

# $\Xi_c(2645)$

$$I(J^P) = \frac{1}{2}(\frac{3}{2}^+) \text{ Status: } ***$$

The natural assignment is that this is the  $J^P = 3/2^+$  excitation of the  $\Xi_c$  in the same SU(4) multiplet as the  $\Delta(1232)$ , but the quantum numbers have not been measured.

## $\Xi_c(2645)$ MASSES

### $\Xi_c(2645)^+$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>2645.10 ± 0.30 OUR FIT</b>	Error includes scale factor of 1.2.			
2645.6 ± 0.2 $\begin{smallmatrix} +0.6 \\ -0.8 \end{smallmatrix}$	578 ± 32	LESLIAK	08	BELL $e^+e^- \approx \Upsilon(4S)$

### $\Xi_c(2645)^0$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>2646.16 ± 0.25 OUR FIT</b>	Error includes scale factor of 1.3.			
2645.7 ± 0.2 $\begin{smallmatrix} +0.6 \\ -0.7 \end{smallmatrix}$	611 ± 32	LESLIAK	08	BELL $e^+e^- \approx \Upsilon(4S)$

## $\Xi_c(2645) - \Xi_c$ MASS DIFFERENCES

### $m_{\Xi_c(2645)^+} - m_{\Xi_c^0}$

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>174.67 ± 0.09 OUR FIT</b>				
174.66 ± 0.06 ± 0.07	1260	YELTON	16	BELL $e^+e^-$ in $\Upsilon$ regions
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
177.1 ± 0.5 ± 1.1	47	FRABETTI	98B	E687 $\gamma$ Be, $\bar{E}_\gamma = 220$ GeV
174.3 ± 0.5 ± 1.0	34	GIBBONS	96	CLE2 $e^+e^- \approx \Upsilon(4S)$

### $m_{\Xi_c(2645)^0} - m_{\Xi_c^+}$

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>178.45 ± 0.10 OUR FIT</b>				
178.46 ± 0.07 ± 0.07	975	YELTON	16	BELL $e^+e^-$ in $\Upsilon$ regions
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
178.2 ± 0.5 ± 1.0	55	AVERY	95	CLE2 $e^+e^- \approx \Upsilon(4S)$

## $\Xi_c(2645)^+ - \Xi_c(2645)^0$ MASS DIFFERENCE

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>-1.06 ± 0.27 OUR FIT</b>	Error includes scale factor of 1.1.		
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●			
-0.85 ± 0.09 ± 0.49	YELTON	16	BELL 1260 and 975 evts
-0.1 ± 0.3 ± 0.6	LESLIAK	08	BELL $\approx 600$ evts each

## $\Xi_c(2645)$ WIDTHS

### $\Xi_c(2645)^+$ WIDTH

VALUE (MeV)	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<b>2.14±0.19 OUR AVERAGE</b>			Error includes scale factor of 1.1.		
2.06±0.13±0.13		1260	YELTON	16	BELL $e^+e^-$ in $\Upsilon$ regions
2.6 ±0.2 ±0.4		3.7k	KATO	14	BELL $e^+e^- \Upsilon(1S)\text{-}\Upsilon(5S)$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
<3.1		90	GIBBONS	96	CLE2 $e^+e^- \approx \Upsilon(4S)$

### $\Xi_c(2645)^0$ WIDTH

VALUE (MeV)	CL%	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>2.35±0.18±0.13</b>		975	YELTON	16	BELL $e^+e^-$ in $\Upsilon$ regions	
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●						
<5.5		90	55	AVERY	95	CLE2 $e^+e^- \approx \Upsilon(4S)$

### $\Xi_c(2645)$ DECAY MODES

$\Xi_c \pi$  is the only strong decay allowed to a  $\Xi_c$  resonance having this mass.

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1 \quad \Xi_c^0 \pi^+$	seen
$\Gamma_2 \quad \Xi_c^+ \pi^-$	seen

### $\Xi_c(2645)$ REFERENCES

YELTON	16	PR D94 052011	J. Yelton <i>et al.</i>	(BELLE Collab.)
KATO	14	PR D89 052003	Y. Kato <i>et al.</i>	(BELLE Collab.)
LESIK	08	PL B665 9	T. Lesiak <i>et al.</i>	(BELLE Collab.)
FRABETTI	98B	PL B426 403	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
GIBBONS	96	PRL 77 810	L.K. Gibbons <i>et al.</i>	(CLEO Collab.)
AVERY	95	PRL 75 4364	P. Avery <i>et al.</i>	(CLEO Collab.)