CHARMED BARYONS
$(C = +1)$

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

Λ_c^+

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

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

Mass $m = 2286.46 \pm 0.14$ MeV
Mean life $\tau = (200 \pm 6) \times 10^{-15}$ s (S = 1.6)
$c\tau = 59.9\ \mu$m

Decay asymmetry parameters

$\Lambda\pi^+$ $\alpha = -0.91 \pm 0.15$
$\Sigma^+\pi^0$ $\alpha = -0.45 \pm 0.32$
$\Lambda\ell^+\nu_\ell$ $\alpha = -0.86 \pm 0.04$
$(\alpha + \overline{\alpha})/(\alpha - \overline{\alpha})$ in $\Lambda_c^+ \to \Lambda\pi^+$, $\overline{\Lambda}_c^- \to \overline{\Lambda}\pi^- = -0.07 \pm 0.31$
$(\alpha + \overline{\alpha})/(\alpha - \overline{\alpha})$ in $\Lambda_c^+ \to \Lambda e^+\nu_e$, $\overline{\Lambda}_c^- \to \overline{\Lambda} e^- \overline{\nu}_e = 0.00 \pm 0.04$

Λ_c^+ DECAY MODES		Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
Hadronic modes with a p: $S = -1$ final states				
pK_S^0		(1.58 ± 0.08) %	S=1.2	873
$pK^-\pi^+$		(6.35 ± 0.33) %	S=1.4	823
$p\overline{K}^*(892)^0$	[a]	(1.98 ± 0.28) %		685
$\Delta(1232)^{++}K^-$		(1.09 ± 0.25) %		710
$\Lambda(1520)\pi^+$	[a]	(2.2 ± 0.5) %		627
$pK^-\pi^+$ nonresonant		(3.5 ± 0.4) %		823
$pK_S^0\pi^0$		(1.99 ± 0.13) %	S=1.1	823
$p\overline{K}^0\eta$		(1.6 ± 0.4) %		568
$pK_S^0\pi^+\pi^-$		(1.66 ± 0.12) %	S=1.1	754
$pK^-\pi^+\pi^0$		(4.9 ± 0.4) %	S=1.3	759
$pK^*(892)^-\pi^+$	[a]	(1.5 ± 0.5) %		580
$p(K^-\pi^+)_{\text{nonresonant}}\pi^0$		(4.6 ± 0.9) %		759
$\Delta(1232)\overline{K}^*(892)$		seen		419
$pK^-2\pi^+\pi^-$		$(1.4 \pm 1.0) \times 10^{-3}$		671
$pK^-\pi^+2\pi^0$		(1.0 ± 0.5) %		678

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

$p\pi^+\pi^-$		$(4.3 \pm 0.4) \times 10^{-3}$		927
$p f_0(980)$	[a]	$(3.5 \pm 2.3) \times 10^{-3}$		614
$p 2\pi^+ 2\pi^-$		$(2.3 \pm 1.5) \times 10^{-3}$		852
$p K^+ K^-$		$(10 \pm 4) \times 10^{-4}$		616
$p\phi$	[a]	$(1.08 \pm 0.14) \times 10^{-3}$		590
$p K^+ K^-$ non-ϕ		$(5.3 \pm 1.2) \times 10^{-4}$		616

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

$\Lambda\pi^+$		(1.30 ± 0.07) %	S=1.2	864
$\Lambda\pi^+\pi^0$		(7.1 ± 0.4) %	S=1.2	844
$\Lambda\rho^+$		< 6 %	CL=95%	636
$\Lambda\pi^- 2\pi^+$		(3.7 ± 0.4) %	S=1.9	807
$\Sigma(1385)^+\pi^+\pi^-$, $\Sigma^{*+} \to \Lambda\pi^+$		(1.0 ± 0.5) %		688
$\Sigma(1385)^- 2\pi^+$, $\Sigma^{*-} \to \Lambda\pi^-$		$(7.8 \pm 1.6) \times 10^{-3}$		688
$\Lambda\pi^+\rho^0$		(1.5 ± 0.6) %		524
$\Sigma(1385)^+\rho^0$, $\Sigma^{*+} \to \Lambda\pi^+$		$(5 \pm 4) \times 10^{-3}$		363
$\Lambda\pi^- 2\pi^+$ nonresonant		< 1.1 %	CL=90%	807
$\Lambda\pi^-\pi^0 2\pi^+$ total		(2.3 ± 0.8) %		757
$\Lambda\pi^+\eta$	[a]	(2.3 ± 0.5) %		691
$\Sigma(1385)^+\eta$	[a]	(1.08 ± 0.32) %		570
$\Lambda\pi^+\omega$	[a]	(1.5 ± 0.5) %		517
$\Lambda\pi^-\pi^0 2\pi^+$, no η or ω		$< 8 \times 10^{-3}$	CL=90%	757
$\Lambda K^+\overline{K}^0$		$(5.7 \pm 1.1) \times 10^{-3}$	S=2.0	443
$\Xi(1690)^0 K^+$, $\Xi^{*0} \to \Lambda\overline{K}^0$		$(1.6 \pm 0.5) \times 10^{-3}$		286
$\Sigma^0\pi^+$		(1.29 ± 0.07) %	S=1.1	825
$\Sigma^+\pi^0$		(1.24 ± 0.10) %		827
$\Sigma^+\eta$		$(7.0 \pm 2.3) \times 10^{-3}$		713
$\Sigma^+\pi^+\pi^-$		(4.57 ± 0.29) %	S=1.2	804
$\Sigma^+\rho^0$		< 1.7 %	CL=95%	575
$\Sigma^- 2\pi^+$		(2.1 ± 0.4) %		799
$\Sigma^0\pi^+\pi^0$		(2.3 ± 0.9) %		803
$\Sigma^0\pi^- 2\pi^+$		(1.13 ± 0.29) %		763
$\Sigma^+\pi^+\pi^-\pi^0$		—		767
$\Sigma^+\omega$	[a]	(1.74 ± 0.21) %		569
$\Sigma^+ K^+ K^-$		$(3.6 \pm 0.4) \times 10^{-3}$		349
$\Sigma^+\phi$	[a]	$(4.0 \pm 0.6) \times 10^{-3}$	S=1.1	295
$\Xi(1690)^0 K^+$, $\Xi^{*0} \to \Sigma^+ K^-$		$(1.03 \pm 0.26) \times 10^{-3}$		286
$\Sigma^+ K^+ K^-$ nonresonant		$< 8 \times 10^{-4}$	CL=90%	349
$\Xi^0 K^+$		$(5.0 \pm 1.2) \times 10^{-3}$		653
$\Xi^- K^+\pi^+$		$(6.2 \pm 0.6) \times 10^{-3}$	S=1.1	565
$\Xi(1530)^0 K^+$	[a]	$(3.3 \pm 0.9) \times 10^{-3}$		473

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

ΛK^+			$(6.1 \pm 1.2) \times 10^{-4}$		781
$\Lambda K^+ \pi^+ \pi^-$			$< 5 \times 10^{-4}$	CL=90%	637
$\Sigma^0 K^+$			$(5.2 \pm 0.8) \times 10^{-4}$		735
$\Sigma^0 K^+ \pi^+ \pi^-$			$< 2.6 \times 10^{-4}$	CL=90%	574
$\Sigma^+ K^+ \pi^-$			$(2.1 \pm 0.6) \times 10^{-3}$		670
$\Sigma^+ K^*(892)^0$		[a]	$(3.6 \pm 1.0) \times 10^{-3}$		469
$\Sigma^- K^+ \pi^+$			$< 1.2 \times 10^{-3}$	CL=90%	664

Doubly Cabibbo-suppressed modes

$p K^+ \pi^-$			$(1 \pm 13) \times 10^{-4}$		823

Semileptonic modes

$\Lambda e^+ \nu_e$			(3.6 ± 0.4) %		871

Inclusive modes

e^+ anything			(4.5 ± 1.7) %		–
$p e^+$ anything			(1.8 ± 0.9) %		–
p anything			(50 ± 16) %		–
p anything (no Λ)			(12 ± 19) %		–
n anything			(50 ± 16) %		–
n anything (no Λ)			(29 ± 17) %		–
Λ anything			(35 ± 11) %	S=1.4	–
$\Sigma^\pm$ anything		[b]	(10 ± 5) %		–
3prongs			(24 ± 8) %		–

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

$p e^+ e^-$	$C1$		$< 5.5 \times 10^{-6}$	CL=90%	951
$p \mu^+ \mu^-$	$C1$		$< 4.4 \times 10^{-5}$	CL=90%	937
$p e^+ \mu^-$	LF		$< 9.9 \times 10^{-6}$	CL=90%	947
$p e^- \mu^+$	LF		$< 1.9 \times 10^{-5}$	CL=90%	947
$\overline{p} 2e^+$	L,B		$< 2.7 \times 10^{-6}$	CL=90%	951
$\overline{p} 2\mu^+$	L,B		$< 9.4 \times 10^{-6}$	CL=90%	937
$\overline{p} e^+ \mu^+$	L,B		$< 1.6 \times 10^{-5}$	CL=90%	947
$\Sigma^- \mu^+ \mu^+$	L		$< 7.0 \times 10^{-4}$	CL=90%	812

$\Lambda_c(2595)^+$

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

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 $m = 2592.25 \pm 0.28$ MeV
$m - m_{\Lambda_c^+} = 305.79 \pm 0.24$ MeV
Full width $\Gamma = 2.6 \pm 0.6$ MeV

$\Lambda_c^+ \pi\pi$ 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.

$\Lambda_c(2595)^+$ DECAY MODES		Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_c^+ \pi^+ \pi^-$	[c]	—	117
$\Sigma_c(2455)^{++} \pi^-$		24 ± 7 %	†
$\Sigma_c(2455)^0 \pi^+$		24 ± 7 %	†
$\Lambda_c^+ \pi^+ \pi^-$ 3-body		18 ± 10 %	117
$\Lambda_c^+ \pi^0$	[d]	not seen	258
$\Lambda_c^+ \gamma$		not seen	288

$\Lambda_c(2625)^+$

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

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

Mass $m = 2628.11 \pm 0.19$ MeV (S = 1.1)
$m - m_{\Lambda_c^+} = 341.65 \pm 0.13$ MeV (S = 1.1)
Full width $\Gamma < 0.97$ MeV, CL = 90%

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

$\Lambda_c(2625)^+$ DECAY MODES		Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
$\Lambda_c^+ \pi^+ \pi^-$	[c]	≈ 67%		184
$\Sigma_c(2455)^{++} \pi^-$		<5	90%	102
$\Sigma_c(2455)^0 \pi^+$		<5	90%	102
$\Lambda_c^+ \pi^+ \pi^-$ 3-body		large		184
$\Lambda_c^+ \pi^0$	[d]	not seen		293
$\Lambda_c^+ \gamma$		not seen		319

$\Lambda_c(2880)^+$

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

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

Mass $m = 2881.53 \pm 0.35$ MeV
$m - m_{\Lambda_c^+} = 595.1 \pm 0.4$ MeV
Full width $\Gamma = 5.8 \pm 1.1$ MeV

$\Lambda_c(2880)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_c^+ \pi^+ \pi^-$	seen	471
$\Sigma_c(2455)^{0,++} \pi^\pm$	seen	376
$\Sigma_c(2520)^{0,++} \pi^\pm$	seen	317
$p D^0$	seen	316

$\Lambda_c(2940)^+$

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

Mass $m = 2939.3^{+1.4}_{-1.5}$ MeV
Full width $\Gamma = 17^{+8}_{-6}$ MeV

$\Lambda_c(2940)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$p D^0$	seen	420
$\Sigma_c(2455)^{0,++} \pi^\pm$	seen	–

$\Sigma_c(2455)$

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

$\Sigma_c(2455)^{++}$ mass $m = 2453.97 \pm 0.14$ MeV
$\Sigma_c(2455)^{+}$ mass $m = 2452.9 \pm 0.4$ MeV
$\Sigma_c(2455)^{0}$ mass $m = 2453.75 \pm 0.14$ MeV
$m_{\Sigma_c^{++}} - m_{\Lambda_c^+} = 167.510 \pm 0.017$ MeV
$m_{\Sigma_c^{+}} - m_{\Lambda_c^+} = 166.4 \pm 0.4$ MeV
$m_{\Sigma_c^{0}} - m_{\Lambda_c^+} = 167.290 \pm 0.017$ MeV
$m_{\Sigma_c^{++}} - m_{\Sigma_c^0} = 0.220 \pm 0.013$ MeV
$m_{\Sigma_c^{+}} - m_{\Sigma_c^0} = -0.9 \pm 0.4$ MeV
$\Sigma_c(2455)^{++}$ full width $\Gamma = 1.89^{+0.09}_{-0.18}$ MeV (S = 1.1)
$\Sigma_c(2455)^{+}$ full width $\Gamma < 4.6$ MeV, CL = 90%
$\Sigma_c(2455)^{0}$ full width $\Gamma = 1.83^{+0.11}_{-0.19}$ MeV (S = 1.2)

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

$\Sigma_c(2455)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_c^+ \pi$	$\approx$ 100 %	94

$\Sigma_c(2520)$

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

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

$\Sigma_c(2520)^{++}$ mass $m = 2518.41^{+0.21}_{-0.19}$ MeV (S = 1.1)
$\Sigma_c(2520)^{+}$ mass $m = 2517.5 \pm 2.3$ MeV
$\Sigma_c(2520)^{0}$ mass $m = 2518.48 \pm 0.20$ MeV (S = 1.1)
$m_{\Sigma_c(2520)^{++}} - m_{\Lambda_c^+} = 231.95^{+0.17}_{-0.12}$ MeV (S = 1.3)
$m_{\Sigma_c(2520)^{+}} - m_{\Lambda_c^+} = 231.0 \pm 2.3$ MeV
$m_{\Sigma_c(2520)^{0}} - m_{\Lambda_c^+} = 232.02^{+0.15}_{-0.14}$ MeV (S = 1.3)
$m_{\Sigma_c(2520)^{++}} - m_{\Sigma_c(2520)^{0}} = 0.01 \pm 0.15$ MeV
$\Sigma_c(2520)^{++}$ full width $\Gamma = 14.78^{+0.30}_{-0.40}$ MeV
$\Sigma_c(2520)^{+}$ full width $\Gamma < 17$ MeV, CL = 90%
$\Sigma_c(2520)^{0}$ full width $\Gamma = 15.3^{+0.4}_{-0.5}$ MeV

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

$\Sigma_c(2520)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_c^+ \pi$	$\approx$ 100 %	179

$\Sigma_c(2800)$

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

$\Sigma_c(2800)^{++}$ mass $m = 2801^{+4}_{-6}$ MeV
$\Sigma_c(2800)^{+}$ mass $m = 2792^{+14}_{-\ 5}$ MeV
$\Sigma_c(2800)^{0}$ mass $m = 2806^{+5}_{-7}$ MeV (S = 1.3)
$m_{\Sigma_c(2800)^{++}} - m_{\Lambda_c^+} = 514^{+4}_{-6}$ MeV
$m_{\Sigma_c(2800)^{+}} - m_{\Lambda_c^+} = 505^{+14}_{-\ 5}$ MeV
$m_{\Sigma_c(2800)^{0}} - m_{\Lambda_c^+} = 519^{+5}_{-7}$ MeV (S = 1.3)
$\Sigma_c(2800)^{++}$ full width $\Gamma = 75^{+22}_{-17}$ MeV
$\Sigma_c(2800)^{+}$ full width $\Gamma = 62^{+60}_{-40}$ MeV
$\Sigma_c(2800)^{0}$ full width $\Gamma = 72^{+22}_{-15}$ MeV

$\Sigma_c(2800)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_c^+ \pi$	seen	443

Ξ_c^+

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

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

Mass $m = 2467.87 \pm 0.30$ MeV (S = 1.1)
Mean life $\tau = (442 \pm 26) \times 10^{-15}$ s (S = 1.3)
$c\tau = 132$ μm

Ξ_c^+ DECAY MODES		Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
No absolute branching fractions have been measured. The following are branching *ratios* relative to $\Xi^- 2\pi^+$.				
Cabibbo-favored ($S = -2$) decays — relative to $\Xi^- 2\pi^+$				
$p 2K_S^0$		0.087 ± 0.021		767
$\Lambda \overline{K}^0 \pi^+$		—		852
$\Sigma(1385)^+ \overline{K}^0$	[a]	1.0 ± 0.5		746
$\Lambda K^- 2\pi^+$		0.323 ± 0.033		787
$\Lambda \overline{K}^*(892)^0 \pi^+$	[a]	<0.16	90%	608
$\Sigma(1385)^+ K^- \pi^+$	[a]	<0.23	90%	678
$\Sigma^+ K^- \pi^+$		0.94 ± 0.10		811
$\Sigma^+ \overline{K}^*(892)^0$	[a]	0.81 ± 0.15		658
$\Sigma^0 K^- 2\pi^+$		0.27 ± 0.12		735
$\Xi^0 \pi^+$		0.55 ± 0.16		877
$\Xi^- 2\pi^+$		**DEFINED AS 1**		851
$\Xi(1530)^0 \pi^+$	[a]	<0.10	90%	750
$\Xi^0 \pi^+ \pi^0$		2.3 ± 0.7		856
$\Xi^0 \pi^- 2\pi^+$		1.7 ± 0.5		818
$\Xi^0 e^+ \nu_e$		$2.3 \, ^{+0.7}_{-0.8}$		884
$\Omega^- K^+ \pi^+$		0.07 ± 0.04		399
Cabibbo-suppressed decays — relative to $\Xi^- 2\pi^+$				
$p K^- \pi^+$		0.21 ± 0.04		944
$p \overline{K}^*(892)^0$	[a]	0.116 ± 0.030		828
$\Sigma^+ \pi^+ \pi^-$		0.48 ± 0.20		922
$\Sigma^- 2\pi^+$		0.18 ± 0.09		918
$\Sigma^+ K^+ K^-$		0.15 ± 0.06		579
$\Sigma^+ \phi$	[a]	<0.11	90%	549
$\Xi(1690)^0 K^+$, $\Xi^0 \to \Sigma^+ K^-$		<0.05	90%	501

Ξ_c^0

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

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

Mass $m = 2470.87^{+0.28}_{-0.31}$ MeV

$m_{\Xi_c^0} - m_{\Xi_c^+} = 3.00 \pm 0.24$ MeV

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

$c\tau = 33.6\ \mu$m

Decay asymmetry parameters

$\Xi^- \pi^+$ $\qquad \alpha = -0.6 \pm 0.4$

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

Ξ_c^0 DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
No absolute branching fractions have been measured. The following are branching *ratios* relative to $\Xi^- \pi^+$.		
Cabibbo-favored (S = −2) decays — relative to $\Xi^- \pi^+$		
$p K^- K^- \pi^+$	0.34 ±0.04	676
$p K^- \overline{K}^*(892)^0$	0.21 ±0.05	413
$p K^- K^- \pi^+$ (no $\overline{K}^{*0}$)	0.21 ±0.04	676
ΛK_S^0	0.210±0.028	906
$\Lambda K^- \pi^+$	1.07 ±0.14	856
$\Lambda \overline{K}^0 \pi^+ \pi^-$	seen	787
$\Lambda K^- \pi^+ \pi^+ \pi^-$	seen	703
$\Xi^- \pi^+$	**DEFINED AS 1**	875
$\Xi^- \pi^+ \pi^+ \pi^-$	3.3 ±1.4	816
$\Omega^- K^+$	0.297±0.024	522
$\Xi^- e^+ \nu_e$	3.1 ±1.1	882
$\Xi^- \ell^+$ anything	1.0 ±0.5	–
Cabibbo-suppressed decays — relative to $\Xi^- \pi^+$		
$\Xi^- K^+$	0.028±0.006	790
$\Lambda K^+ K^-$ (no ϕ)	0.029±0.007	648
$\Lambda \phi$	0.034±0.007	621

$\Xi_c'^+$

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

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

Mass $m = 2577.4 \pm 1.2$ MeV (S = 2.9)
$m_{\Xi_c'^+} - m_{\Xi_c^+} = 109.5 \pm 1.2$ MeV (S = 3.7)
$m_{\Xi_c'^+} - m_{\Xi_c'^0} = -1.4 \pm 1.3$ MeV (S = 2.5)

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

$\Xi_c'^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c^+\gamma$	seen	107

$\Xi_c'^0$

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

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

Mass $m = 2578.8 \pm 0.5$ MeV (S = 1.2)
$m_{\Xi_c'^0} - m_{\Xi_c^0} = 108.0 \pm 0.4$ MeV (S = 1.2)

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

$\Xi_c'^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c^0\gamma$	seen	106

$\Xi_c(2645)$

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

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

$\Xi_c(2645)^+$ mass $m = 2645.53 \pm 0.31$ MeV
$\Xi_c(2645)^0$ mass $m = 2646.32 \pm 0.31$ MeV (S = 1.1)
$m_{\Xi_c(2645)^+} - m_{\Xi_c^0} = 174.66 \pm 0.09$ MeV
$m_{\Xi_c(2645)^0} - m_{\Xi_c^+} = 178.44 \pm 0.11$ MeV (S = 1.1)
$m_{\Xi_c(2645)^+} - m_{\Xi_c(2645)^0} = -0.79 \pm 0.27$ MeV
$\Xi_c(2645)^+$ full width $\Gamma = 2.14 \pm 0.19$ MeV (S = 1.1)
$\Xi_c(2645)^0$ full width $\Gamma = 2.35 \pm 0.22$ MeV

$\Xi_c \pi$ is the only strong decay allowed to a Ξ_c resonance having this mass.

Ξ_c(2645) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c^0 \pi^+$	seen	102
$\Xi_c^+ \pi^-$	seen	106

$\Xi_c(2790)$

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

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

$\Xi_c(2790)^+$ mass $= 2792.0 \pm 0.5$ MeV (S = 1.2)
$\Xi_c(2790)^0$ mass $= 2792.8 \pm 1.2$ MeV (S = 2.9)
$m_{\Xi_c(2790)^+} - m_{\Xi_c^0} = 321.1 \pm 0.4$ MeV (S = 1.2)
$m_{\Xi_c(2790)^0} - m_{\Xi_c^+} = 324.9 \pm 1.2$ MeV (S = 3.7)
$m_{\Xi_c(2790)^+} - m_{\Xi_c'^0} = 213.10 \pm 0.26$ MeV (S = 1.2)
$m_{\Xi_c(2790)^0} - m_{\Xi_c'^+} = 215.4 \pm 0.8$ MeV (S = 3.7)
$m_{\Xi_c(2790)^+} - m_{\Xi_c(2790)^0} = -0.9 \pm 1.3$ MeV (S = 2.5)
$\Xi_c(2790)^+$ width $= 8.9 \pm 1.0$ MeV
$\Xi_c(2790)^0$ width $= 10.0 \pm 1.1$ MeV

Ξ_c(2790) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c \pi$	seen	–
$\Xi'_c \pi$	seen	160

$\Xi_c(2815)$

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

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

$\Xi_c(2815)^+$ mass $m = 2816.67 \pm 0.31$ MeV (S = 1.1)
$\Xi_c(2815)^0$ mass $m = 2820.22 \pm 0.32$ MeV
$m_{\Xi_c(2815)^+} - m_{\Xi_c^+} = 348.80 \pm 0.10$ MeV
$m_{\Xi_c(2815)^0} - m_{\Xi_c^0} = 349.35 \pm 0.11$ MeV
$m_{\Xi_c(2815)^+} - m_{\Xi_c(2815)^0} = -3.55 \pm 0.28$ MeV
$\Xi_c(2815)^+$ full width $\Gamma = 2.43 \pm 0.26$ MeV
$\Xi_c(2815)^0$ full width $\Gamma = 2.54 \pm 0.25$ MeV

The $\Xi_c \pi\pi$ modes are consistent with being entirely via $\Xi_c(2645)\pi$.

Ξ_c(2815) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c \pi$	seen	–
$\Xi_c^+ \pi^+ \pi^-$	seen	196
$\Xi_c^0 \pi^+ \pi^-$	seen	191

Ξ_c(2970) was Ξ_c(2980)

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

$\Xi_c(2970)^+$ $m = 2969.4 \pm 0.8$ MeV (S = 1.1)
$\Xi_c(2970)^0$ $m = 2967.8 \pm 0.8$ MeV (S = 1.1)
$m_{\Xi_c(2970)^+} - m_{\Xi_c^0} = 498.5 \pm 0.8$ MeV (S = 1.1)
$m_{\Xi_c(2970)^0} - m_{\Xi_c^+} = 499.9^{+0.8}_{-0.7}$ MeV (S = 1.1)
$m_{\Xi_c(2970)^+} - m_{\Xi_c(2970)^0} = 1.6 \pm 1.1$ MeV (S = 1.1)
$\Xi_c(2970)^+$ width $\Gamma = 20.9^{+2.4}_{-3.5}$ MeV (S = 1.2)
$\Xi_c(2970)^0$ width $\Gamma = 28.1^{+3.4}_{-4.0}$ MeV (S = 1.5)

Ξ_c(2970) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_c^+ \overline{K} \pi$	seen	231
$\Sigma_c(2455) \overline{K}$	seen	133
$\Lambda_c^+ \overline{K}$	not seen	414
$\Xi_c 2\pi$	seen	385
$\Xi_c(2645) \pi$	seen	277

Ξ_c(3055)

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

Mass $m = 3055.9 \pm 0.4$ MeV
Full width $\Gamma = 7.8 \pm 1.9$ MeV

Ξ_c(3055) DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Sigma^{++} K^-$	seen	–
ΛD^+	seen	317

$\Xi_c(3080)$

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

$\Xi_c(3080)^+$ $m = 3077.2 \pm 0.4$ MeV
$\Xi_c(3080)^0$ $m = 3079.9 \pm 1.4$ MeV (S = 1.3)
$\Xi_c(3080)^+$ width $\Gamma = 3.6 \pm 1.1$ MeV (S = 1.5)
$\Xi_c(3080)^0$ width $\Gamma = 5.6 \pm 2.2$ MeV

$\Xi_c(3080)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_c^+ \overline{K} \pi$	seen	415
$\Sigma_c(2455) \overline{K}$	seen	342
$\Sigma_c(2455)^{++} K^-$	seen	342
$\Sigma_c(2520)^{++} K^-$	seen	239
$\Sigma_c(2455) \overline{K} + \Sigma_c(2520) \overline{K}$	seen	–
$\Lambda_c^+ \overline{K}$	not seen	536
$\Lambda_c^+ \overline{K} \pi^+ \pi^-$	not seen	144
ΛD^+	seen	362

Ω_c^0

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

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

Mass $m = 2695.2 \pm 1.7$ MeV (S = 1.3)
Mean life $\tau = (69 \pm 12) \times 10^{-15}$ s
$c\tau = 21$ μm

No absolute branching fractions have been measured.

Ω_c^0 DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Sigma^+ K^- K^- \pi^+$	seen	689
$\Xi^0 K^- \pi^+$	seen	901
$\Xi^- K^- \pi^+ \pi^+$	seen	830
$\Omega^- e^+ \nu_e$	seen	829
$\Omega^- \pi^+$	seen	821
$\Omega^- \pi^+ \pi^0$	seen	797
$\Omega^- \pi^- \pi^+ \pi^+$	seen	753

$\Omega_c(2770)^0$

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

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

Mass $m = 2765.9 \pm 2.0$ MeV (S = 1.2)

$m_{\Omega_c(2770)^0} - m_{\Omega_c^0} = 70.7^{+0.8}_{-0.9}$ MeV

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

$\Omega_c(2770)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Omega_c^0\gamma$	presumably 100%	70

NOTES

[*a*] This branching fraction includes all the decay modes of the final-state resonance.

[*b*] The value is for the sum of the charge states or particle/antiparticle states indicated.

[*c*] See AALTONEN 11H, Fig. 8, for the calculated ratio of $\Lambda_c^+\pi^0\pi^0$ and $\Lambda_c^+\pi^+\pi^-$ partial widths as a function of the $\Lambda_c(2595)^+ - \Lambda_c^+$ mass difference. At our value of the mass difference, the ratio is about 4.

[*d*] A test that the isospin is indeed 0, so that the particle is indeed a Λ_c^+.