CHARMED BARYONS
$(C = +1)$

$\Lambda_c^+ = udc$, $\Sigma_c^{++} = uuc$, $\Sigma_c^+ = udc$, $\Sigma_c^0 = ddc$,
$\Xi_c^+ = usc$, $\Xi_c^0 = dsc$, $\Omega_c^0 = ssc$

NODE=BXXX040

Λ_c^+

$I(J^P) = 0(\frac{1}{2}^+)$

NODE=S033

J is not well measured; $\frac{1}{2}$ is the quark-model prediction.

Mass $m = 2286.46 \pm 0.14$ MeV — NODE=S033M;DTYPE=M
Mean life $\tau = (200 \pm 6) \times 10^{-15}$ s (S = 1.6) — NODE=S033T;DTYPE=T
$c\tau = 59.9\ \mu$m — NODE=S033CTA;DTYPE=C;OUR EVAL

Decay asymmetry parameters

CLUMP=D

$\Lambda\pi^+$	$\alpha = -0.91 \pm 0.15$	NODE=S033A;DTYPE=d;CLUMP=D
$\Sigma^+\pi^0$	$\alpha = -0.45 \pm 0.32$	NODE=S033ALS;DTYPE=d;CLUMP=D
$\Lambda\ell^+\nu_\ell$	$\alpha = -0.86 \pm 0.04$	NODE=S033ALC;DTYPE=d;CLUMP=D

$(\alpha + \overline{\alpha})/(\alpha - \overline{\alpha})$ in $\Lambda_c^+ \to \Lambda\pi^+$, $\overline{\Lambda}_c^- \to \overline{\Lambda}\pi^- = -0.07 \pm 0.31$ — NODE=S033AC1;DTYPE=d;CLUMP=D

$(\alpha + \overline{\alpha})/(\alpha - \overline{\alpha})$ in $\Lambda_c^+ \to \Lambda e^+\nu_e$, $\overline{\Lambda}_c^- \to \overline{\Lambda} e^-\overline{\nu}_e = 0.00 \pm 0.04$ — NODE=S033ACP;DTYPE=d;CLUMP=D

Nearly all branching fractions of the Λ_c^+ are measured relative to the $pK^-\pi^+$ mode, but there are no model-independent measurements of this branching fraction. We explain how we arrive at our value of B($\Lambda_c^+ \to pK^-\pi^+$) in a Note at the beginning of the branching-ratio measurements in the Listings. When this branching fraction is eventually well determined, all the other branching fractions will slide up or down proportionally as the true value differs from the value we use here.

NODE=S033215;NODE=S033

Λ_c^+ DECAY MODES		Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)	
Hadronic modes with a p: $S = -1$ final states					NODE=S033;CLUMP=A
$p\overline{K}^0$		(2.3 ± 0.6) %		873	DESIG=3
$pK^-\pi^+$	[a]	(5.0 ± 1.3) %		823	DESIG=4
$p\overline{K}^*(892)^0$	[b]	(1.6 ± 0.5) %		685	DESIG=5
$\Delta(1232)^{++}K^-$		(8.6 ± 3.0) $\times 10^{-3}$		710	DESIG=6
$\Lambda(1520)\pi^+$	[b]	(1.8 ± 0.6) %		627	DESIG=38
$pK^-\pi^+$ nonresonant		(2.8 ± 0.8) %		823	DESIG=39
$p\overline{K}^0\pi^0$		(3.3 ± 1.0) %		823	DESIG=69
$p\overline{K}^0\eta$		(1.2 ± 0.4) %		568	DESIG=62
$p\overline{K}^0\pi^+\pi^-$		(2.6 ± 0.7) %		754	DESIG=7
$pK^-\pi^+\pi^0$		(3.4 ± 1.0) %		759	DESIG=18
$pK^*(892)^-\pi^+$	[b]	(1.1 ± 0.5) %		580	DESIG=8
$p(K^-\pi^+)_{\text{nonresonant}}\pi^0$		(3.6 ± 1.2) %		759	DESIG=40
$\Delta(1232)\overline{K}^*(892)$		seen		419	DESIG=19
$pK^-\pi^+\pi^+\pi^-$		(1.1 ± 0.8) $\times 10^{-3}$		671	DESIG=23
$pK^-\pi^+\pi^0\pi^0$		(8 ± 4) $\times 10^{-3}$		678	DESIG=41
Hadronic modes with a p: $S = 0$ final states					NODE=S033;CLUMP=D
$p\pi^+\pi^-$		(3.5 ± 2.0) $\times 10^{-3}$		927	DESIG=30
$pf_0(980)$	[b]	(2.8 ± 1.9) $\times 10^{-3}$		622	DESIG=31
$p\pi^+\pi^+\pi^-\pi^-$		(1.8 ± 1.2) $\times 10^{-3}$		852	DESIG=32
pK^+K^-		(7.7 ± 3.5) $\times 10^{-4}$		616	DESIG=33
$p\phi$	[b]	(8.2 ± 2.7) $\times 10^{-4}$		590	DESIG=34
pK^+K^- non-ϕ		(3.5 ± 1.7) $\times 10^{-4}$		616	DESIG=70

Hadronic modes with a hyperon: $S = -1$ final states

					NODE=S033;CLUMP=B
$\Lambda\pi^+$		$(1.07 \pm 0.28)\ \%$		864	DESIG=2
$\Lambda\pi^+\pi^0$		$(3.6 \pm 1.3)\ \%$		844	DESIG=49
$\Lambda\rho^+$		$< 5\ \%$	CL=95%	635	DESIG=52
$\Lambda\pi^+\pi^+\pi^-$		$(2.6 \pm 0.7)\ \%$		807	DESIG=1
$\Sigma(1385)^+\pi^+\pi^-$, $\Sigma^{*+} \to \Lambda\pi^+$		$(7 \pm 4) \times 10^{-3}$		688	DESIG=100
$\Sigma(1385)^-\pi^+\pi^+$, $\Sigma^{*-} \to \Lambda\pi^-$		$(5.5 \pm 1.7) \times 10^{-3}$		688	DESIG=101
$\Lambda\pi^+\rho^0$		$(1.1 \pm 0.5)\ \%$		523	DESIG=102
$\Sigma(1385)^+\rho^0$, $\Sigma^{*+} \to \Lambda\pi^+$		$(3.7 \pm 3.1) \times 10^{-3}$		363	DESIG=103
$\Lambda\pi^+\pi^+\pi^-$ nonresonant		$< 8 \times 10^{-3}$	CL=90%	807	DESIG=104
$\Lambda\pi^+\pi^+\pi^-\pi^0$ total		$(1.8 \pm 0.8)\ \%$		757	DESIG=79
$\Lambda\pi^+\eta$	[b]	$(1.8 \pm 0.6)\ \%$		691	DESIG=63
$\Sigma(1385)^+\eta$	[b]	$(8.5 \pm 3.3) \times 10^{-3}$		570	DESIG=64
$\Lambda\pi^+\omega$	[b]	$(1.2 \pm 0.5)\ \%$		517	DESIG=81
$\Lambda\pi^+\pi^+\pi^-\pi^0$, no η or ω		$< 7 \times 10^{-3}$	CL=90%	757	DESIG=80
$\Lambda K^+\overline{K}^0$		$(4.7 \pm 1.5) \times 10^{-3}$	S=1.2	443	DESIG=65
$\Xi(1690)^0 K^+$, $\Xi^{*0} \to \Lambda\overline{K}^0$		$(1.3 \pm 0.5) \times 10^{-3}$		286	DESIG=76
$\Sigma^0\pi^+$		$(1.05 \pm 0.28)\ \%$		825	DESIG=10
$\Sigma^+\pi^0$		$(1.00 \pm 0.34)\ \%$		827	DESIG=9
$\Sigma^+\eta$		$(5.5 \pm 2.3) \times 10^{-3}$		713	DESIG=66
$\Sigma^+\pi^+\pi^-$		$(3.6 \pm 1.0)\ \%$		804	DESIG=21
$\Sigma^+\rho^0$		$< 1.4\ \%$	CL=95%	575	DESIG=46
$\Sigma^-\pi^+\pi^+$		$(1.9 \pm 0.8)\ \%$		799	DESIG=59
$\Sigma^0\pi^+\pi^0$		$(1.8 \pm 0.8)\ \%$		803	DESIG=50
$\Sigma^0\pi^+\pi^+\pi^-$		$(8.3 \pm 3.1) \times 10^{-3}$		763	DESIG=51
$\Sigma^+\pi^+\pi^-\pi^0$		—		767	DESIG=48;OUR EVAL; $\Rightarrow$ NOT CHECKED $\Leftarrow$
$\Sigma^+\omega$	[b]	$(2.7 \pm 1.0)\ \%$		569	DESIG=47
$\Sigma^+K^+K^-$		$(2.8 \pm 0.8) \times 10^{-3}$		349	DESIG=35
$\Sigma^+\phi$	[b]	$(3.2 \pm 1.0) \times 10^{-3}$		295	DESIG=43
$\Xi(1690)^0 K^+$, $\Xi^{*0} \to \Sigma^+K^-$		$(8.2 \pm 3.1) \times 10^{-4}$		286	DESIG=75
$\Sigma^+K^+K^-$ nonresonant		$< 7 \times 10^{-4}$	CL=90%	349	DESIG=71
$\Xi^0 K^+$		$(3.9 \pm 1.4) \times 10^{-3}$		653	DESIG=44
$\Xi^- K^+\pi^+$		$(5.1 \pm 1.4) \times 10^{-3}$		565	DESIG=27
$\Xi(1530)^0 K^+$	[b]	$(2.6 \pm 1.0) \times 10^{-3}$		473	DESIG=45

Hadronic modes with a hyperon: $S = 0$ final states

					NODE=S033;CLUMP=G
ΛK^+		$(5.0 \pm 1.6) \times 10^{-4}$		781	DESIG=73
$\Lambda K^+\pi^+\pi^-$		$< 4 \times 10^{-4}$	CL=90%	637	DESIG=106
$\Sigma^0 K^+$		$(4.2 \pm 1.3) \times 10^{-4}$		735	DESIG=74
$\Sigma^0 K^+\pi^+\pi^-$		$< 2.1 \times 10^{-4}$	CL=90%	574	DESIG=107
$\Sigma^+ K^+\pi^-$		$(1.7 \pm 0.7) \times 10^{-3}$		670	DESIG=36
$\Sigma^+ K^*(892)^0$	[b]	$(2.8 \pm 1.1) \times 10^{-3}$		470	DESIG=77
$\Sigma^- K^+\pi^+$		$< 1.0 \times 10^{-3}$	CL=90%	664	DESIG=78

Doubly Cabibbo-suppressed modes

					NODE=S033;CLUMP=H
$pK^+\pi^-$		$< 2.3 \times 10^{-4}$	CL=90%	823	DESIG=105

Semileptonic modes

					NODE=S033;CLUMP=E
$\Lambda\ell^+\nu_\ell$	[c]	$(2.0 \pm 0.6)\ \%$		871	DESIG=57
$\Lambda e^+\nu_e$		$(2.1 \pm 0.6)\ \%$		871	DESIG=67
$\Lambda\mu^+\nu_\mu$		$(2.0 \pm 0.7)\ \%$		867	DESIG=68

Inclusive modes

					NODE=S033;CLUMP=C
e^+ anything		$(4.5 \pm 1.7)\ \%$		–	DESIG=12
pe^+ anything		$(1.8 \pm 0.9)\ \%$		–	DESIG=13
p anything		$(50 \pm 16)\ \%$		–	DESIG=53
p anything (no Λ)		$(12 \pm 19)\ \%$		–	DESIG=54
n anything		$(50 \pm 16)\ \%$		–	DESIG=55
n anything (no Λ)		$(29 \pm 17)\ \%$		–	DESIG=56
Λ anything		$(35 \pm 11)\ \%$	S=1.4	–	DESIG=16
$\Sigma^\pm$ anything	[d]	$(10 \pm 5)\ \%$		–	DESIG=17
3prongs		$(24 \pm 8)\ \%$		–	DESIG=82

$\Delta C = 1$ weak neutral current ($C1$) modes, or Lepton number (L) violating modes

NODE=S033;CLUMP=F

$p\mu^+\mu^-$	$C1$	< 3.4	$\times 10^{-4}$	CL=90%	937	DESIG=60
$\Sigma^-\mu^+\mu^+$	L	< 7.0	$\times 10^{-4}$	CL=90%	812	DESIG=61

$\Lambda_c(2595)^+$

$I(J^P) = 0(\frac{1}{2}^-)$

NODE=B119

The spin-parity follows from the fact that $\Sigma_c(2455)\pi$ decays, with little available phase space, are dominant. This assumes that $J^P = 1/2^+$ for the $\Sigma_c(2455)$.

Mass $m = 2595.4 \pm 0.6$ MeV (S = 1.1) NODE=B119M;DTYPE=M

$m - m_{\Lambda_c^+} = 308.9 \pm 0.6$ MeV (S = 1.1) NODE=B119D;DTYPE=D

Full width $\Gamma = 3.6^{+2.0}_{-1.3}$ MeV NODE=B119W;DTYPE=G

$\Lambda_c^+\pi\pi$ and its submode $\Sigma_c(2455)\pi$ — the latter just barely — are the only strong decays allowed to an excited Λ_c^+ having this mass; and the submode seems to dominate. NODE=B119215;NODE=B119

$\Lambda_c(2595)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Lambda_c^+\pi^+\pi^-$	[e] ≈ 67 %	124	DESIG=1;OUR EST;→ NOT CHECKED ←
$\Sigma_c(2455)^{++}\pi^-$	24 ± 7 %	28	DESIG=2;OUR EST;→ NOT CHECKED ←
$\Sigma_c(2455)^0\pi^+$	24 ± 7 %	28	DESIG=3;OUR EST;→ NOT CHECKED ←
$\Lambda_c^+\pi^+\pi^-$ 3-body	18 ± 10 %	124	DESIG=6;OUR EST;→ NOT CHECKED ←
$\Lambda_c^+\pi^0$	[f] not seen	261	DESIG=4;OUR EST;→ NOT CHECKED ←
$\Lambda_c^+\gamma$	not seen	291	DESIG=5;OUR EST;→ NOT CHECKED ←

$\Lambda_c(2625)^+$

$I(J^P) = 0(\frac{3}{2}^-)$

NODE=B102

J^P has not been measured; $\frac{3}{2}^-$ is the quark-model prediction.

Mass $m = 2628.1 \pm 0.6$ MeV (S = 1.5) NODE=B102M;DTYPE=M

$m - m_{\Lambda_c^+} = 341.7 \pm 0.6$ MeV (S = 1.6) NODE=B102D;DTYPE=D

Full width $\Gamma < 1.9$ MeV, CL = 90% NODE=B102W;DTYPE=G

$\Lambda_c^+\pi\pi$ and its submode $\Sigma(2455)\pi$ are the only strong decays allowed to an excited Λ_c^+ having this mass. NODE=B102215;NODE=B102

$\Lambda_c(2625)^+$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$\Lambda_c^+\pi^+\pi^-$	[e] ≈ 67%		184	DESIG=1;OUR EST;→ NOT CHECKED ←
$\Sigma_c(2455)^{++}\pi^-$	<5	90%	102	DESIG=2;OUR EST;→ NOT CHECKED ←
$\Sigma_c(2455)^0\pi^+$	<5	90%	102	DESIG=4;OUR EST;→ NOT CHECKED ←
$\Lambda_c^+\pi^+\pi^-$ 3-body	large		184	DESIG=3;OUR EST;→ NOT CHECKED ←
$\Lambda_c^+\pi^0$	[f] not seen		293	DESIG=5;OUR EST;→ NOT CHECKED ←
$\Lambda_c^+\gamma$	not seen		319	DESIG=6;OUR EST;→ NOT CHECKED ←

$\Lambda_c(2880)^+$

$I(J^P) = 0(\frac{5}{2}^+)$

NODE=B151

There is some good evidence that indeed $J^P = 5/2^+$

Mass $m = 2881.53 \pm 0.35$ MeV NODE=B151M;DTYPE=M

$m - m_{\Lambda_c^+} = 595.1 \pm 0.4$ MeV NODE=B151D;DTYPE=D

Full width $\Gamma = 5.8 \pm 1.1$ MeV NODE=B151W;DTYPE=G

$\Lambda_c(2880)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Lambda_c^+\pi^+\pi^-$	seen	471	NODE=B151220;DESIG=1;OUR EST
$\Sigma_c(2455)^{0,++}\pi^\pm$	seen	376	DESIG=2;OUR EST
$\Sigma_c(2520)^{0,++}\pi^\pm$	seen	317	DESIG=3;OUR EST
$p D^0$	seen	316	DESIG=4;OUR EST

$\Lambda_c(2940)^+$

$I(J^P) = 0(?^?)$

NODE=B122

Mass $m = 2939.3^{+1.4}_{-1.5}$ MeV NODE=B122M;DTYPE=M

Full width $\Gamma = 17^{+8}_{-6}$ MeV NODE=B122W;DTYPE=G

$\Lambda_c(2940)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$p D^0$	seen	420	NODE=B122220;DESIG=1;OUR EST
$\Sigma_c(2455)^{0,++}\pi^\pm$	seen	–	DESIG=2;OUR EST

$\Sigma_c(2455)$

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

NODE=B104

J^P has not been measured; $\frac{1}{2}^+$ is the quark-model prediction.

$\Sigma_c(2455)^{++}$ mass $m = 2454.02 \pm 0.18$ MeV NODE=B104M++;DTYPE=M
$\Sigma_c(2455)^{+}$ mass $m = 2452.9 \pm 0.4$ MeV NODE=B104M+;DTYPE=M
$\Sigma_c(2455)^{0}$ mass $m = 2453.76 \pm 0.18$ MeV NODE=B104M0;DTYPE=M
$m_{\Sigma_c^{++}} - m_{\Lambda_c^+} = 167.56 \pm 0.11$ MeV NODE=B104D++;DTYPE=D
$m_{\Sigma_c^{+}} - m_{\Lambda_c^+} = 166.4 \pm 0.4$ MeV NODE=B104D+;DTYPE=D
$m_{\Sigma_c^{0}} - m_{\Lambda_c^+} = 167.30 \pm 0.11$ MeV NODE=B104D0;DTYPE=D
$m_{\Sigma_c^{++}} - m_{\Sigma_c^0} = 0.27 \pm 0.11$ MeV (S = 1.1) NODE=B104D13;DTYPE=D
$m_{\Sigma_c^{+}} - m_{\Sigma_c^0} = -0.9 \pm 0.4$ MeV NODE=B104D14;DTYPE=D
$\Sigma_c(2455)^{++}$ full width $\Gamma = 2.23 \pm 0.30$ MeV NODE=B104W++;DTYPE=G
$\Sigma_c(2455)^{+}$ full width $\Gamma < 4.6$ MeV, CL = 90% NODE=B104W+;DTYPE=G
$\Sigma_c(2455)^{0}$ full width $\Gamma = 2.2 \pm 0.4$ MeV (S = 1.4) NODE=B104W0;DTYPE=G

$\Lambda_c^+\pi$ is the only strong decay allowed to a Σ_c having this mass. NODE=B104215;NODE=B104

$\Sigma_c(2455)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Lambda_c^+\pi$	≈ 100 %	94	DESIG=1;OUR EST;→ NOT CHECKED ←

$\Sigma_c(2520)$

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

NODE=B115

J^P has not been measured; $\frac{3}{2}^+$ is the quark-model prediction.

$\Sigma_c(2520)^{++}$ mass $m = 2518.4 \pm 0.6$ MeV (S = 1.4) NODE=B115M++;DTYPE=M
$\Sigma_c(2520)^{+}$ mass $m = 2517.5 \pm 2.3$ MeV NODE=B115M+;DTYPE=M
$\Sigma_c(2520)^{0}$ mass $m = 2518.0 \pm 0.5$ MeV NODE=B115M0;DTYPE=M
$m_{\Sigma_c(2520)^{++}} - m_{\Lambda_c^+} = 231.9 \pm 0.6$ MeV (S = 1.5) NODE=B115D++;DTYPE=D
$m_{\Sigma_c(2520)^{+}} - m_{\Lambda_c^+} = 231.0 \pm 2.3$ MeV NODE=B115D+;DTYPE=D
$m_{\Sigma_c(2520)^{0}} - m_{\Lambda_c^+} = 231.6 \pm 0.5$ MeV (S = 1.1) NODE=B115D0;DTYPE=D
$m_{\Sigma_c(2520)^{++}} - m_{\Sigma_c(2520)^0} = 0.3 \pm 0.6$ MeV (S = 1.2) NODE=B115DI;DTYPE=D
$\Sigma_c(2520)^{++}$ full width $\Gamma = 14.9 \pm 1.9$ MeV NODE=B115W++;DTYPE=G
$\Sigma_c(2520)^{+}$ full width $\Gamma < 17$ MeV, CL = 90% NODE=B115W+;DTYPE=G
$\Sigma_c(2520)^{0}$ full width $\Gamma = 16.1 \pm 2.1$ MeV NODE=B115W0;DTYPE=G

$\Lambda_c^+ \pi$ is the only strong decay allowed to a Σ_c having this mass.

NODE=B115220;NODE=B115

Σ_c(2520) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Lambda_c^+ \pi$	$\approx$ 100 %	180	DESIG=1;OUR EST;→ NOT CHECKED ←

$\Sigma_c(2800)$

$I(J^P) = 1(?^?)$

NODE=B155

$\Sigma_c(2800)^{++}$ mass $m = 2801^{+4}_{-6}$ MeV — NODE=B155M++;DTYPE=M

$\Sigma_c(2800)^{+}$ mass $m = 2792^{+14}_{-\ 5}$ MeV — NODE=B155M+;DTYPE=M

$\Sigma_c(2800)^{0}$ mass $m = 2802^{+4}_{-7}$ MeV — NODE=B155M0;DTYPE=M

$m_{\Sigma_c(2800)^{++}} - m_{\Lambda_c^+} = 514^{+4}_{-6}$ MeV — NODE=B155D++;DTYPE=D

$m_{\Sigma_c(2800)^{+}} - m_{\Lambda_c^+} = 505^{+14}_{-\ 5}$ MeV — NODE=B155D+;DTYPE=D

$m_{\Sigma_c(2800)^{0}} - m_{\Lambda_c^+} = 515^{+4}_{-7}$ MeV — NODE=B155D0;DTYPE=D

$\Sigma_c(2800)^{++}$ full width $\Gamma = 75^{+22}_{-17}$ MeV — NODE=B155W++;DTYPE=G

$\Sigma_c(2800)^{+}$ full width $\Gamma = 62^{+60}_{-40}$ MeV — NODE=B155W+;DTYPE=G

$\Sigma_c(2800)^{0}$ full width $\Gamma = 61^{+28}_{-18}$ MeV — NODE=B155W0;DTYPE=G

Σ_c(2800) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Lambda_c^+ \pi$	seen	443	NODE=B155220;DESIG=1;OUR EST

Ξ_c^+

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

NODE=S045

J^P has not been measured; $\frac{1}{2}^+$ is the quark-model prediction.

Mass $m = 2467.9 \pm 0.4$ MeV — NODE=S045M;DTYPE=M

Mean life $\tau = (442 \pm 26) \times 10^{-15}$ s (S = 1.3) — NODE=S045T;DTYPE=T

$c\tau = 132\ \mu$m — NODE=S045CTA;DTYPE=C;OUR EVAL

No absolute branching fractions have been measured.
The following are branching *ratios* relative to $\Xi^- \pi^+ \pi^+$.

NODE=S045215;NODE=S045;CLUMP=A

Cabibbo-favored ($S = -2$) decays

Ξ_c^+ DECAY MODES		Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)	
$p K_S^0 K_S^0$	[g]	0.087 ± 0.022		767	DESIG=21;OUR EST;→ NOT CHECKED ←
$\Lambda \overline{K}^0 \pi^+$		—		852	DESIG=15;OUR EST;→ NOT CHECKED ←
$\Sigma(1385)^+ \overline{K}^0$	[b,g]	1.0 ± 0.5		746	DESIG=16;OUR EST;→ NOT CHECKED ←
$\Lambda K^- \pi^+ \pi^+$	[g]	0.323 ± 0.033		787	DESIG=1;OUR EST;→ NOT CHECKED ←
$\Lambda \overline{K}^*(892)^0 \pi^+$	[b,g]	<0.2	90%	608	DESIG=8;OUR EST;→ NOT CHECKED ←
$\Sigma(1385)^+ K^- \pi^+$	[b,g]	<0.3	90%	678	DESIG=9;OUR EST;→ NOT CHECKED ←
$\Sigma^+ K^- \pi^+$	[g]	0.94 ± 0.11		811	DESIG=4;OUR EST;→ NOT CHECKED ←
$\Sigma^+ \overline{K}^*(892)^0$	[b,g]	0.81 ± 0.15		658	DESIG=6;OUR EST;→ NOT CHECKED ←
$\Sigma^0 K^- \pi^+ \pi^+$	[g]	0.29 ± 0.16		735	DESIG=2;OUR EST;→ NOT CHECKED ←
$\Xi^0 \pi^+$	[g]	0.55 ± 0.16		877	DESIG=11;OUR EST;→ NOT CHECKED ←
$\Xi^- \pi^+ \pi^+$	[g]	DEFINED AS 1		851	DESIG=3;OUR EST;→ NOT CHECKED ←
$\Xi(1530)^0 \pi^+$	[b,g]	<0.1	90%	750	DESIG=10;OUR EST;→ NOT CHECKED ←
$\Xi^0 \pi^+ \pi^0$	[g]	2.34 ± 0.68		856	DESIG=7;OUR EST;→ NOT CHECKED ←
$\Xi^0 \pi^+ \pi^+ \pi^-$	[g]	1.74 ± 0.50		818	DESIG=12;OUR EST;→ NOT CHECKED ←
$\Xi^0 e^+ \nu_e$	[g]	$2.3 \ {}^{+0.7}_{-0.9}$		884	DESIG=5;OUR EST;→ NOT CHECKED ←
$\Omega^- K^+ \pi^+$	[g]	0.07 ± 0.04		399	DESIG=17;OUR EST;→ NOT CHECKED ←

Cabibbo-suppressed decays

NODE=S045;CLUMP=B

$p K^- \pi^+$	[g]	0.21 ±0.03		944	DESIG=13;OUR EST;→ NOT CHECKED ←
$p \overline{K}^*(892)^0$	[b,g]	0.12 ±0.02		828	DESIG=14;OUR EST;→ NOT CHECKED ←
$\Sigma^+ K^+ K^-$	[g]	0.15 ±0.07		580	DESIG=18;OUR EST;→ NOT CHECKED ←
$\Sigma^+ \phi$	[b,g]	<0.11	90%	549	DESIG=19;OUR EST;→ NOT CHECKED ←
$\Xi(1690)^0 K^+$, $\Xi(1690)^0 \to \Sigma^+ K^-$	[g]	<0.05	90%	501	DESIG=20;OUR EST;→ NOT CHECKED ←

Ξ_c^0

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

NODE=S048

J^P has not been measured; $\frac{1}{2}^+$ is the quark-model prediction.

Mass $m = 2471.0 \pm 0.4$ MeV NODE=S048M;DTYPE=M

$m_{\Xi_c^0} - m_{\Xi_c^+} = 3.1 \pm 0.5$ MeV NODE=S048D;DTYPE=D

Mean life $\tau = (112^{+13}_{-10}) \times 10^{-15}$ s NODE=S048T;DTYPE=T

$c\tau = 33.6\ \mu$m NODE=S048CTA;DTYPE=C;OUR EVAL

Decay asymmetry parameters

CLUMP=D

$\Xi^- \pi^+$ $\alpha = -0.6 \pm 0.4$ NODE=S048A;DTYPE=d;CLUMP=D

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

NODE=S048215;NODE=S048

Ξ_c^0 DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$p K^- K^- \pi^+$	seen	676	DESIG=10;OUR EST;→ NOT CHECKED ←
$p K^- \overline{K}^*(892)^0$	seen	413	DESIG=2;OUR EST;→ NOT CHECKED ←
$p K^- K^- \pi^+$ no $\overline{K}^*(892)^0$	seen	676	DESIG=11;OUR EST;→ NOT CHECKED ←
ΛK_S^0	seen	906	DESIG=6;OUR EST;→ NOT CHECKED ←
$\Lambda \overline{K}^0 \pi^+ \pi^-$	seen	787	DESIG=8
$\Lambda K^- \pi^+ \pi^+ \pi^-$	seen	703	DESIG=9
$\Xi^- \pi^+$	seen	875	DESIG=1;OUR EST;→ NOT CHECKED ←
$\Xi^- \pi^+ \pi^+ \pi^-$	seen	816	DESIG=3;OUR EST;→ NOT CHECKED ←
$\Omega^- K^+$	seen	523	DESIG=4;OUR EST;→ NOT CHECKED ←
$\Xi^- e^+ \nu_e$	seen	882	DESIG=7;OUR EST;→ NOT CHECKED ←
$\Xi^- \ell^+$ anything	seen	–	DESIG=5;OUR EST;→ NOT CHECKED ←

$\Xi_c'^+$

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

NODE=S058

J^P has not been measured; $\frac{1}{2}^+$ is the quark-model prediction.

Mass $m = 2575.7 \pm 3.1$ MeV NODE=S058M;DTYPE=M

$m_{\Xi_c'^+} - m_{\Xi_c^+} = 107.8 \pm 3.0$ MeV NODE=S058D;DTYPE=D

The $\Xi_c'^+$–Ξ_c^+ mass difference is too small for any strong decay to occur.

NODE=S058215;NODE=S058

$\Xi_c'^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Xi_c^+ \gamma$	seen	106	DESIG=1;OUR EST;→ NOT CHECKED ←

$\Xi_c'^0$

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

NODE=S059

J^P has not been measured; $\frac{1}{2}^+$ is the quark-model prediction.

Mass $m = 2578.0 \pm 2.9$ MeV NODE=S059M;DTYPE=M

$m_{\Xi_c'^0} - m_{\Xi_c^0} = 107.0 \pm 2.9$ MeV NODE=S059D;DTYPE=D

The $\Xi_c'^0 - \Xi_c^0$ mass difference is too small for any strong decay to occur. NODE=S059215;NODE=S059

$\Xi_c'^0$ **DECAY MODES**	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Xi_c^0\gamma$	seen	105	DESIG=1;OUR EST;→ NOT CHECKED ←

$\Xi_c(2645)$

$I(J^P) = \frac{1}{2}(\frac{3}{2}^+)$ NODE=B146

J^P has not been measured; $\frac{3}{2}^+$ is the quark-model prediction.

$\Xi_c(2645)^+$ mass $m = 2646.6 \pm 1.4$ MeV (S = 1.6) NODE=B146M+;DTYPE=M

$\Xi_c(2645)^0$ mass $m = 2646.1 \pm 1.2$ MeV NODE=B146M0;DTYPE=M

$m_{\Xi_c(2645)^+} - m_{\Xi_c^0} = 175.6 \pm 1.4$ MeV (S = 1.7) NODE=B146D+;DTYPE=D

$m_{\Xi_c(2645)^0} - m_{\Xi_c^+} = 178.2 \pm 1.1$ MeV NODE=B146D0;DTYPE=D

$\Xi_c(2645)^+$ full width $\Gamma < 3.1$ MeV, CL = 90% NODE=B146W+;DTYPE=G

$\Xi_c(2645)^0$ full width $\Gamma < 5.5$ MeV, CL = 90% NODE=B146W0;DTYPE=G

$\Xi_c\pi$ is the only strong decay allowed to a Ξ_c resonance having this mass. NODE=B146215;NODE=B146

$\Xi_c(2645)$ **DECAY MODES**	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Xi_c^0\pi^+$	seen	102	DESIG=2;OUR EST;→ NOT CHECKED ←
$\Xi_c^+\pi^-$	seen	107	DESIG=1;OUR EST;→ NOT CHECKED ←

$\Xi_c(2790)$

$I(J^P) = \frac{1}{2}(\frac{1}{2}^-)$ NODE=B149

J^P has not been measured; $\frac{1}{2}^-$ is the quark-model prediction.

$\Xi_c(2790)^+$ mass $= 2789.2 \pm 3.2$ MeV NODE=B149M+;DTYPE=M

$\Xi_c(2790)^0$ mass $= 2791.9 \pm 3.3$ MeV NODE=B149M0;DTYPE=M

$m_{\Xi_c(2790)^+} - m_{\Xi_c^0} = 318.2 \pm 3.2$ MeV NODE=B149D+;DTYPE=D

$m_{\Xi_c(2790)^0} - m_{\Xi_c^+} = 324.0 \pm 3.3$ MeV NODE=B149D0;DTYPE=D

$\Xi_c(2790)^+$ width < 15 MeV, CL = 90% NODE=B149W+;DTYPE=G

$\Xi_c(2790)^0$ width < 12 MeV, CL = 90% NODE=B149W0;DTYPE=G

$\Xi_c(2790)$ **DECAY MODES**	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Xi_c'\pi$	seen	159	NODE=B149215;DESIG=1;OUR EST

$\Xi_c(2815)$

$I(J^P) = \frac{1}{2}(\frac{3}{2}^-)$ NODE=B148

J^P has not been measured; $\frac{3}{2}^-$ is the quark-model prediction.

$\Xi_c(2815)^+$ mass $m = 2816.5 \pm 1.2$ MeV NODE=B148M+;DTYPE=M

$\Xi_c(2815)^0$ mass $m = 2818.2 \pm 2.1$ MeV NODE=B148M0;DTYPE=M

$m_{\Xi_c(2815)^+} - m_{\Xi_c^+} = 348.6 \pm 1.2$ MeV NODE=B148D+;DTYPE=D

$m_{\Xi_c(2815)^0} - m_{\Xi_c^0} = 347.2 \pm 2.1$ MeV NODE=B148D0;DTYPE=D

$\Xi_c(2815)^+$ full width $\Gamma < 3.5$ MeV, CL = 90% NODE=B148W+;DTYPE=G

$\Xi_c(2815)^0$ full width $\Gamma < 6.5$ MeV, CL = 90% NODE=B148W0;DTYPE=G

The $\Xi_c \pi\pi$ modes are consistent with being entirely via $\Xi_c(2645)\pi$. NODE=B148215;NODE=B148

Ξ_c(2815) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Xi_c^+ \pi^+ \pi^-$	seen	196	DESIG=1;OUR EST
$\Xi_c^0 \pi^+ \pi^-$	seen	191	DESIG=2;OUR EST

$\Xi_c(2980)$

$I(J^P) = \frac{1}{2}(?^?)$ NODE=B130

$\Xi_c(2980)^+$ $m = 2974 \pm 5$ MeV (S = 2.3) NODE=B130M+;DTYPE=M
$\Xi_c(2980)^0$ $m = 2974 \pm 4$ MeV NODE=B130M0;DTYPE=M
$\Xi_c(2980)^+$ width $\Gamma = 33 \pm 8$ MeV (S = 1.3) NODE=B130W+;DTYPE=G
$\Xi_c(2980)^0$ width $\Gamma = 31 \pm 11$ MeV NODE=B130W0;DTYPE=G

Ξ_c(2980) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Lambda_c^+ \overline{K} \pi$	seen	244	NODE=B130215;DESIG=1;OUR EST
$\quad \Sigma_c(2455) \overline{K}$	seen	151	DESIG=2;OUR EST
$\Lambda_c^+ \overline{K}$	not seen	421	DESIG=3;OUR EST

$\Xi_c(3080)$

$I(J^P) = \frac{1}{2}(?^?)$ NODE=B147

$\Xi_c(3080)^+$ $m = 3077.0 \pm 0.4$ MeV NODE=B147M+;DTYPE=M
$\Xi_c(3080)^0$ $m = 3079.9 \pm 1.4$ MeV (S = 1.3) NODE=B147M0;DTYPE=M
$\Xi_c(3080)^+$ width $\Gamma = 5.8 \pm 1.0$ MeV NODE=B147W+;DTYPE=G
$\Xi_c(3080)^0$ width $\Gamma = 5.6 \pm 2.2$ MeV NODE=B147W0;DTYPE=G

Ξ_c(3080) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Lambda_c^+ \overline{K} \pi$	seen	415	NODE=B147215;DESIG=1;OUR EST; $\rightarrow$ NOT CHECKED $\leftarrow$
$\quad \Sigma_c(2455) \overline{K}$	seen	342	DESIG=2;OUR EST;$\rightarrow$ NOT CHECKED $\leftarrow$
$\quad \Sigma_c(2455) \overline{K} + \Sigma_c(2520) \overline{K}$	seen	–	DESIG=3;OUR EST;$\rightarrow$ NOT CHECKED $\leftarrow$
$\Lambda_c^+ \overline{K}$	not seen	536	DESIG=4;OUR EST;$\rightarrow$ NOT CHECKED $\leftarrow$
$\Lambda_c^+ \overline{K} \pi^+ \pi^-$	not seen	143	DESIG=5;OUR EST;$\rightarrow$ NOT CHECKED $\leftarrow$

Ω_c^0

$I(J^P) = 0(\frac{1}{2}^+)$ NODE=S047

J^P has not been measured; $\frac{1}{2}^+$ is the quark-model prediction.

Mass $m = 2697.5 \pm 2.6$ MeV (S = 1.2) NODE=S047M;DTYPE=M
Mean life $\tau = (69 \pm 12) \times 10^{-15}$ s NODE=S047T;DTYPE=T
$c\tau = 21\ \mu$m NODE=S047CTA;DTYPE=C;OUR EVAL

No absolute branching fractions have been measured. NODE=S047215;NODE=S047

Ω_c^0 DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Sigma^+ K^- K^- \pi^+$	seen	691	DESIG=4;OUR EVAL;$\rightarrow$ NOT CHECKED $\leftarrow$
$\Xi^0 K^- \pi^+$	seen	903	DESIG=5;OUR EVAL;$\rightarrow$ NOT CHECKED $\leftarrow$
$\Xi^- K^- \pi^+ \pi^+$	seen	832	DESIG=1;OUR EVAL;$\rightarrow$ NOT CHECKED $\leftarrow$
$\Omega^- e^+ \nu_e$	seen	830	DESIG=7;OUR EVAL;$\rightarrow$ NOT CHECKED $\leftarrow$
$\Omega^- \pi^+$	seen	822	DESIG=2;OUR EVAL;$\rightarrow$ NOT CHECKED $\leftarrow$
$\Omega^- \pi^+ \pi^0$	seen	798	DESIG=6;OUR EVAL;$\rightarrow$ NOT CHECKED $\leftarrow$
$\Omega^- \pi^- \pi^+ \pi^+$	seen	754	DESIG=3;OUR EVAL;$\rightarrow$ NOT CHECKED $\leftarrow$

$\Omega_c(2770)^0$

$I(J^P) = 0(\frac{3}{2}^+)$ NODE=S053

J^P has not been measured; $\frac{3}{2}^+$ is the quark-model prediction.

Mass $m = 2768.3 \pm 3.0$ MeV (S = 1.2) NODE=S053M;DTYPE=M
$m_{\Omega_c(2770)^0} - m_{\Omega_c^0} = 70.8 \pm 1.5$ MeV NODE=S053D;DTYPE=D

The $\Omega_c(2770)^0$–Ω_c^0 mass difference is too small for any strong decay to occur. NODE=S053215;NODE=S053

$\boldsymbol{\Omega_c(2770)^0}$ **DECAY MODES**	Fraction (Γ_i/Γ)	p (MeV/c)	
$\Omega_c^0\gamma$	presumably 100%	70	DESIG=1;OUR EST;→ NOT CHECKED ←

NOTES

[a] See the note on "Λ_c^+ Branching Fractions" in the Λ_c^+ Particle Listings. LINKAGE=S33

[b] This branching fraction includes all the decay modes of the final-state resonance. LINKAGE=SAD

[c] An ℓ indicates an e or a μ mode, not a sum over these modes. LINKAGE=DX

[d] The value is for the sum of the charge states or particle/antiparticle states indicated. LINKAGE=SG

[e] Assuming isospin conservation, so that the other third is $\Lambda_c^+\pi^0\pi^0$. LINKAGE=LC

[f] A test that the isospin is indeed 0, so that the particle is indeed a Λ_c^+. LINKAGE=B19

[g] No absolute branching fractions have been measured. The value here is the branching *ratio* relative to $\Xi^-\pi^+\pi^+$. LINKAGE=S45