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^+

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

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

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 $\Lambda_c^+ \to \Lambda e^+\nu_e$, $\overline{\Lambda}_c^- \to \overline{\Lambda} e^-\overline{\nu}_e = 0.00 \pm 0.04$
$A_{CP}(\Lambda X)$ in $\Lambda_c \to \Lambda X$, $\overline{\Lambda}_c \to \overline{\Lambda} X = (2 \pm 7)\%$
$\Delta A_{CP} = A_{CP}(\Lambda_c^+ \to pK^+K^-) - A_{CP}(\Lambda_c^+ \to p\pi^+\pi^-) = (0.3 \pm 1.1)\%$

Branching fractions marked with a footnote, e.g. [*a*], have been corrected for decay modes not observed in the experiments. For example, the sub-mode fraction $\Lambda_c^+ \to p\overline{K}^*(892)^0$ seen in $\Lambda_c^+ \to pK^-\pi^+$ has been multiplied up to include $\overline{K}^*(892)^0 \to \overline{K}^0\pi^0$ decays.

Λ_c^+ DECAY MODES		Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
Hadronic modes with a p or n: $S = -1$ final states				
pK_S^0		(1.59± 0.08) %	S=1.1	873
$pK^-\pi^+$		(6.28± 0.32) %	S=1.4	823
$p\overline{K}^*(892)^0$	[*a*]	(1.96± 0.27) %		685
$\Delta(1232)^{++}K^-$		(1.08± 0.25) %		710
$\Lambda(1520)\pi^+$	[*a*]	(2.2 ± 0.5) %		627
$pK^-\pi^+$ nonresonant		(3.5 ± 0.4) %		823
$pK_S^0\pi^0$		(1.97± 0.13) %	S=1.1	823
$nK_S^0\pi^+$		(1.82± 0.25) %		821
$p\overline{K}^0\eta$		(1.6 ± 0.4) %		568

$pK^0_S\pi^+\pi^-$		(1.60± 0.12) %	S=1.1	754
$pK^-\pi^+\pi^0$		(4.46± 0.30) %	S=1.5	759
$pK^*(892)^-\pi^+$	[a]	(1.4 ± 0.5) %		580
$p(K^-\pi^+)_{\text{nonresonant}}\pi^0$		(4.6 ± 0.8) %		759
$\Delta(1232)\overline{K}^*(892)$		seen		419
$pK^-2\pi^+\pi^-$		(1.4 ± 0.9) $\times 10^{-3}$		671
$pK^-\pi^+2\pi^0$		(1.0 ± 0.5) %		678

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

$p\pi^0$		< 2.7 $\times 10^{-4}$	CL=90%	945
$p\eta$		(1.24± 0.30) $\times 10^{-3}$		856
$p\omega(782)^0$		(9 ± 4) $\times 10^{-4}$		751
$p\pi^+\pi^-$		(4.61± 0.28) $\times 10^{-3}$		927
$pf_0(980)$	[a]	(3.5 ± 2.3) $\times 10^{-3}$		614
$p2\pi^+2\pi^-$		(2.3 ± 1.4) $\times 10^{-3}$		852
pK^+K^-		(1.06± 0.06) $\times 10^{-3}$		616
$p\phi$	[a]	(1.06± 0.14) $\times 10^{-3}$		590
pK^+K^- non-ϕ		(5.3 ± 1.2) $\times 10^{-4}$		616
$p\phi\pi^0$		(10 ± 4) $\times 10^{-5}$		460
$pK^+K^-\pi^0$ nonresonant		< 6.3 $\times 10^{-5}$	CL=90%	494

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

$\Lambda\pi^+$		(1.30± 0.07) %	S=1.1	864
$\Lambda\pi^+\pi^0$		(7.1 ± 0.4) %	S=1.1	844
$\Lambda\rho^+$		< 6 %	CL=95%	636
$\Lambda\pi^-2\pi^+$		(3.64± 0.29) %	S=1.4	807
$\Sigma(1385)^+\pi^+\pi^-$, $\Sigma^{*+}\to\Lambda\pi^+$		(1.0 ± 0.5) %		688
$\Sigma(1385)^-2\pi^+$, $\Sigma^{*-}\to\Lambda\pi^-$		(7.6 ± 1.4) $\times 10^{-3}$		688
$\Lambda\pi^+\rho^0$		(1.5 ± 0.6) %		524
$\Sigma(1385)^+\rho^0$, $\Sigma^{*+}\to\Lambda\pi^+$		(5 ± 4) $\times 10^{-3}$		363
$\Lambda\pi^-2\pi^+$ nonresonant		< 1.1 %	CL=90%	807
$\Lambda\pi^-\pi^02\pi^+$ total		(2.3 ± 0.8) %		757
$\Lambda\pi^+\eta$	[a]	(2.2 ± 0.5) %		691
$\Sigma(1385)^+\eta$	[a]	(1.07± 0.32) %		570
$\Lambda\pi^+\omega$	[a]	(1.5 ± 0.5) %		517
$\Lambda\pi^-\pi^02\pi^+$, no η or ω		< 8 $\times 10^{-3}$	CL=90%	757
$\Lambda K^+\overline{K}^0$		(5.7 ± 1.1) $\times 10^{-3}$	S=1.9	443
$\Xi(1690)^0K^+$, $\Xi^{*0}\to\Lambda\overline{K}^0$		(1.6 ± 0.5) $\times 10^{-3}$		286
$\Sigma^0\pi^+$		(1.29± 0.07) %	S=1.1	825
$\Sigma^+\pi^0$		(1.25± 0.10) %		827
$\Sigma^+\eta$		(6.9 ± 2.3) $\times 10^{-3}$		713
$\Sigma^+\pi^+\pi^-$		(4.50± 0.25) %	S=1.3	804
$\Sigma^+\rho^0$		< 1.7 %	CL=95%	575

$\Sigma^- 2\pi^+$		(1.87± 0.18) %			799
$\Sigma^0 \pi^+ \pi^0$		(3.5 ± 0.4) %			803
$\Sigma^+ \pi^0 \pi^0$		(1.55± 0.15) %			806
$\Sigma^0 \pi^- 2\pi^+$		(1.11± 0.30) %			763
$\Sigma^+ \pi^+ \pi^- \pi^0$		—			767
$\Sigma^+ \omega$	[a]	(1.70± 0.21) %			569
$\Sigma^- \pi^0 2\pi^+$		(2.1 ± 0.4) %			762
$\Sigma^+ K^+ K^-$		(3.5 ± 0.4) $\times 10^{-3}$		S=1.1	349
$\Sigma^+ \phi$	[a]	(3.9 ± 0.6) $\times 10^{-3}$		S=1.1	295
$\Xi(1690)^0 K^+$, $\Xi^{*0} \to \Sigma^+ K^-$		(1.02± 0.25) $\times 10^{-3}$			286
$\Sigma^+ K^+ K^-$ nonresonant		< 8 $\times 10^{-4}$		CL=90%	349
$\Xi^0 K^+$		(5.5 ± 0.7) $\times 10^{-3}$			653
$\Xi^- K^+ \pi^+$		(6.2 ± 0.6) $\times 10^{-3}$		S=1.1	565
$\Xi(1530)^0 K^+$		(4.3 ± 0.9) $\times 10^{-3}$		S=1.1	473

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

ΛK^+		(6.1 ± 1.2) $\times 10^{-4}$			781
$\Lambda K^+ \pi^+ \pi^-$		< 5 $\times 10^{-4}$		CL=90%	637
$\Sigma^0 K^+$		(5.2 ± 0.8) $\times 10^{-4}$			735
$\Sigma^0 K^+ \pi^+ \pi^-$		< 2.6 $\times 10^{-4}$		CL=90%	574
$\Sigma^+ K^+ \pi^-$		(2.1 ± 0.6) $\times 10^{-3}$			670
$\Sigma^+ K^*(892)^0$	[a]	(3.5 ± 1.0) $\times 10^{-3}$			470
$\Sigma^- K^+ \pi^+$		< 1.2 $\times 10^{-3}$		CL=90%	664

Doubly Cabibbo-suppressed modes

$p K^+ \pi^-$		(1.11± 0.18) $\times 10^{-4}$			823

Semileptonic modes

$\Lambda e^+ \nu_e$		(3.6 ± 0.4) %			871
$\Lambda \mu^+ \nu_\mu$		(3.5 ± 0.5) %			867

Inclusive modes

e^+ anything		(3.95± 0.35) %			–
p anything		(50 ±16) %			–
n anything		(50 ±16) %			–
Λ anything		(38.2 $^{+\ 2.9}_{-\ 2.4}$) %			–
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
$p \mu^+ \mu^-$ non-resonant	*C1*	< 7.7 $\times 10^{-8}$		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)
$\Lambda_c^+\pi^+\pi^-$	[b] —	117
$\Sigma_c(2455)^{++}\pi^-$	24 ± 7 %	†
$\Sigma_c(2455)^0\pi^+$	24 ± 7 %	†
$\Lambda_c^+\pi^+\pi^-$ 3-body	18 ± 10 %	117
$\Lambda_c^+\pi^0$	[c] 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)
$\Lambda_c^+\pi^+\pi^-$	≈ 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
$\Lambda_c^+\pi^0$	[c]	not seen		293
$\Lambda_c^+\gamma$		not seen		319

$\Lambda_c(2860)^+$

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

Mass $m = 2856.1^{+2.3}_{-6.0}$ MeV
Full width $\Gamma = 68^{+12}_{-22}$ MeV

$\Lambda_c(2860)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^0 p$	seen	259

$\Lambda_c(2880)^+$

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

Mass $m = 2881.63 \pm 0.24$ MeV
$m - m_{\Lambda_c^+} = 595.17 \pm 0.28$ MeV
Full width $\Gamma = 5.6^{+0.8}_{-0.6}$ 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
pD^0	seen	316

$\Lambda_c(2940)^+$

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

$J^P = 3/2^-$ is favored, but is not certain

Mass $m = 2939.6^{+1.3}_{-1.5}$ MeV
Full width $\Gamma = 20^{+6}_{-5}$ MeV

$\Lambda_c(2940)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
pD^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)
$\Lambda_c^+ \pi$	≈ 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)
$\Lambda_c^+ \pi$	≈ 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 $m = 2467.93 \pm 0.18$ MeV (S = 1.1)
Mean life $\tau = (442 \pm 26) \times 10^{-15}$ s (S = 1.3)
$c\tau = 132$ μm

Branching fractions marked with a footnote, e.g. [*a*], have been corrected for decay modes not observed in the experiments. For example, the submode fraction $\Xi_c^+ \to \Sigma^+\overline{K}^*(892)^0$ seen in $\Xi_c^+ \to \Sigma^+K^-\pi^+$ has been multiplied up to include $\overline{K}^*(892)^0 \to \overline{K}^0\pi^0$ decays.

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 $\Xi^-2\pi^+$			
$p2K_S^0$	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
$\Xi(1620)^0 \pi^+$		seen			–
$\Xi(1690)^0 \pi^+$		seen			644
$\Xi^0 \pi^+ \pi^0$		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		580
$\Sigma^+ \phi$	[a]	<0.11		90%	549
$\Xi(1690)^0 K^+$, $\Xi^0 \rightarrow \Sigma^+ K^-$		<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 $m = 2470.91 \pm 0.25$ MeV

$m_{\Xi_c^0} - m_{\Xi_c^+} = 2.98 \pm 0.22$ MeV

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

$c\tau = 33.6\ \mu$m

Decay asymmetry parameters

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

Ξ_c^0 DECAY MODES	Fraction (Γ_i/Γ)	Scale factor	p (MeV/c)
Cabibbo-favored (S = −2) decays			
$p K^- K^- \pi^+$	$(4.8 \pm 1.2) \times 10^{-3}$	1.1	676
$p K^- \overline{K}^*(892)^0$, $\overline{K}^{*0} \rightarrow K^- \pi^+$	$(2.0 \pm 0.6) \times 10^{-3}$		413
$p K^- K^- \pi^+$ (no $\overline{K}^{*0}$)	$(3.0 \pm 0.9) \times 10^{-3}$		676
ΛK_S^0	$(3.0 \pm 0.8) \times 10^{-3}$		906
$\Lambda K^- \pi^+$	(1.45 ± 0.33) %	1.1	856

$\Lambda\overline{K}^0\pi^+\pi^-$	seen		787
$\Lambda K^-\pi^+\pi^+\pi^-$	seen		703
$\Xi^-\pi^+$	(1.43±0.32) %	1.1	875
$\Xi^-\pi^+\pi^+\pi^-$	(4.8 ±2.3) %		816
$\Omega^- K^+$	(4.2 ±1.0) × 10^{-3}		522
$\Xi^- e^+\nu_e$	(1.8 ±1.2) %		882

Cabibbo-suppressed decays

$\Xi^- K^+$	(3.9 ±1.2) × 10^{-4}		790
$\Lambda K^+ K^-$ (no ϕ)	(4.1 ±1.4) × 10^{-4}		648
$\Lambda\phi$	(4.9 ±1.5) × 10^{-4}		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 $m = 2578.4 \pm 0.5$ MeV

$m_{\Xi_c'^+} - m_{\Xi_c^+} = 110.5 \pm 0.4$ MeV

$m_{\Xi_c'^+} - m_{\Xi_c'^0} = -0.8 \pm 0.6$ MeV

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	108

$\Xi_c'^0$

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

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

Mass $m = 2579.2 \pm 0.5$ MeV

$m_{\Xi_c'^0} - m_{\Xi_c^0} = 108.3 \pm 0.4$ MeV

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 $m = 2645.57 \pm 0.26$ MeV
$\Xi_c(2645)^0$ mass $m = 2646.38 \pm 0.21$ MeV (S = 1.1)
$m_{\Xi_c(2645)^+} - m_{\Xi_c^0} = 174.66 \pm 0.09$ MeV
$m_{\Xi_c(2645)^0} - m_{\Xi_c^+} = 178.44 \pm 0.10$ MeV
$m_{\Xi_c(2645)^+} - m_{\Xi_c(2645)^0} = -0.80 \pm 0.26$ 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.

$\Xi_c(2645)$ 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 $= 2792.4 \pm 0.5$ MeV
$\Xi_c(2790)^0$ mass $= 2794.1 \pm 0.5$ MeV
$m_{\Xi_c(2790)^+} - m_{\Xi_c'^0} = 213.20 \pm 0.22$ MeV
$m_{\Xi_c(2790)^0} - m_{\Xi_c'^+} = 215.70 \pm 0.22$ MeV
$m_{\Xi_c(2790)^+} - m_{\Xi_c(2790)^0} = -1.7 \pm 0.7$ MeV
$\Xi_c(2790)^+$ width $= 8.9 \pm 1.0$ MeV
$\Xi_c(2790)^0$ width $= 10.0 \pm 1.1$ MeV

$\Xi_c(2790)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c'\,\pi$	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 $m = 2816.73 \pm 0.21$ MeV
$\Xi_c(2815)^0$ mass $m = 2820.26 \pm 0.27$ 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
$m_{\Xi_c(2815)^+} - m_{\Xi_c(2815)^0} = -3.53 \pm 0.27$ 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 $\Xi_c(2645)\pi$.

$\Xi_c(2815)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c'\pi$	seen	188
$\Xi_c(2645)\pi$	seen	102

$\Xi_c(2970)$

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

$\Xi_c(2970)^+$ $m = 2969.4 \pm 0.8$ MeV (S = 1.1)
$\Xi_c(2970)^0$ $m = 2967.8^{+0.9}_{-0.7}$ 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)
$m_{\Xi_c(2970)^+} - m_{\Xi_c(2970)^0} = 1.5^{+1.1}_{-1.2}$ 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)

$\Xi_c(2970)$ 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
$\Xi_c'\pi$	seen	–
$\Xi_c(2645)\pi$	seen	277

$\Xi_c(3055)$

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

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

$\Xi_c(3055)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Sigma^{++}K^-$	seen	–
ΛD^+	seen	316

$\Xi_c(3080)$

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

$\Xi_c(3080)^+$ $m = 3077.2 \pm 0.4$ 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 $\tau = (268 \pm 26) \times 10^{-15}$ s
$c\tau = 80$ μm

Ω_c^0 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 $\Omega^-\pi^+$.

Cabibbo-favored ($S = -3$) decays — relative to $\Omega^-\pi^+$

$\Omega^-\pi^+$	**DEFINED AS 1**		821
$\Omega^-\pi^+\pi^0$	1.80±0.33		797

$\Omega^- \rho^+$	>1.3	90%	532
$\Omega^- \pi^- 2\pi^+$	0.31±0.05		753
$\Omega^- e^+ \nu_e$	2.4 ±1.2		829
$\Xi^0 \overline{K}^0$	1.64±0.29		950
$\Xi^0 K^- \pi^+$	1.20±0.18		901
$\Xi^0 \overline{K}^{*0}$, $\overline{K}^{*0} \rightarrow K^- \pi^+$	0.68±0.16		764
$\Xi^- \overline{K}^0 \pi^+$	2.12±0.28		895
$\Xi^- K^- 2\pi^+$	0.63±0.09		830
$\Xi(1530)^0 K^- \pi^+$, $\Xi^{*0} \rightarrow \Xi^- \pi^+$	0.21±0.06		757
$\Xi^- \overline{K}^{*0} \pi^+$	0.34±0.11		653
$\Sigma^+ K^- K^- \pi^+$	<0.32	90%	689
$\Lambda \overline{K}^0 K^0$	1.72±0.35		837

$\Omega_c(2770)^0$

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

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

$\Omega_c(3000)^0$

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

Mass $m = 3000.41 \pm 0.22$ MeV

Full width $\Gamma = 4.5 \pm 0.7$ MeV

$\Omega_c(3000)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c^+ K^-$	seen	181

$\Omega_c(3050)^0$

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

Mass $m = 3050.20 \pm 0.13$ MeV
Full width $\Gamma < 1.2$ MeV, CL = 95%

$\Omega_c(3050)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c^+ K^-$	seen	278

$\Omega_c(3065)^0$

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

Mass $m = 3065.46 \pm 0.28$ MeV
Full width $\Gamma = 3.5 \pm 0.4$ MeV

$\Omega_c(3065)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c^+ K^-$	seen	303

$\Omega_c(3090)^0$

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

Mass $m = 3090.0 \pm 0.5$ MeV
Full width $\Gamma = 8.7 \pm 1.3$ MeV

$\Omega_c(3090)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c^+ K^-$	seen	339

$\Omega_c(3120)^0$

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

Mass $m = 3119.1 \pm 1.0$ MeV
Full width $\Gamma < 2.6$ MeV, CL = 95%

$\Omega_c(3120)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c^+ K^-$	seen	379

NOTES

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

[*b*] 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.

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