# $\Xi_c(2645)$

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

A narrow peak seen in the $\Xi_c \pi$ mass spectrum. 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

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

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

| VALUE (MeV) | DOCUMENT ID |
|---|---|
| **2646.6±1.4 OUR FIT**   Error includes scale factor of 1.6. | |

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

| VALUE (MeV) | DOCUMENT ID |
|---|---|
| **2646.1±1.2 OUR FIT** | |

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

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

| VALUE (MeV) | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **175.6±1.4 OUR FIT**   Error includes scale factor of 1.7. | | | | | |
| **175.6±1.4 OUR AVERAGE**   Error includes scale factor of 1.7. | | | | | |
| 177.1±0.5±1.1 | 47 | FRABETTI | 98B | E687 | $\gamma$ Be, $\overline{E}_\gamma = 220$ 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 |
|---|---|---|---|---|---|
| **178.2±1.1 OUR FIT** | | | | | |
| 178.2±0.5±1.0 | 55 | AVERY | 95 | CLE2 | $e^+ e^- \approx \Upsilon(4S)$ |

## $\Xi_c(2645)$ WIDTHS

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

| VALUE (MeV) | CL% | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| <3.1 | 90 | GIBBONS | 96 | CLE2 | $e^+ e^- \approx \Upsilon(4S)$ |

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

| VALUE (MeV) | CL% | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|---|
| <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

| | | | | |
|---|---|---|---|---|
| FRABETTI | 98B | PL B426 403 | P.L. Frabetti *et al.* | (FNAL E687 Collab.) |
| GIBBONS | 96 | PRL 77 810 | L.K. Gibbons *et al.* | (CLEO Collab.) |
| AVERY | 95 | PRL 75 4364 | P. Avery *et al.* | (CLEO Collab.) |