

$\Xi_c(2815)$ 

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

Seen in both  $\Xi_c' \pi$  and  $\Xi_c \pi \pi$  decays. The simplest assignment is that this belongs to the same SU(4) multiplet as the  $\Lambda(1520)$  and the  $\Lambda_c(2625)$ , but the spin and parity have not been measured.

### $\Xi_c(2815)$ MASSES

The masses are obtained from the mass-difference measurements that follow.

#### $\Xi_c(2815)^+$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
-------------	------	-------------	------	---------

**2816.51 ± 0.25 OUR FIT** Error includes scale factor of 1.2.

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

2817.0 ± 1.2 $\begin{smallmatrix} +0.7 \\ -0.8 \end{smallmatrix}$	73 ± 10	LESLIAK	08 BELL	$e^+ e^- \approx \gamma(4S)$
---	---------	---------	---------	------------------------------

#### $\Xi_c(2815)^0$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
-------------	------	-------------	------	---------

**2819.79 ± 0.30 OUR FIT** Error includes scale factor of 1.1.

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

2820.4 ± 1.4 $\begin{smallmatrix} +0.9 \\ -1.0 \end{smallmatrix}$	48 ± 8	LESLIAK	08 BELL	$e^+ e^- \approx \gamma(4S)$
---	--------	---------	---------	------------------------------

### $\Xi_c(2815) - \Xi_c$ MASS DIFFERENCES

#### $m_{\Xi_c(2815)^+} - m_{\Xi_c^+}$

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
-------------	------	-------------	------	---------

**348.80 ± 0.10 OUR FIT**

**348.80 ± 0.08 ± 0.06** 941 YELTON 16 BELL  $e^+ e^-$ ,  $\gamma$  regions

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

348.6 ± 0.6 ± 1.0	20	ALEXANDER	99B CLE2	$e^+ e^- \approx \gamma(4S)$
-------------------	----	-----------	----------	------------------------------

#### $m_{\Xi_c(2815)^0} - m_{\Xi_c^0}$

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
-------------	------	-------------	------	---------

**349.35 ± 0.11 OUR FIT**

**349.35 ± 0.08 ± 0.07** 1258 YELTON 16 BELL  $e^+ e^-$ ,  $\gamma$  regions

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

347.2 ± 0.7 ± 2.0	9	ALEXANDER	99B CLE2	$e^+ e^- \approx \gamma(4S)$
-------------------	---	-----------	----------	------------------------------

### $\Xi_c(2815)^+ - \Xi_c(2815)^0$ MASS DIFFERENCE

#### $m_{\Xi_c(2815)^+} - m_{\Xi_c(2815)^0}$

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
-------------	-------------	------	---------

**-3.27 ± 0.27 OUR FIT**

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

-3.47 ± 0.12 ± 0.48	YELTON	16 BELL	941 and 1258 evts
---------------------	--------	---------	-------------------

-3.4 ± 1.9 ± 0.9	LESLIAK	08 BELL	73 & 48 events
------------------	---------	---------	----------------

## $\Xi_c(2815)$ WIDTHS

### $\Xi_c(2815)^+$ WIDTH

VALUE (MeV)	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<b><math>2.43 \pm 0.20 \pm 0.17</math></b>		941	YELTON	16 BELL	$e^+e^-$ , $\Upsilon$ regions
$<3.5$	90		ALEXANDER	99B CLE2	$e^+e^- \approx \Upsilon(4S)$

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

### $\Xi_c(2815)^0$ WIDTH

VALUE (MeV)	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<b><math>2.54 \pm 0.18 \pm 0.17</math></b>		1258	YELTON	16 BELL	$e^+e^-$ , $\Upsilon$ regions
$<6.5$	90		ALEXANDER	99B CLE2	$e^+e^- \approx \Upsilon(4S)$

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

## $\Xi_c(2815)$ DECAY MODES

The  $\Xi_c \pi \pi$  modes are consistent with being entirely via  $\Xi_c(2645)\pi$ .

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1 \quad \Xi_c' \pi$	seen
$\Gamma_2 \quad \Xi_c(2645)\pi$	seen
$\Gamma_3 \quad \Xi_c^0 \gamma$	seen
$\Gamma_4 \quad \Xi_c^+ \gamma$	

### $\Gamma(\Xi_c' \pi)/\Gamma_{\text{total}}$

$\Gamma_1/\Gamma$

VALUE	DOCUMENT ID	TECN	COMMENT
seen	YELTON	16 BELL	$e^+e^-$ , $\Upsilon$ regions
<b>seen</b>	ALEXANDER	99B CLE2	$e^+e^- \approx \Upsilon(4S)$

### $\Gamma(\Xi_c(2645)\pi)/\Gamma_{\text{total}}$

$\Gamma_2/\Gamma$

VALUE	DOCUMENT ID	TECN	COMMENT
seen	YELTON	16 BELL	$e^+e^-$ , $\Upsilon$ regions
<b>seen</b>	LESIAK	08 BELL	$e^+e^- \approx \Upsilon(4S)$

### $\Gamma(\Xi_c^0 \gamma)/\Gamma(\Xi_c(2645)\pi)$

$\Gamma_3/\Gamma_2$

VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>0.41 \pm 0.05 \pm 0.03</math></b>	222	<sup>1</sup> YELTON	20 BELL	0	$e^+e^-$ at $\Upsilon(4S)$

<sup>1</sup> Assumes  $B(\Xi_c(2645)^+ \rightarrow \Xi_c^0 \pi^+) = 100\%$ , which is the only strong decay of the  $\Xi_c(2645)$  permitted in the available phase space. YELTON 20 measures  $B(\Xi_c(2815)^0 \rightarrow \Xi_c^0 \gamma)/B(\Xi_c(2815)^0 \rightarrow \Xi_c(2645)^+ \pi^- \rightarrow \Xi_c^0 \pi^+ \pi^-)$ .

$\Gamma(\Xi_c^+ \gamma) / \Gamma(\Xi_c(2645)\pi)$							$\Gamma_4 / \Gamma_2$
<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>		
<b>&lt;0.09</b>	90	<sup>1</sup> YELTON	20	BELL	+	$e^+ e^-$ at $\Upsilon(4S)$	

<sup>1</sup> Assumes  $B(\Xi_c(2645)^0 \rightarrow \Xi_c^+ \pi^-) = 100\%$ , which is the only strong decay of the  $\Xi_c(2645)$  permitted in the available phase space. YELTON 20 measures  $B(\Xi_c(2815)^+ \rightarrow \Xi_c^+ \gamma) / B(\Xi_c(2815)^+ \rightarrow \Xi_c(2645)^0 \pi^+ \rightarrow \Xi_c^+ \pi^- \pi^+)$ .

### $\Xi_c(2815)$ REFERENCES

YELTON	20	PR D102 071103	J. Yelton <i>et al.</i>	(BELLE Collab.)
YELTON	16	PR D94 052011	J. Yelton <i>et al.</i>	(BELLE Collab.)
LESIK	08	PL B665 9	T. Lesiak <i>et al.</i>	(BELLE Collab.)
ALEXANDER	99B	PRL 83 3390	J.P. Alexander <i>et al.</i>	(CLEO Collab.)