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 $\tau = (202.6 \pm 1.0) \times 10^{-15}$ s
$c\tau = 60.75$ μm

Decay asymmetry parameters

α FOR $\Lambda_c^+ \to \Lambda\pi^+ = -0.768 \pm 0.015$ (S = 3.4)
α FOR $\Lambda_c^+ \to \Lambda\rho^+ = -0.76 \pm 0.07$
α FOR $\Lambda_c^+ \to \Sigma^+\pi^0 = -0.484 \pm 0.027$
α FOR $\Lambda_c^+ \to \Sigma^+\eta = -0.99 \pm 0.06$
α FOR $\Lambda_c^+ \to \Sigma^+\eta' = -0.46 \pm 0.07$
α FOR $\Lambda_c^+ \to \Sigma^0\pi^+ = -0.466 \pm 0.018$
α FOR $\Lambda_c^+ \to \Sigma(1385)^+\pi^0 = -0.92 \pm 0.09$
α FOR $\Lambda_c^+ \to \Sigma(1385)^0\pi^+ = -0.79 \pm 0.11$
α FOR $\Lambda_c^+ \to \Lambda\ell^+\nu_\ell = -0.875 \pm 0.033$
α FOR $\Lambda_c^+ \to pK_S^0 = -0.754 \pm 0.010$
α FOR $\Lambda_c^+ \to \Lambda K^+ = -0.546 \pm 0.035$
α FOR $\Lambda_c^+ \to \Sigma^0 K^+ = -0.54 \pm 0.20$
α FOR $\Lambda_c^+ \to \Lambda(1405)\pi^+ = 0.58 \pm 0.28$
α FOR $\Lambda_c^+ \to \Lambda(1520)\pi^+ = 0.93 \pm 0.09$
α FOR $\Lambda_c^+ \to \Lambda(1600)\pi^+ = 0.2 \pm 0.5$
α FOR $\Lambda_c^+ \to \Lambda(1670)\pi^+ = 0.82 \pm 0.08$
α FOR $\Lambda_c^+ \to \Lambda(1690)\pi^+ = 0.958 \pm 0.034$
α FOR $\Lambda_c^+ \to \Lambda(2000)\pi^+ = -0.57 \pm 0.19$
α FOR $\Lambda_c^+ \to \Delta(1232)^{++}K^- = 0.55 \pm 0.04$
α FOR $\Lambda_c^+ \to \Delta(1600)^{++}K^- = -0.50 \pm 0.18$
α FOR $\Lambda_c^+ \to \Delta(1700)^{++}K^- = 0.22 \pm 0.08$
α FOR $\Lambda_c^+ \to \overline{K}_0^*(700)^0 p = -0.1 \pm 0.7$
α FOR $\Lambda_c^+ \to \overline{K}_0^*(1430)^0 p = 0.34 \pm 0.14$
α FOR $\Lambda_c^+ \to \Xi^0 K^+ = 0.01 \pm 0.16$

$(\alpha + \overline{\alpha})/(\alpha - \overline{\alpha})$ in $\Lambda_c^+ \to \Lambda\pi^+$, $\overline{\Lambda}_c^- \to \overline{\Lambda}\pi^- = 0.020 \pm 0.016$
$(\alpha + \overline{\alpha})/(\alpha - \overline{\alpha})$ in $\Lambda_c^+ \to \Sigma^0\pi^+$, $\overline{\Lambda}_c^- \to \overline{\Sigma}^0\pi^- = -0.02 \pm 0.05$
$(\alpha + \overline{\alpha})/(\alpha - \overline{\alpha})$ in $\Lambda_c^+ \to \Lambda e^+\nu_e$, $\overline{\Lambda}_c^- \to \overline{\Lambda}e^-\overline{\nu}_e = 0.00 \pm 0.04$
$(\alpha + \overline{\alpha})/(\alpha - \overline{\alpha})$ in $\Lambda_c^+ \to \Lambda K^+$, $\overline{\Lambda}_c^- \to \overline{\Lambda}K^- = -0.02 \pm 0.11$
$(\alpha + \overline{\alpha})/(\alpha - \overline{\alpha})$ in $\Lambda_c^+ \to \Sigma^0 K^+$, $\overline{\Lambda}_c^- \to \overline{\Sigma}^0 K^- = 0.1 \pm 0.4$
$A_{CP}(\Lambda X)$ in $\Lambda_c \to \Lambda X$, $\overline{\Lambda}_c \to \overline{\Lambda}X = (2 \pm 7)\%$
$A_{CP}(\Lambda K^+)$ in $\Lambda_c \to \Lambda K^+$, $\overline{\Lambda}_c \to \overline{\Lambda}K^- = 0.021 \pm 0.026$
$A_{CP}(\Sigma^0 K^+)$ in $\Lambda_c \to \Sigma^0 K^+$, $\overline{\Lambda}_c \to \overline{\Sigma}^0 K^- = 0.03 \pm 0.05$
$\Delta A_{CP} = A_{CP}(\Lambda_c^+ \to pK^+K^-) - A_{CP}(\Lambda_c^+ \to p\pi^+\pi^-) = (0.3 \pm 1.1)\%$

Branching fractions marked with a footnote, e.g. [*a*], have been corrected for decay modes not observed in the experiments. For example, the submode 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		(1.61± 0.07) %	S=1.1	873
pK_L^0		(1.67± 0.07) %		873
$pK^-\pi^+$		(6.35± 0.25) %	S=1.3	823
$p\overline{K}_0^*(700)^0$		(1.9 ± 0.6) × 10^{-3}		719
$p\overline{K}^*(892)^0$	[*a*]	(1.41± 0.07) %		685
$p\overline{K}_0^*(1430)$		(9.3 ± 1.8) × 10^{-3}		†
$\Delta(1232)^{++}K^-$		(1.79± 0.09) %		710
$\Delta(1600)^{++}K^-$		(2.9 ± 1.0) × 10^{-3}		–
$\Delta(1700)^{++}K^-$		(2.5 ± 0.6) × 10^{-3}		–
$\Lambda(1405)^0\pi^+$		(4.9 ± 1.9) × 10^{-3}		–
$\Lambda(1520)\pi^+$	[*a*]	(1.18± 0.16) × 10^{-3}		628
$\Lambda(1600)\pi^+$		(3.3 ± 1.2) × 10^{-3}		571
$\Lambda(1670)\pi^+$		(7.5 ± 2.1) × 10^{-4}		516
$\Lambda(1690)\pi^+$		(7.6 ± 2.3) × 10^{-4}		504
$\Lambda(2000)\pi^+$		(6.1 ± 0.7) × 10^{-3}		234
$pK^-\pi^+$ nonresonant		(3.5 ± 0.4) %		823
$pK_S^0\pi^0$		(1.99± 0.12) %		823
$pK_L^0\pi^0$		(2.02± 0.14) %		823
$nK_S^0\pi^+$		(1.86± 0.09) %		821
$nK_S^0K^+$		(3.9 $^{+\ 1.7}_{-\ 1.4}$) × 10^{-4}		612
$nK_S^0\pi^+\pi^0$		(8.5 ± 1.3) × 10^{-3}		756
$nK^-\pi^+\pi^+$		(1.90± 0.12) %		756
$p\overline{K}^0\eta$		(8.9 ± 0.6) × 10^{-3}	S=1.1	568

$pK^0_S\pi^+\pi^-$		(1.62± 0.11) %	S=1.1	754
$pK^0_L\pi^+\pi^-$		(1.69± 0.11) %		754
$pK^-\pi^+\pi^0$		(4.52± 0.28) %	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 ± 1.0) $\times 10^{-3}$		671
$pK^-\pi^+2\pi^0$		(1.0 ± 0.5) %		678

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

$p\pi^0$		(1.6 $^{+\ 0.7}_{-\ 0.6}$) $\times 10^{-4}$		945
$n\pi^+$		(6.6 ± 1.3) $\times 10^{-4}$		944
$p\eta$		(1.49± 0.08) $\times 10^{-3}$	S=1.1	856
$p\eta'$		(4.9 ± 0.9) $\times 10^{-4}$		639
$p\omega(782)^0$		(8.9 ± 1.1) $\times 10^{-4}$	S=1.2	751
$p\pi^+\pi^-$		(4.67± 0.24) $\times 10^{-3}$		927
$pf_0(980)$	[a]	(3.5 ± 2.3) $\times 10^{-3}$		614
$p\rho(770)^0$		(1.5 ± 0.4) $\times 10^{-3}$		–
$n\pi^+\pi^0$		(6.4 ± 0.9) $\times 10^{-3}$		927
$nK^+\pi^0$		< 7.1 $\times 10^{-4}$	CL=90%	824
$n\pi^+\pi^-\pi^+$		(4.5 ± 0.8) $\times 10^{-3}$		895
$p2\pi^+2\pi^-$		(2.3 ± 1.5) $\times 10^{-3}$		852
pK^+K^-		(1.08± 0.05) $\times 10^{-3}$		616
$p\phi$	[a]	(1.05± 0.14) $\times 10^{-3}$	S=1.1	590
pK^+K^- non-ϕ		(5.3 ± 1.2) $\times 10^{-4}$		616
$pK^0_SK^0_S$		(2.38± 0.18) $\times 10^{-4}$		610
$p\phi\pi^0$		(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

$\Lambda\pi^+$		(1.31± 0.05) %	S=1.1	864
$\Lambda(1670)\pi^+$, $\Lambda(1670)\to\ \eta\Lambda$		(3.5 ± 0.5) $\times 10^{-3}$		–
$\Lambda\pi^+\pi^0$		(7.10± 0.34) %	S=1.1	844
$\Lambda\rho^+$		(4.1 ± 0.5) %		636
$\Sigma(1385)^+\pi^0$, $\Sigma^+\to\ \Lambda\pi^+$		(5.1 ± 0.7) $\times 10^{-3}$		–
$\Sigma(1385)^0\pi^+$, $\Sigma^0\to\ \Lambda\pi^0$		(5.6 ± 0.8) $\times 10^{-3}$		–
$\Lambda\pi^-2\pi^+$		(3.67± 0.26) %	S=1.4	807
$\Sigma(1385)^+\pi^+\pi^-$, $\Sigma^{*+}\to$ $\Lambda\pi^+$		(1.0 ± 0.5) %		688
$\Sigma(1385)^-2\pi^+$, $\Sigma^{*-}\to$ $\Lambda\pi^-$		(7.7 ± 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]	(1.87± 0.11) %	S=1.1	691
$\Sigma(1385)^+\eta$	[a]	(9.1 ± 2.0) × 10^{-3}		570
$\Lambda\pi^+\omega$	[a]	(1.5 ± 0.5) %		517
$\Lambda\pi^-\pi^0 2\pi^+$, no η or ω		< 8 × 10^{-3}	CL=90%	757
$\Lambda K^+\overline{K}^0$		(5.7 ± 1.1) × 10^{-3}	S=2.0	443
$\Xi(1690)^0 K^+$, $\Xi^{*0} \to \Lambda\overline{K}^0$		(1.6 ± 0.5) × 10^{-3}		286
$\Sigma^0\pi^+$		(1.29± 0.05) %		825
$\Sigma^0\pi^+\eta$		(7.6 ± 0.8) × 10^{-3}		635
$\Sigma^+\pi^0$		(1.26± 0.10) %	S=1.1	827
$\Sigma^+\eta$		(3.2 ± 0.5) × 10^{-3}		713
$\Sigma^+\eta'$		(4.2 ± 0.9) × 10^{-3}		391
$\Sigma^+\pi^+\pi^-$		(4.54± 0.20) %	S=1.2	804
$\Sigma^+\rho^0$		< 1.7 %	CL=95%	575
$\Sigma^-2\pi^+$		(1.87± 0.18) %		799
$\Sigma^0\pi^+\pi^0$		(3.6 ± 0.4) %		803
$\Sigma^+\pi^0\pi^0$		(1.57± 0.14) %		806
$\Sigma^0\pi^-2\pi^+$		(1.12± 0.31) %		763
$\Sigma^+\omega$		(1.72± 0.20) %		569
$\Sigma^-\pi^0 2\pi^+$		(2.1 ± 0.4) %		762
$\Sigma^+K^+K^-$		(3.6 ± 0.4) × 10^{-3}	S=1.1	349
$\Sigma^+\phi$	[a]	(4.0 ± 0.5) × 10^{-3}	S=1.1	295
$\Xi(1690)^0 K^+$, $\Xi^{*0} \to \Sigma^+K^-$		(1.03± 0.25) × 10^{-3}		286
$\Sigma^+K^+K^-$ nonresonant		< 8 × 10^{-4}	CL=90%	349
$\Xi^0 K^+$		(5.5 ± 0.7) × 10^{-3}		653
$\Xi^-K^+\pi^+$		(6.3 ± 0.5) × 10^{-3}	S=1.1	565
$\Xi^0 K^+\pi^0$		(7.8 ± 1.7) × 10^{-3}		574
$\Xi(1530)^0 K^+$		(4.9 ± 0.6) × 10^{-3}	S=1.1	473

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

ΛK^+		(6.48± 0.31) × 10^{-4}		781
$\Lambda K^+\pi^0$		(1.48± 0.29) × 10^{-3}		722
$\Lambda K^+\pi^+\pi^-$		(4.2 ± 1.6) × 10^{-4}		637
$\Sigma^0 K^+$		(3.73± 0.31) × 10^{-4}		735
$\Sigma^+ K^0_S$		(4.8 ± 1.4) × 10^{-4}		736
$\Sigma^0 K^+\pi^+\pi^-$		< 2.6 × 10^{-4}	CL=90%	574
$\Sigma^0 K^+\pi^0$		< 1.8 × 10^{-3}	CL=90%	670
$\Sigma^+K^+\pi^-$		(2.04± 0.26) × 10^{-3}		670
$\Sigma^+K^*(892)^0$	[a]	(3.5 ± 1.0) × 10^{-3}		470
$\Sigma^+K^+\pi^-\pi^0$		< 1.1 × 10^{-3}	CL=90%	581
$\Sigma^-K^+\pi^+$		(3.8 ± 1.2) × 10^{-4}		664

Doubly Cabibbo-suppressed modes

$pK^+\pi^-$		(1.13± 0.17) × 10^{-4}		823

Semileptonic modes

$\Lambda e^+ \nu_e$	(3.56± 0.13) %				871
$\Lambda \pi^+ \pi^- e^+ \nu_e$	< 3.9		$\times 10^{-4}$	CL=90%	843
$p K^- e^+ \nu_e$	(8.8 ± 1.8)		$\times 10^{-4}$		874
$p K^0_S \pi^- e^+ \nu_e$	< 3.3		$\times 10^{-4}$	CL=90%	821
$\Lambda(1520) e^+ \nu_e$	(1.0 ± 0.5)		$\times 10^{-3}$		639
$\Lambda(1405)^0 e^+ \nu_e$, $\Lambda^0 \to p K^-$	(4.2 ± 1.9)		$\times 10^{-4}$		–
$\Lambda \mu^+ \nu_\mu$	(3.48± 0.17) %				867

Inclusive modes

e^+ anything	(4.06± 0.13) %				–
p anything	(50 ±16) %				–
n anything	(32.6 ± 1.6) %				–
Λ anything	(38.2 $^{+\ 2.9}_{-\ 2.4}$) %				–
K^0_S anything	(9.9 ± 0.7) %				–
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	$C1$	< 2.9	$\times 10^{-8}$	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

Radiative modes

$\Sigma^+ \gamma$	< 2.5		$\times 10^{-4}$	CL=90%	834

Exotic modes

$p \gamma_D$	[b] < 8.0		$\times 10^{-5}$	CL=90%	–

$\Lambda_c(2595)^+$

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

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 %	3
$\Sigma_c(2455)^0\pi^+$	24 ± 7 %	3
$\Lambda_c^+\pi^+\pi^-$ 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 $m = 2628.00 \pm 0.15$ MeV
$m - m_{\Lambda_c^+} = 341.54 \pm 0.05$ MeV
Full width $\Gamma < 0.52$ 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)
$\Lambda_c^+\pi^+\pi^-$	[e] (50 ±7) %		184
$\Sigma_c(2455)^{++}\pi^-$	(2.6±0.4) %		103
$\Sigma_c(2455)^0\pi^+$	(2.6±0.4) %		103
$\Lambda_c^+\pi^+\pi^-$ 3-body	large		184
$\Lambda_c^+\pi^0$	[d] < 50 %	90%	293
$\Lambda_c^+\gamma$	< 26 %	90%	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
$p D^0$	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)
$p D^0$	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 $m = 2452.65^{+0.22}_{-0.16}$ MeV
$\Sigma_c(2455)^0$ mass $m = 2453.75 \pm 0.14$ MeV
$m_{\Sigma_c(2455)^{++}} - m_{\Lambda_c^+} = 167.510 \pm 0.017$ MeV
$m_{\Sigma_c(2455)^+} - m_{\Lambda_c^+} = 166.19^{+0.16}_{-0.08}$ MeV
$m_{\Sigma^0_{c2455}} - m_{\Lambda_c^+} = 167.290 \pm 0.017$ MeV
$m_{\Sigma_c(2455)^{++}} - m_{\Sigma_c(2455)^0} = 0.220 \pm 0.013$ MeV
$m_{\Sigma_c(2455)^+} - m_{\Sigma_c(2455)^0} = -1.10^{+0.16}_{-0.08}$ MeV

$\Sigma_c(2455)^{++}$ full width $\Gamma = 1.89^{+0.09}_{-0.18}$ MeV (S = 1.1)
$\Sigma_c(2455)^{+}$ full width $\Gamma = 2.3 \pm 0.4$ MeV
$\Sigma_c(2455)^{0}$ 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 $m = 2518.41 \pm 0.22$ MeV (S = 1.3)
$\Sigma_c(2520)^{+}$ mass $m = 2517.4^{+0.7}_{-0.5}$ MeV
$\Sigma_c(2520)^{0}$ mass $m = 2518.48 \pm 0.21$ MeV (S = 1.2)
$m_{\Sigma_c(2520)^{++}} - m_{\Lambda_c^+} = 231.95 \pm 0.18$ MeV (S = 1.8)
$m_{\Sigma_c(2520)^{+}} - m_{\Lambda_c^+} = 230.9^{+0.7}_{-0.5}$ MeV
$m_{\Sigma_c(2520)^{0}} - m_{\Lambda_c^+} = 232.02 \pm 0.15$ MeV (S = 1.4)
$m_{\Sigma_c(2520)^{++}} - m_{\Sigma_c(2520)^{0}} = 0.01 \pm 0.15$ MeV
$\Sigma_c(2520)^{++}$ full width $\Gamma = 14.78^{+0.30}_{-0.40}$ MeV
$\Sigma_c(2520)^{+}$ full width $\Gamma = 17.2^{+4.0}_{-2.2}$ MeV
$\Sigma_c(2520)^{0}$ 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 $\Gamma = 60^{+60}_{-40}$ 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 $m = 2467.71 \pm 0.23$ MeV (S = 1.3)
Mean life $\tau = (453 \pm 5) \times 10^{-15}$ s
$c\tau = 135.8$ μm

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 $\Xi_c^+ \to \Sigma^+ \overline{K}^*(892)^0$ 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)	Scale factor/ Confidence level	p (MeV/c)
Cabibbo-favored ($S = -2$) decays				
$p 2K_S^0$		$(2.5 \pm 1.3) \times 10^{-3}$		766
$\Lambda \overline{K}^0 \pi^+$		—		852
$\Sigma(1385)^+ \overline{K}^0$	[a]	(2.9±2.0) %		746
$\Lambda K^- 2\pi^+$		$(9 \pm 4) \times 10^{-3}$		787
$\Lambda \overline{K}^*(892)^0 \pi^+$	[a]	$< 5 \times 10^{-3}$	CL=90%	608
$\Sigma(1385)^+ K^- \pi^+$	[a]	$< 6 \times 10^{-3}$	CL=90%	678
$\Sigma^+ K^- \pi^+$		(2.7±1.2) %		810
$\Sigma^+ \overline{K}^*(892)^0$	[a]	(2.3±1.1) %		658
$\Sigma^0 K^- 2\pi^+$		$(8 \pm 5) \times 10^{-3}$		735
$\Xi^0 \pi^+$		(1.6±0.8) %		876
$\Xi^- 2\pi^+$		(2.9±1.3) %		851
$\Xi(1530)^0 \pi^+$	[a]	$< 2.9 \times 10^{-3}$	CL=90%	749
$\Xi(1620)^0 \pi^+$		seen		–
$\Xi(1690)^0 \pi^+$		seen		644
$\Xi^0 \pi^+ \pi^0$		(6.7±3.5) %		856
$\Xi^0 \pi^- 2\pi^+$		(5.0±2.6) %		818
$\Xi^0 e^+ \nu_e$		(7 ± 4) %		884
$\Omega^- K^+ \pi^+$		$(2.0 \pm 1.5) \times 10^{-3}$		399
Cabibbo-suppressed decays				
$p K^- \pi^+$		$(6.2 \pm 3.0) \times 10^{-3}$	S=1.5	944
$p \overline{K}^*(892)^0$	[a]	$(3.3 \pm 1.7) \times 10^{-3}$		828
$\Sigma^+ \pi^+ \pi^-$		(1.4±0.8) %		922
$\Sigma^- 2\pi^+$		$(5.1 \pm 3.4) \times 10^{-3}$		918
$\Sigma^+ K^+ K^-$		$(4.3 \pm 2.5) \times 10^{-3}$		579
$\Sigma^+ \phi$	[a]	$< 3.2 \times 10^{-3}$	CL=90%	549
$\Xi(1690)^0 K^+$, $\Xi^0 \to \Sigma^+ K^-$		$< 1.3 \times 10^{-3}$	CL=90%	501
$p \phi(1020)$		$(1.2 \pm 0.6) \times 10^{-4}$		751

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 $m = 2470.44 \pm 0.28$ MeV (S = 1.2)
$m_{\Xi_c^0} - m_{\Xi_c^+} = 2.72 \pm 0.23$ MeV (S = 1.1)
Mean life $\tau = (150.4 \pm 2.8) \times 10^{-15}$ s (S = 1.4)
$c\tau = 45.1$ μm

Decay asymmetry parameters

$\Xi^-\pi^+$ $\alpha = -0.64 \pm 0.05$
α FOR $\overline{\Xi}_c^0 \to \overline{\Xi}^+\pi^- = 0.61 \pm 0.05$
α FOR $\Xi_c^0 \to \Lambda\overline{K}^*(892)^0 = 0.15 \pm 0.22$
α FOR $\Xi_c^0 \to \Sigma^+ K^*(892)^- = -0.52 \pm 0.30$
α FOR $\Xi_c^0 \to \Xi^0\pi^0 = -0.90 \pm 0.27$
τ_{mix}, $\Xi_c^0 - \overline{\Xi}_c^0$ oscillation period $> 1.3 \times 10^{-12}$ s

Ξ_c^0 DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
Cabibbo-favored decays			
$pK^-K^-\pi^+$	$(4.9 \pm 1.0) \times 10^{-3}$		676
$pK^-\overline{K}^*(892)^0$, $\overline{K}^{*0} \to K^-\pi^+$	$(2.0 \pm 0.6) \times 10^{-3}$		413
$pK^-K^-\pi^+$(no $\overline{K}^{*0}$)	$(3.0 \pm 0.8) \times 10^{-3}$		676
ΛK_S^0	$(3.2 \pm 0.6) \times 10^{-3}$		906
$\Lambda K^-\pi^+$	(1.45±0.28) %		856
$\Lambda\overline{K}^*(892)^0$	$(2.6 \pm 0.6) \times 10^{-3}$		717
$\Lambda\overline{K}^0\pi^+\pi^-$	seen		786
$\Lambda K^-\pi^+\pi^+\pi^-$	seen		703
$\Sigma^0 K_S^0$	$(5.4 \pm 1.4) \times 10^{-4}$		864
$\Sigma^+ K^-$	$(1.8 \pm 0.4) \times 10^{-3}$		868
$\Sigma^0\overline{K}^*(892)^0$	$(9.9 \pm 1.9) \times 10^{-3}$		658
$\Sigma^+ K^*(892)^-$	$(4.9 \pm 1.3) \times 10^{-3}$		661
$\Xi^-\pi^+$	(1.43±0.27) %		875
$\Xi^-\pi^+\pi^+\pi^-$	(4.8 ±2.3) %		816
$\Xi^0\pi^0$	$(6.9 \pm 1.4) \times 10^{-3}$		879
$\Xi^0\eta$	$(1.6 \pm 0.4) \times 10^{-3}$		771
$\Xi^0\eta'$	$(1.1 \pm 0.4) \times 10^{-3}$		479
$\Xi^0\phi$, $\phi \to K^+K^-$	$(5.2 \pm 1.2) \times 10^{-4}$		–
$\Xi^0 K^+K^-$ nonresonant	$(5.6 \pm 1.2) \times 10^{-4}$		444
$\Omega^- K^+$	$(4.2 \pm 0.9) \times 10^{-3}$		522
$\Xi^- e^+\nu_e$	(1.05±0.20) %		882
$\Xi^-\mu^+\nu_\mu$	(1.01±0.21) %		878
$\Xi^0\gamma$	$< 1.7 \times 10^{-4}$	90%	885
$\Xi^0\mu^+\mu^-$	$< 6 \times 10^{-5}$	90%	869
$\Xi^0 e^+ e^-$	$< 1.0 \times 10^{-4}$	90%	885

Cabibbo-suppressed decays

$\Lambda_c^+ \pi^-$	$(5.5 \pm 1.1) \times 10^{-3}$	115
$\Xi^- K^+$	$(3.9 \pm 1.1) \times 10^{-4}$	789
$\Lambda K^+ K^-$ (no ϕ)	$(4.1 \pm 1.3) \times 10^{-4}$	648
$\Lambda \phi$	$(4.9 \pm 1.3) \times 10^{-4}$	621

$\Xi_c'^+$

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

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

Mass $m = 2578.2 \pm 0.5$ MeV (S = 1.1)

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

$m_{\Xi_c'^+} - m_{\Xi_c'^0} = -0.5 \pm 0.6$ 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

$\Xi_c'^0$

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

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

Mass $m = 2578.7 \pm 0.5$ 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 $m = 2645.10 \pm 0.30$ MeV (S = 1.2)
$\Xi_c(2645)^0$ mass $m = 2646.16 \pm 0.25$ MeV (S = 1.3)
$m_{\Xi_c(2645)^+} - m_{\Xi_c^0} = 174.67 \pm 0.09$ MeV
$m_{\Xi_c(2645)^0} - m_{\Xi_c^+} = 178.45 \pm 0.10$ MeV
$m_{\Xi_c(2645)^+} - m_{\Xi_c(2645)^0} = -1.06 \pm 0.27$ MeV (S = 1.1)
$\Xi_c(2645)^+$ 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 $= 2791.9 \pm 0.5$ MeV
$\Xi_c(2790)^0$ mass $= 2793.9 \pm 0.5$ 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
$m_{\Xi_c(2790)^+} - m_{\Xi_c(2790)^0} = -2.0 \pm 0.7$ 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	159
$\Lambda_c^+\,K^-$	seen	98

$\Xi_c(2815)$

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

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

$\Xi_c(2815)^+$ mass $m = 2816.51 \pm 0.25$ MeV (S = 1.2)
$\Xi_c(2815)^0$ mass $m = 2819.79 \pm 0.30$ MeV (S = 1.1)
$m_{\Xi_c(2815)^+} - m_{\Xi_c^+} = 348.80 \pm 0.10$ MeV
$m_{\Xi_c(2815)^0} - m_{\Xi_c^0} = 349.35 \pm 0.11$ MeV
$m_{\Xi_c(2815)^+} - m_{\Xi_c(2815)^0} = -3.27 \pm 0.27$ 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
$\Xi_c^0\,\gamma$	seen	325

$\Xi_c(2970)$

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

was $\Xi_c(2980)$

$\Xi_c(2970)^+$ $m = 2964.3 \pm 1.5$ MeV (S = 3.9)
$\Xi_c(2970)^0$ $m = 2967.1 \pm 1.7$ MeV (S = 6.7)
$m_{\Xi_c(2970)^+} - m_{\Xi_c^+} = 496.6 \pm 1.5$ MeV (S = 3.7)
$m_{\Xi_c(2970)^0} - m_{\Xi_c^0} = 496.7 \pm 1.8$ MeV (S = 5.3)
$m_{\Xi_c(2970)^+} - m_{\Xi_c(2970)^0} = -2.8 \pm 1.9$ MeV (S = 4.8)
$\Xi_c(2970)^+$ width $\Gamma = 20.9^{+2.4}_{-3.5}$ MeV (S = 1.2)

$\Xi_c(2970)$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Lambda_c^+ \overline{K}\pi$	seen	223
$\Sigma_c(2455)\overline{K}$	seen	122
$\Lambda_c^+ \overline{K}$	not seen	410
$\Lambda_c^+ K^-$	seen	410
$\Xi_c 2\pi$	seen	381
$\Xi_c'\pi$	seen	–
$\Xi_c(2645)\pi$	seen	274

$\Xi_c(3055)$

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

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

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

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

Mass $m = 2695.3 \pm 0.4$ MeV
Mean life $\tau = (273 \pm 12) \times 10^{-15}$ s
$c\tau = 82$ μm

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

Ω_c^0 DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
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
$\Omega^- e^+ \nu_e$	1.98 ±0.29		829
$\Omega^- \mu^+ \nu_\mu$	1.94 ±0.21		824
$\Xi^0 \overline{K}^0$	1.64 ±0.29		950
$\Xi^0 K^- \pi^+$	1.20 ±0.18		901
$\Xi^0 \overline{K}^{*0}$, $\overline{K}^{*0} \to K^- \pi^+$	0.68 ±0.16		764
$\Omega(2012)^- \pi^+$, $\Omega(2012)^- \to \Xi^0 K^-$	0.12 ±0.05		–
$\Xi^- \overline{K}^0 \pi^+$	2.12 ±0.28		895
$\Omega(2012)^- \pi^+$, $\Omega(2012)^- \to \Xi^- \overline{K}^0$	0.12 ±0.06		–
$\Xi^- K^- 2\pi^+$	0.63 ±0.09		830
$\Xi(1530)^0 K^- \pi^+$, $\Xi^{*0} \to \Xi^- \pi^+$	0.21 ±0.06		757

$\Xi^- \overline{K}^{*0} \pi^+$	0.34 $\pm$0.11		653
$p K^- K^- \pi^+$	seen		864
$\Sigma^+ K^- K^- \pi^+$	<0.32	90%	689
$\Lambda \overline{K}^0 \overline{K}^0$	1.72 $\pm$0.35		837

Singly Cabibbo-suppressed modes — relative to $\Omega^- \pi^+$

$\Xi^- \pi^+$	0.161$\pm$0.010		–
$\Omega^- K^+$	0.061$\pm$0.006		–

Doubly Cabibbo-suppressed modes — relative to $\Omega^- \pi^+$

$\Xi^- K^+$	<0.07	90%	–

$\Omega_c(2770)^0$

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

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

Mass $m = 2766.0^{+0.9}_{-1.0}$ MeV

$m_{\Omega_c(2770)^0} - m_{\Omega_c^0} = 70.7^{+0.8}_{-0.9}$ 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 $m = 3000.46 \pm 0.25$ MeV

Full width $\Gamma = 3.8^{+1.6}_{-0.4}$ MeV

$\Omega_c(3000)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c^+ K^-$	seen	182

$\Omega_c(3050)^0$

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

Mass $m = 3050.17 \pm 0.19$ MeV

Full width $\Gamma < 1.8$ 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 $m = 3065.58 \pm 0.21$ MeV
Full width $\Gamma = 3.4^{+0.7}_{-0.8}$ MeV (S = 1.7)

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

$\Omega_c(3090)^0$

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

Mass $m = 3090.15 \pm 0.26$ MeV
Full width $\Gamma = 8.5^{+0.8}_{-1.7}$ MeV

$\Omega_c(3090)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c^+ K^-$	seen	340

$\Omega_c(3120)^0$

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

Mass $m = 3118.98^{+0.27}_{-0.35}$ MeV
Full width $\Gamma < 2.5$ MeV, CL = 95%

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

$\Omega_c(3185)^0$

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

Mass $m = 3185^{+7.6}_{-1.9}$ MeV
Full width $\Gamma = 50^{+12}_{-21}$ MeV

$\Omega_c(3185)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c^+ K^-$	seen	460

$\Omega_c(3327)^0$

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

Mass $m = 3327.1^{+1.2}_{-1.8}$ MeV
Full width $\Gamma = 20^{+14}_{-5}$ MeV

$\Omega_c(3327)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$\Xi_c^+ K^-$	seen	610

NOTES

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

[*b*] Here γ_D stands for a dark photon.

[*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^+.

[*e*] In the isospin limit, this braching fraction would be 2/3, the other 1/3 being decays to $\Lambda_c^+ \pi^0 \pi^0$.