

$\Xi_c(2645)$

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

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.

NODE=B146

NODE=B146

### $\Xi_c(2645)$ MASSES

NODE=B146205

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

 NODE=B146M+  
 NODE=B146M+

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

SYCLP2=E

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

 NODE=B146M0  
 NODE=B146M0

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

SYCLP2=E

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

NODE=B146207

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

 NODE=B146D+  
 NODE=B146D+

| VALUE (MeV)                                                                   | EVTS | DOCUMENT ID | TECN | COMMENT                                      |
|-------------------------------------------------------------------------------|------|-------------|------|----------------------------------------------|
| <b>174.67±0.09 OUR FIT</b>                                                    |      |             |      |                                              |
| <b>174.66±0.06±0.07</b>                                                       | 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 $e^+e^- \approx \Upsilon(4S)$           |

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

 NODE=B146D0  
 NODE=B146D0

| VALUE (MeV)                                                                   | EVTS | DOCUMENT ID | TECN | COMMENT                             |
|-------------------------------------------------------------------------------|------|-------------|------|-------------------------------------|
| <b>178.45±0.10 OUR FIT</b>                                                    |      |             |      |                                     |
| <b>178.46±0.07±0.07</b>                                                       | 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

NODE=B146DD

| <u>VALUE (MeV)</u>                                                            | <u>DOCUMENT ID</u>                  | <u>TECN</u> | <u>COMMENT</u>         |
|-------------------------------------------------------------------------------|-------------------------------------|-------------|------------------------|
| <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                                                                | LESIK                               | 08          | BELL ≈ 600 evts each   |

NODE=B146DD

SYCLP2=E

### $\Xi_c(2645)$ WIDTHS

NODE=B146210

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

 NODE=B146W+  
 NODE=B146W+

| 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 $e^+e^- \Upsilon(1S)-\Upsilon(5S)$ |
| • • • 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

 NODE=B146W0  
 NODE=B146W0

| 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 ( $\Gamma_i/\Gamma$ ) |
|------------|-----------------|--------------------------------|
| $\Gamma_1$ | $\Xi_c^0 \pi^+$ | seen                           |
| $\Gamma_2$ | $\Xi_c^+ \pi^-$ | 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.)      |

NODE=B146215;NODE=B146

NODE=B146

DESIG=2;OUR EST;→ UNCHECKED ←

DESIG=1;OUR EST;→ UNCHECKED ←

NODE=B146

REFID=57432  
REFID=55801  
REFID=52460  
REFID=46086  
REFID=44809  
REFID=44563