

$\Xi_c(2970)$

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

was $\Xi_c(2980)$

$\Xi_c(2970)$ MASSES

$\Xi_c(2970)^+$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
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2966.34^{+0.17}_{-1.00} OUR FIT

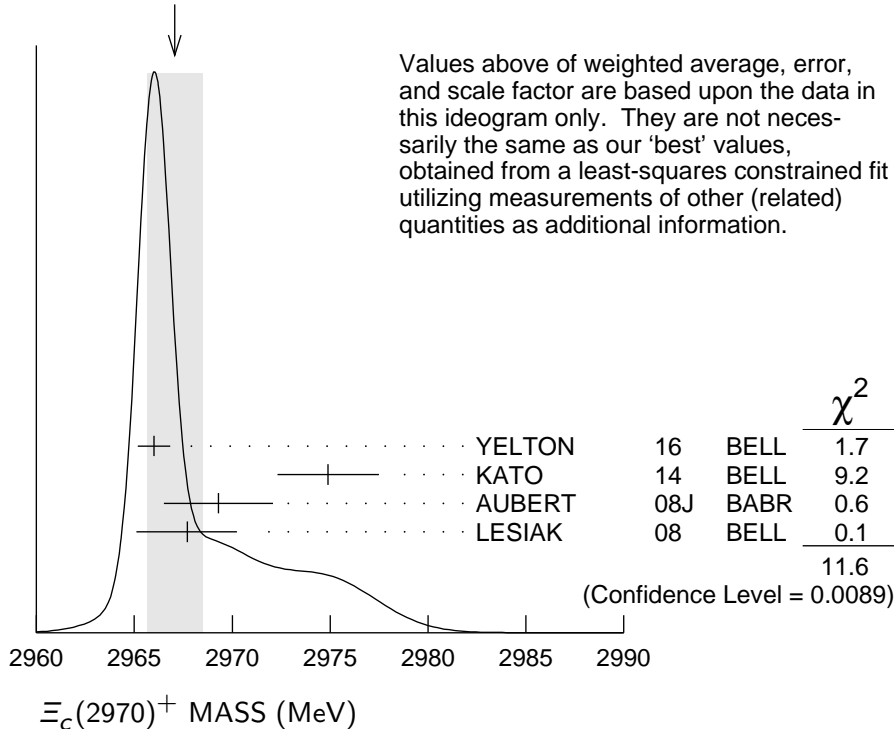
2967.1 ± 1.4 OUR AVERAGE Error includes scale factor of 2.0. See the ideogram below.

2966.0 ± 0.8 ± 0.2	0.9k	YELTON	16 BELL	$e^+e^- \rightarrow \Upsilon(4S), \Upsilon(5S)$ and continuum
2974.9 ± 1.5 ± 2.1	244 ± 39	KATO	14 BELL	$e^+e^- \Upsilon(1S)$ to $\Upsilon(5S)$
2969.3 ± 2.2 ± 1.7	756 ± 206	AUBERT	08J BABR	$e^+e^- \approx 10.58$ GeV
2967.7 ± 2.3 ^{+1.1} _{-1.2}	78 ± 13	LESIK	08 BELL	$e^+e^- \approx \Upsilon(4S)$

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

2978.5 ± 2.1 ± 2.0	405 ± 51	CHISTOV	06 BELL	See KATO 14
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WEIGHTED AVERAGE
2967.1 ± 1.4 (Error scaled by 2.0)



$\Xi_c(2970)^0$ MASS

The evidence is statistically weaker for this charge state.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
$2970.9^{+0.4}_{-0.6}$				OUR FIT
2970.5 ± 1.3				OUR AVERAGE Error includes scale factor of 1.9.
$2970.8 \pm 0.7 \pm 0.2$	1.4k	YELTON	16	BELL $e^+e^- \rightarrow \gamma(4S), \gamma(5S)$ and continuum
$2972.9 \pm 4.4 \pm 1.6$	67 ± 44	AUBERT	08J	BABR $e^+e^- \approx 10.58$ GeV
$2965.7 \pm 2.4^{+1.1}_{-1.2}$	57 ± 13	LESIK	08	BELL $e^+e^- \approx \gamma(4S)$
$2977.1 \pm 8.8 \pm 3.5$	42 ± 24	CHISTOV	06	BELL $e^+e^- \approx \gamma(4S)$

 $\Xi_c(2970) - \Xi_c$ MASS DIFFERENCES $m_{\Xi_c(2970)^+} - m_{\Xi_c^+}$

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
$498.40^{+0.27}_{-0.90}$				OUR FIT
$498.1 \pm 0.8 \pm 0.2$	916	YELTON	16	BELL e^+e^- , γ regions

 $m_{\Xi_c(2970)^0} - m_{\Xi_c^0}$

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
$500.0^{+0.4}_{-0.6}$				OUR FIT
$499.9 \pm 0.7 \pm 0.2$	1.4k	YELTON	16	BELL e^+e^- , γ regions

 $\Xi_c(2970)^+ - \Xi_c(2970)^0$ MASS DIFFERENCE

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
$-4.6^{+0.4}_{-0.6}$			OUR FIT
$-4.8 \pm 0.1 \pm 0.5$	YELTON	16	BELL 916 and 1443 evts

 $\Xi_c(2970)$ WIDTHS $\Xi_c(2970)^+$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
$20.9^{+2.4}_{-3.5}$				OUR AVERAGE Error includes scale factor of 1.2.
$28.1 \pm 2.4^{+1.0}_{-5.0}$	916	YELTON	16	BELL e^+e^- , γ regions
$14.8 \pm 2.5 \pm 4.1$	244 ± 39	KATO	14	BELL $e^+e^- \gamma(1S)$ to $\gamma(5S)$
$27 \pm 8 \pm 2$	756 ± 206	AUBERT	08J	BABR $e^+e^- \approx 10.58$ GeV
$18 \pm 6 \pm 3$	78 ± 13	LESIK	08	BELL $e^+e^- \approx \gamma(4S)$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
$43.5 \pm 7.5 \pm 7.0$	405 ± 51	CHISTOV	06	BELL See KATO 14

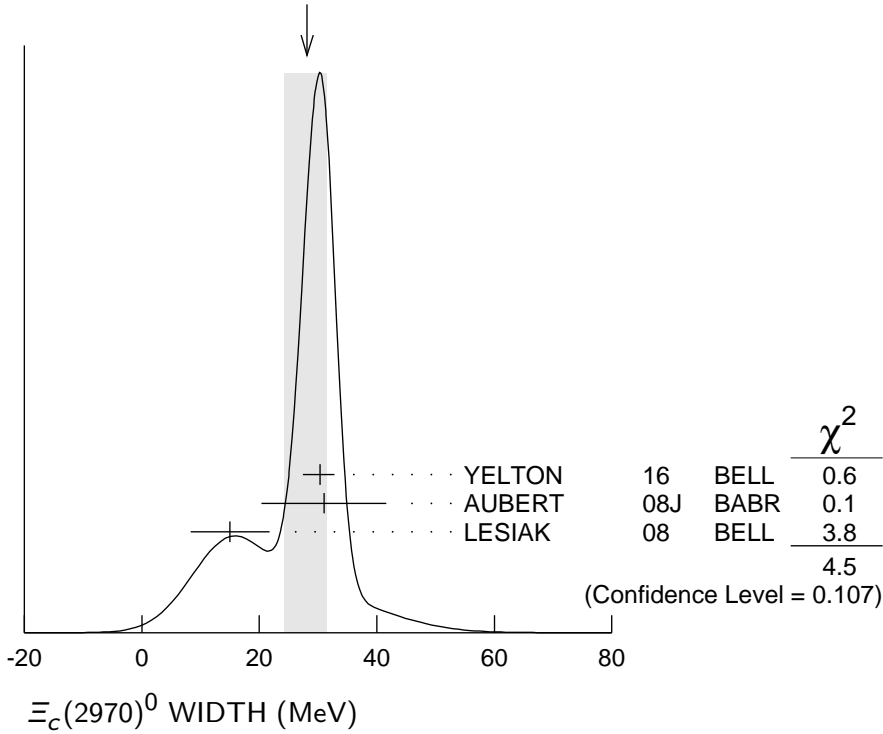
$\Xi_c(2970)^0$ WIDTH

VALUE (MeV) EVTS DOCUMENT ID TECN COMMENT

28.1^{+3.4}_{-4.0} OUR AVERAGE Error includes scale factor of 1.5. See the ideogram below.

30.3 ± 2.3 ^{+1.0} _{-1.8}	1443	YELTON	16	BELL	e^+e^- , Υ regions
31 ± 7 ± 8	67 ± 44	AUBERT	08J	BABR	$e^+e^- \approx 10.58$ GeV
15 ± 6 ± 3	57 ± 13	LESLIAK	08	BELL	$e^+e^- \approx \Upsilon(4S)$

WEIGHTED AVERAGE
28.1+3.4-4.0 (Error scaled by 1.5)



$\Xi_c(2970)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 $\Lambda_c^+ \bar{K} \pi$	seen
Γ_2 $\Sigma_c(2455) \bar{K}$	seen
Γ_3 $\Lambda_c^+ \bar{K}$	not seen
Γ_4 $\Xi_c 2\pi$	seen
Γ_5 $\Xi'_c \pi$	seen
Γ_6 $\Xi_c(2645) \pi$	seen

$\Xi_c(2970)$ BRANCHING RATIOS

$\Gamma(\Lambda_c^+ \bar{K} \pi) / \Gamma_{\text{total}}$				Γ_1 / Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
seen	AUBERT	08J	BABR	$e^+ e^- \approx \mathcal{R}(4S)$
seen	CHISTOV	06	BELL	$e^+ e^- \approx \mathcal{R}(4S)$
$\Gamma(\Sigma_c(2455) \bar{K}) / \Gamma(\Lambda_c^+ \bar{K} \pi)$				Γ_2 / Γ_1
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
$0.55 \pm 0.07 \pm 0.13$	AUBERT	08J	BABR	$e^+ e^- \approx \mathcal{R}(4S)$
$\Gamma(\Xi_c' \pi) / \Gamma_{\text{total}}$				Γ_5 / Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
seen	YELTON	16	BELL	$e^+ e^-$, \mathcal{R} regions
$\Gamma(\Xi_c(2645) \pi) / \Gamma_{\text{total}}$				Γ_6 / Γ
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
seen	LESIK	08	BELL	$e^+ e^- \approx \mathcal{R}(4S)$

 $\Xi_c(2970)$ 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.)
AUBERT	08J	PR D77 012002	B. Aubert <i>et al.</i>	(BABAR Collab.)
LESIK	08	PL B665 9	T. Lesiak <i>et al.</i>	(BELLE Collab.)
CHISTOV	06	PRL 97 162001	R. Chistov <i>et al.</i>	(BELLE Collab.)