



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

According to the quark model, the Ξ_c^0 (quark content dsc) and Ξ_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.

Ξ_c^0 MASS

The fit uses the Ξ_c^0 and Ξ_c^+ mass and mass-difference measurements.

VALUE (MeV)	EVTs	DOCUMENT ID	TECN	COMMENT
2471.8±1.4 OUR FIT				
2471.8±1.4 OUR AVERAGE				
2470.0±2.8±2.6	85	FRABETTI	98B E687	γ Be, $\overline{E}_\gamma = 220$ 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	¹ FRABETTI	93C E687	See FRABETTI 98B
2471 ±3 ±4	14	VERY	89 CLEO	See ALAM 89

¹The FRABETTI 93C mass is well below the other measurements.

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

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
5.5±1.8 OUR FIT			
6.3±2.3 OUR AVERAGE			
+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	$\Xi_c^0 \rightarrow \Xi^- \pi^+, \Xi_c^+ \rightarrow \Xi^- \pi^+ \pi^+$

Ξ_c^0 MEAN LIFE

VALUE (10 ⁻¹² s)	EVTs	DOCUMENT ID	TECN	COMMENT
0.098^{+0.023}_{-0.015} OUR AVERAGE				
0.101 ^{+0.025} _{-0.017} ±0.005	42	FRABETTI	93C E687	γ Be, $\overline{E}_\gamma = 220$ GeV
0.082 ^{+0.059} _{-0.030}	4	BARLAG	90 ACCM	$\pi^- (K^-)$ Cu 230 GeV

Ξ_c^0 DECAY MODES

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 \quad \Lambda \bar{K}^0$	seen
$\Gamma_2 \quad \Lambda \bar{K}^0 \pi^+ \pi^-$	seen
$\Gamma_3 \quad \Lambda K^- \pi^+ \pi^+ \pi^-$	seen
$\Gamma_4 \quad \Xi^- \pi^+$	seen
$\Gamma_5 \quad \Xi^- \pi^+ \pi^+ \pi^-$	seen
$\Gamma_6 \quad p K^- \bar{K}^*(892)^0$	seen
$\Gamma_7 \quad \Omega^- K^+$	seen
$\Gamma_8 \quad \Xi^- e^+ \nu_e$	seen
$\Gamma_9 \quad \Xi^- \ell^+ \text{anything}$	seen

Ξ_c^0 BRANCHING RATIOS

$\Gamma(\Lambda \bar{K}^0)/\Gamma_{\text{total}}$	Γ_1/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
seen	ALBRECHT 95B ARG $e^+ e^- \approx 10.4 \text{ GeV}$
$\Gamma(\Lambda \bar{K}^0 \pi^+ \pi^-)/\Gamma_{\text{total}}$	Γ_2/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
seen	FRABETTI 98B E687 $\gamma \text{ Be}, \bar{E}_\gamma = 220 \text{ GeV}$
$\Gamma(\Lambda K^- \pi^+ \pi^+ \pi^-)/\Gamma_{\text{total}}$	Γ_3/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
seen	FRABETTI 98B E687 $\gamma \text{ Be}, \bar{E}_\gamma = 220 \text{ GeV}$
$\Gamma(\Xi^- \pi^+)/\Gamma(\Xi^- \pi^+ \pi^+ \pi^-)$	Γ_4/Γ_5
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
$0.30 \pm 0.12 \pm 0.05$	ALBRECHT 90F ARG $e^+ e^- \text{ at } \Upsilon(4S)$
$\Gamma(p K^- \bar{K}^*(892)^0)/\Gamma_{\text{total}}$	Γ_6/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
seen	BARLAG 90 ACCM $\pi^- (K^-) \text{ Cu } 230 \text{ GeV}$
$\Gamma(\Omega^- K^+)/\Gamma(\Xi^- \pi^+)$	Γ_7/Γ_4
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
$0.50 \pm 0.21 \pm 0.05$	HENDERSON 92B CLEO $e^+ e^- \approx 10.6 \text{ GeV}$
$\Gamma(\Xi^- e^+ \nu_e)/\Gamma(\Xi^- \pi^+)$	Γ_8/Γ_4
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
$3.1 \pm 1.0^{+0.3}_{-0.5}$	ALEXANDER 95B CLE2 $e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\Xi^- \ell^+ \text{anything})/\Gamma(\Xi^- \pi^+)$					Γ_9/Γ_4
The ratio is for the <i>average</i> (not the sum) of the $\Xi^- e^+$ anything and $\Xi^- \mu^+$ anything modes.					
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
$0.96 \pm 0.43 \pm 0.18$	18	ALBRECHT	93B ARG	$e^+ e^- \approx 10.4$ GeV	

$\Gamma(\Xi^- \ell^+ \text{anything})/\Gamma(\Xi^- \pi^+ \pi^+ \pi^-)$					Γ_9/Γ_5
The ratio is for the <i>average</i> (not the sum) of the $\Xi^- e^+$ anything and $\Xi^- \mu^+$ anything modes.					
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
$0.29 \pm 0.12 \pm 0.04$	18	ALBRECHT	93B ARG	$e^+ e^- \approx 10.4$ GeV	

Ξ_c^0 REFERENCES

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	95E	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.)