



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

According to the quark model, the  $\Xi_c^0$  (quark content  $dsc$ ) and  $\Xi_c^+$  form an isospin doublet, and the spin-parity ought to be  $J^P = 1/2^+$ . None of  $I$ ,  $J$ , or  $P$  has actually been measured.

### $\Xi_c^0$ MASS

The fit uses the  $\Xi_c^0$  and  $\Xi_c^+$  mass and mass-difference measurements.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>2471.0 ± 0.4 OUR FIT</b>				
<b>2471.09<sup>+0.35</sup><sub>-1.00</sub> OUR AVERAGE</b>				
2471.0 ± 0.3 <sup>+0.2</sup> <sub>-1.4</sub>	8620 ± 355	<sup>1</sup> LESIAK	05 BELL	$e^+e^-$ , $\Upsilon(4S)$
2470.0 ± 2.8 ± 2.6	85	FRABETTI	98B E687	$\gamma$ Be, $\bar{E}_\gamma = 220$ GeV
2469 ± 2 ± 3	9	HENDERSON	92B CLEO	$\Omega^- K^+$
2472.1 ± 2.7 ± 1.6	54	ALBRECHT	90F ARG	$e^+e^-$ at $\Upsilon(4S)$
2473.3 ± 1.9 ± 1.2	4	BARLAG	90 ACCM	$\pi^- (K^-)$ Cu 230 GeV
2472 ± 3 ± 4	19	ALAM	89 CLEO	$e^+e^-$ 10.6 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2462.1 ± 3.1 ± 1.4	42	<sup>2</sup> FRABETTI	93C E687	See FRABETTI 98B
2471 ± 3 ± 4	14	AVERY	89 CLEO	See ALAM 89

<sup>1</sup> The systematic error was (wrongly) given the other way round in LESIAK 05.

<sup>2</sup> The FRABETTI 93C mass is well below the other measurements.

### $\Xi_c^0 - \Xi_c^+$ MASS DIFFERENCE

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>3.1 ± 0.5 OUR FIT</b>			
<b>3.1 ± 0.5 OUR AVERAGE</b>			
+2.9 ± 0.5	LESIAK	05 BELL	$e^+e^-$ , $\Upsilon(4S)$
+7.0 ± 4.5 ± 2.2	ALBRECHT	90F ARG	$e^+e^-$ at $\Upsilon(4S)$
+6.8 ± 3.3 ± 0.5	BARLAG	90 ACCM	$\pi^- (K^-)$ Cu 230 GeV
+5 ± 4 ± 1	ALAM	89 CLEO	$\Xi_c^0 \rightarrow \Xi^- \pi^+$ , $\Xi_c^+ \rightarrow \Xi^- \pi^+ \pi^+$

### $\Xi_c^0$ MEAN LIFE

VALUE ( $10^{-15}$ s)	EVTS	DOCUMENT ID	TECN	COMMENT
<b><math>112^{+13}_{-10}</math> OUR AVERAGE</b>				
$118^{+14}_{-12} \pm 5$	110	LINK	02H FOCS	$\gamma$ nucleus, $\approx 180$ GeV
$101^{+25}_{-17} \pm 5$	42	FRABETTI	93C E687	$\gamma$ Be, $\bar{E}_\gamma = 220$ GeV
$82^{+59}_{-30}$	4	BARLAG	90 ACCM	$\pi^- (K^-)$ Cu 230 GeV

### $\Xi_c^0$ DECAY MODES

No absolute branching fractions have been measured. Several measurements of ratios of fractions may be found in the Listings that follow.

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $pK^- K^- \pi^+$	seen
$\Gamma_2$ $pK^- \bar{K}^*(892)^0$	seen
$\Gamma_3$ $pK^- K^- \pi^+$ no $\bar{K}^*(892)^0$	seen
$\Gamma_4$ $\Lambda K_S^0$	seen
$\Gamma_5$ $\Lambda K^- \pi^+$	
$\Gamma_6$ $\Lambda \bar{K}^0 \pi^+ \pi^-$	seen
$\Gamma_7$ $\Lambda K^- \pi^+ \pi^+ \pi^-$	seen
$\Gamma_8$ $\Xi^- \pi^+$	seen
$\Gamma_9$ $\Xi^- \pi^+ \pi^+ \pi^-$	seen
$\Gamma_{10}$ $\Omega^- K^+$	seen
$\Gamma_{11}$ $\Xi^- e^+ \nu_e$	seen
$\Gamma_{12}$ $\Xi^- \ell^+$ anything	seen

### $\Xi_c^0$ BRANCHING RATIOS

$\Gamma(pK^- K^- \pi^+)/\Gamma(\Xi^- \pi^+)$   $\Gamma_1/\Gamma_8$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b><math>0.34 \pm 0.04</math> OUR AVERAGE</b>				
$0.33 \pm 0.03 \pm 0.03$	$1908 \pm 62$	LESIK	05 BELL	$e^+ e^-$ , $\Upsilon(4S)$
$0.35 \pm 0.06 \pm 0.03$	$148 \pm 18$	DANKO	04 CLEO	$e^+ e^-$

$\Gamma(pK^- \bar{K}^*(892)^0)/\Gamma(\Xi^- \pi^+)$   $\Gamma_2/\Gamma_8$

Unseen decay modes of the  $\bar{K}^*(892)^0$  are included.

VALUE	DOCUMENT ID	TECN	COMMENT
<b><math>0.210 \pm 0.045 \pm 0.015</math></b>	DANKO	04 CLEO	$e^+ e^-$

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

seen	BARLAG	90 ACCM	$\pi^- (K^-)$ Cu 230 GeV
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$\Gamma(\rho K^- K^- \pi^+ \text{ no } \bar{K}^*(892)^0)/\Gamma(\Xi^- \pi^+)$   $\Gamma_3/\Gamma_8$

VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.21±0.04±0.02</b>	DANKO	04	CLEO $e^+ e^-$

$\Gamma(\Lambda K_S^0)/\Gamma(\Xi^- \pi^+)$   $\Gamma_4/\Gamma_8$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>0.21±0.02 ±0.02</b>	465 ± 37	LESIK	05	BELL $e^+ e^-$ , $\Upsilon(4S)$

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

seen	7	ALBRECHT	95B	ARG $e^+ e^- \approx 10.4$ GeV
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$\Gamma(\Lambda K^- \pi^+)/\Gamma(\Xi^- \pi^+)$   $\Gamma_5/\Gamma_8$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>1.07±0.12±0.07</b>	2979 ± 211	LESIK	05	BELL $e^+ e^-$ , $\Upsilon(4S)$

$\Gamma(\Lambda \bar{K}^0 \pi^+ \pi^-)/\Gamma_{\text{total}}$   $\Gamma_6/\Gamma$

VALUE	DOCUMENT ID	TECN	COMMENT
<b>seen</b>	FRABETTI	98B	E687 $\gamma$ Be, $\bar{E}_\gamma = 220$ GeV

$\Gamma(\Lambda K^- \pi^+ \pi^+ \pi^-)/\Gamma_{\text{total}}$   $\Gamma_7/\Gamma$

VALUE	DOCUMENT ID	TECN	COMMENT
<b>seen</b>	FRABETTI	98B	E687 $\gamma$ Be, $\bar{E}_\gamma = 220$ GeV

$\Gamma(\Xi^- \pi^+)/\Gamma(\Xi^- \pi^+ \pi^+ \pi^-)$   $\Gamma_8/\Gamma_9$

VALUE	DOCUMENT ID	TECN	COMMENT
<b>0.30±0.12±0.05</b>	ALBRECHT	90F	ARG $e^+ e^-$ at $\Upsilon(4S)$

$\Gamma(\Omega^- K^+)/\Gamma(\Xi^- \pi^+)$   $\Gamma_{10}/\Gamma_8$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>0.297±0.024 OUR AVERAGE</b>				
0.294±0.018±0.016	650	AUBERT,B	05M	BABR $e^+ e^- \approx \Upsilon(4S)$
0.50 ±0.21 ±0.05	9	HENDERSON	92B	CLEO $e^+ e^- \approx 10.6$ GeV

$\Gamma(\Xi^- e^+ \nu_e)/\Gamma(\Xi^- \pi^+)$   $\Gamma_{11}/\Gamma_8$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>3.1±1.0<sup>+0.3</sup><sub>-0.5</sub></b>	54	ALEXANDER	95B	CLE2 $e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\Xi^- \ell^+ \text{ anything})/\Gamma(\Xi^- \pi^+)$   $\Gamma_{12}/\Gamma_8$

The ratio is for the *average* (not the sum) of the  $\Xi^- e^+$  anything and  $\Xi^- \mu^+$  anything modes.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>0.96±0.43±0.18</b>	18	ALBRECHT	93B	ARG $e^+ e^- \approx 10.4$ GeV

$\Gamma(\Xi^- \ell^+ \text{ anything})/\Gamma(\Xi^- \pi^+ \pi^+ \pi^-)$   $\Gamma_{12}/\Gamma_9$

The ratio is for the *average* (not the sum) of the  $\Xi^- e^+$  anything and  $\Xi^- \mu^+$  anything modes.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>0.29±0.12±0.04</b>	18	ALBRECHT	93B	ARG $e^+ e^- \approx 10.4$ GeV

$\Xi_c^0$  DECAY PARAMETERS

See the note on "Baryon Decay Parameters" in the neutron Listings.

 $\alpha$  FOR  $\Xi_c^0 \rightarrow \Xi^- \pi^+$ 

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$-0.56 \pm 0.39^{+0.10}_{-0.09}$	138	CHAN	01 CLE2	$e^+ e^- \approx \mathcal{T}(4S)$

 $\Xi_c^0$  REFERENCES

AUBERT,B	05M	PRL 95 142003	B. Aubert <i>et al.</i>	(BABAR Collab.)
LESIK	05	PL B605 237	T. Lesiak <i>et al.</i>	(BELLE Collab.)
Also		PL B617 198 (erratum)	T. Lesiak <i>et al.</i>	(BELLE Collab.)
DANKO	04	PR D69 052004	I. Danko <i>et al.</i>	(CLEO Collab.)
LINK	02H	PL B541 211	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)
CHAN	01	PR D63 111102R	S. Chan <i>et al.</i>	(CLEO Collab.)
FRABETTI	98B	PL B426 403	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
ALBRECHT	95B	PL B342 397	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
ALEXANDER	95B	PRL 74 3113	J. Alexander <i>et al.</i>	(CLEO Collab.)
Also		PRL 75 4155 (erratum)	J. Alexander <i>et al.</i>	(CLEO Collab.)
ALBRECHT	93B	PL B303 368	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
FRABETTI	93C	PRL 70 2058	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
HENDERSON	92B	PL B283 161	S. Henderson <i>et al.</i>	(CLEO Collab.)
ALBRECHT	90F	PL B247 121	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
BARLAG	90	PL B236 495	S. Barlag <i>et al.</i>	(ACCMOR Collab.)
ALAM	89	PL B226 401	M.S. Alam <i>et al.</i>	(CLEO Collab.)
AVERY	89	PRL 62 863	P. Avery <i>et al.</i>	(CLEO Collab.)