.</i>	(LHCb Collab.)
UEHARA	13	PTEP 2013 123C01	S. Uehara <i>et al.</i>	(BELLE Collab.)
LEES	12AE	PR D86 092005	J.P. Lees <i>et al.</i>	(BABAR Collab.)
DEL-AMO-SA...	11M	PR D84 012004	P. del Amo Sanchez <i>et al.</i>	(BABAR Collab.)
AUBERT	10G	PR D81 092003	B. Aubert <i>et al.</i>	(BABAR Collab.)
UEHARA	06	PRL 96 082003	S. Uehara <i>et al.</i>	(BELLE Collab.)