



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

The parity of the Λ_c^+ is defined to be positive (as are the parities of the proton, neutron, and Λ). The spin J has not actually been measured yet. Results of an analysis of $pK^-\pi^+$ decays (JEZABEK 92) are consistent with the expected $J = 1/2$. The quark content is udc .

We have omitted some results that have been superseded by later experiments. The omitted results may be found in earlier editions.

Λ_c^+ MASS

Measurements with an error greater than 5 MeV or that are otherwise obsolete have been omitted.

The fit also includes $\Sigma_c - \Lambda_c^+$ and $\Lambda_c^{*+} - \Lambda_c^+$ mass-difference measurements, but this doesn't affect the Λ_c^+ mass.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
2284.9 ± 0.6 OUR FIT				
2284.9 ± 0.6 OUR AVERAGE				
2284.7 ± 0.6 ± 0.7	1134	AVERY	91 CLEO	Six modes
2281.7 ± 2.7 ± 2.6	29	ALVAREZ	90B NA14	$pK^-\pi^+$
2285.8 ± 0.6 ± 1.2	101	BARLAG	89 NA32	$pK^-\pi^+$
2284.7 ± 2.3 ± 0.5	5	AGUILAR-...	88B LEBC	$pK^-\pi^+$
2283.1 ± 1.7 ± 2.0	628	ALBRECHT	88C ARG	$pK^-\pi^+$, $p\bar{K}^0$, $\Lambda_3\pi$
2286.2 ± 1.7 ± 0.7	97	ANJOS	88B E691	$pK^-\pi^+$
2281 ± 3	2	JONES	87 HBC	$pK^-\pi^+$
2283 ± 3	3	BOSETTI	82 HBC	$pK^-\pi^+$
2290 ± 3	1	CALICCHIO	80 HYBR	$pK^-\pi^+$

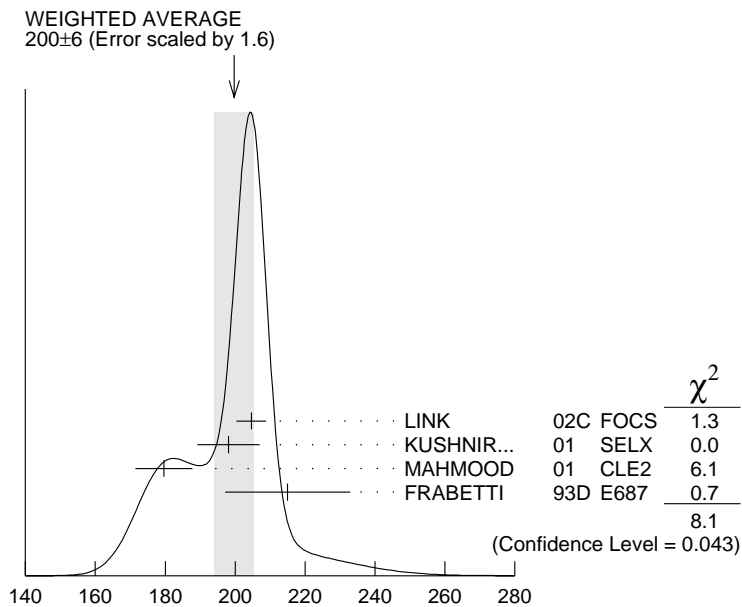
Λ_c^+ MEAN LIFE

Measurements with an error $\geq 100 \times 10^{-15}$ s or with fewer than 20 events have been omitted.

VALUE (10^{-15} s)	EVTS	DOCUMENT ID	TECN	COMMENT
200 ± 6 OUR AVERAGE				Error includes scale factor of 1.6. See the ideogram below.
204.6 ± 3.4 ± 2.5	8034	LINK	02C FOCS	$pK^-\pi^+$
198.1 ± 7.0 ± 5.6	1630	KUSHNIR...	01 SELX	$\Lambda_c^+ \rightarrow pK^-\pi^+$
179.6 ± 6.9 ± 4.4	4749	MAHMOOD	01 CLE2	$e^+e^- \approx \Upsilon(4S)$
215 ± 16 ± 8	1340	FRABETTI	93D E687	γBe , $\Lambda_c^+ \rightarrow pK^-\pi^+$

• • • We do not use the following data for averages, fits, limits, etc. • • •

180	± 30	± 30	29	ALVAREZ	90	NA14	$\gamma, \Lambda_c^+ \rightarrow pK^- \pi^+$
200	± 30	± 30	90	FRABETTI	90	E687	$\gamma \text{Be}, \Lambda_c^+ \rightarrow pK^- \pi^+$
196	+23	-20	101	BARLAG	89	NA32	$pK^- \pi^+ + \text{c.c.}$
220	± 30	± 20	97	ANJOS	88B	E691	$pK^- \pi^+ + \text{c.c.}$



Λ_c^+ mean life

Λ_c^+ DECAY MODES

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 $B(\Lambda_c^+ \rightarrow pK^-\pi^+)$ in a Note at the beginning of the branching-ratio measurements, below. 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.

Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
Hadronic modes with a p: $S = -1$ final states		
Γ_1 $p\bar{K}^0$	(2.3 \pm 0.6) %	
Γ_2 $pK^-\pi^+$	[a] (5.0 \pm 1.3) %	
Γ_3 $p\bar{K}^*(892)^0$	[b] (1.6 \pm 0.5) %	
Γ_4 $\Delta(1232)^{++}K^-$	(8.6 \pm 3.0) $\times 10^{-3}$	
Γ_5 $\Lambda(1520)\pi^+$	[b] (5.9 \pm 2.1) $\times 10^{-3}$	
Γ_6 $pK^-\pi^+$ nonresonant	(2.8 \pm 0.8) %	
Γ_7 $p\bar{K}^0\pi^0$	(3.3 \pm 1.0) %	
Γ_8 $p\bar{K}^0\eta$	(1.2 \pm 0.4) %	
Γ_9 $p\bar{K}^0\pi^+\pi^-$	(2.6 \pm 0.7) %	
Γ_{10} $pK^-\pi^+\pi^0$	(3.4 \pm 1.0) %	
Γ_{11} $pK^*(892)^-\pi^+$	[b] (1.1 \pm 0.5) %	
Γ_{12} $p(K^-\pi^+)_{\text{nonresonant}}\pi^0$	(3.6 \pm 1.2) %	
Γ_{13} $\Delta(1232)\bar{K}^*(892)$	seen	
Γ_{14} $pK^-\pi^+\pi^+\pi^-$	(1.1 \pm 0.8) $\times 10^{-3}$	
Γ_{15} $pK^-\pi^+\pi^0\pi^0$	(8 \pm 4) $\times 10^{-3}$	
Γ_{16} $pK^-\pi^+\pi^0\pi^0\pi^0$		
Hadronic modes with a p: $S = 0$ final states		
Γ_{17} $p\pi^+\pi^-$	(3.5 \pm 2.0) $\times 10^{-3}$	
Γ_{18} $pf_0(980)$	[b] (2.8 \pm 1.9) $\times 10^{-3}$	
Γ_{19} $p\pi^+\pi^+\pi^-\pi^-$	(1.8 \pm 1.2) $\times 10^{-3}$	
Γ_{20} pK^+K^-	(7.7 \pm 3.5) $\times 10^{-4}$	
Γ_{21} $p\phi$	[b] (8.2 \pm 2.7) $\times 10^{-4}$	
Γ_{22} pK^+K^- non- ϕ	(3.5 \pm 1.7) $\times 10^{-4}$	
Hadronic modes with a hyperon: $S = -1$ final states		
Γ_{23} $\Lambda\pi^+$	(9.0 \pm 2.8) $\times 10^{-3}$	
Γ_{24} $\Lambda\pi^+\pi^0$	(3.6 \pm 1.3) %	
Γ_{25} $\Lambda\rho^+$	< 5 %	CL=95%
Γ_{26} $\Lambda\pi^+\pi^+\pi^-$	(3.3 \pm 1.0) %	
Γ_{27} $\Lambda\pi^+\eta$	(1.8 \pm 0.6) %	
Γ_{28} $\Sigma(1385)^+\eta$	[b] (8.5 \pm 3.3) $\times 10^{-3}$	

Γ_{29}	$\Lambda K^+ \bar{K}^0$	$(6.0 \pm 2.1) \times 10^{-3}$	
Γ_{30}	$\Xi(1690)^0 K^+, \Xi(1690)^0 \rightarrow \Lambda \bar{K}^0$	$(1.6 \pm 0.8) \times 10^{-3}$	
Γ_{31}	$\Sigma^0 \pi^+$	$(9.9 \pm 3.2) \times 10^{-3}$	
Γ_{32}	$\Sigma^+ \pi^0$	$(1.00 \pm 0.34) \%$	
Γ_{33}	$\Sigma^+ \eta$	$(5.5 \pm 2.3) \times 10^{-3}$	
Γ_{34}	$\Sigma^+ \pi^+ \pi^-$	$(3.6 \pm 1.0) \%$	
Γ_{35}	$\Sigma^+ \rho^0$	$< 1.4 \%$	CL=95%
Γ_{36}	$\Sigma^- \pi^+ \pi^+$	$(1.9 \pm 0.8) \%$	
Γ_{37}	$\Sigma^0 \pi^+ \pi^0$	$(1.8 \pm 0.8) \%$	
Γ_{38}	$\Sigma^0 \pi^+ \pi^+ \pi^-$	$(1.1 \pm 0.4) \%$	
Γ_{39}	$\Sigma^+ \pi^+ \pi^- \pi^0$	—	
Γ_{40}	$\Sigma^+ \omega$	[b] $(2.7 \pm 1.0) \%$	
Γ_{41}	$\Sigma^+ \pi^+ \pi^+ \pi^- \pi^-$		
Γ_{42}	$\Sigma^+ K^+ K^-$	$(2.8 \pm 0.8) \times 10^{-3}$	
Γ_{43}	$\Sigma^+ \phi$	[b] $(3.2 \pm 1.0) \times 10^{-3}$	
Γ_{44}	$\Xi(1690)^0 K^+, \Xi(1690)^0 \rightarrow \Sigma^+ K^-$	$(8.2 \pm 3.1) \times 10^{-4}$	
Γ_{45}	$\Sigma^+ K^+ K^-$ nonresonant	$< 7 \times 10^{-4}$	CL=90%
Γ_{46}	$\Xi^0 K^+$	$(3.9 \pm 1.4) \times 10^{-3}$	
Γ_{47}	$\Xi^- K^+ \pi^+$	$(4.9 \pm 1.7) \times 10^{-3}$	
Γ_{48}	$\Xi(1530)^0 K^+$	[b] $(2.6 \pm 1.0) \times 10^{-3}$	

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

Γ_{49}	ΛK^+	$(6.7 \pm 2.5) \times 10^{-4}$	
Γ_{50}	$\Sigma^0 K^+$	$(5.6 \pm 2.4) \times 10^{-4}$	
Γ_{51}	$\Sigma^+ K^+ \pi^-$	$(1.7 \pm 0.7) \times 10^{-3}$	
Γ_{52}	$\Sigma^+ K^*(892)^0$	$(2.8 \pm 1.1) \times 10^{-3}$	
Γ_{53}	$\Sigma^- K^+ \pi^+$	$< 1.0 \times 10^{-3}$	CL=90%

Semileptonic modes

Γ_{54}	$\Lambda \ell^+ \nu_\ell$	[c] $(2.0 \pm 0.6) \%$	
Γ_{55}	$\Lambda e^+ \nu_e$	$(2.1 \pm 0.6) \%$	
Γ_{56}	$\Lambda \mu^+ \nu_\mu$	$(2.0 \pm 0.7) \%$	

Inclusive modes

Γ_{57}	e^+ anything	$(4.5 \pm 1.7) \%$	
Γ_{58}	$p e^+$ anything	$(1.8 \pm 0.9) \%$	
Γ_{59}	Λe^+ anything		
Γ_{60}	p anything	$(50 \pm 16) \%$	
Γ_{61}	p anything (no Λ)	$(12 \pm 19) \%$	
Γ_{62}	p hadrons		
Γ_{63}	n anything	$(50 \pm 16) \%$	
Γ_{64}	n anything (no Λ)	$(29 \pm 17) \%$	
Γ_{65}	Λ anything	$(35 \pm 11) \%$	S=1.4
Γ_{66}	Σ^\pm anything	[d] $(10 \pm 5) \%$	

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

Γ_{67}	$p\mu^+\mu^-$	CI	< 3.4	$\times 10^{-4}$	CL=90%
Γ_{68}	$\Sigma^-\mu^+\mu^+$	L	< 7.0	$\times 10^{-4}$	CL=90%

- [a] See the note on “ Λ_c^+ Branching Fractions” below.
- [b] This branching fraction includes all the decay modes of the final-state resonance.
- [c] An ℓ indicates an e or a μ mode, not a sum over these modes.
- [d] The value is for the sum of the charge states or particle/antiparticle states indicated.

CONSTRAINED FIT INFORMATION

An overall fit to 6 branching ratios uses 9 measurements and one constraint to determine 5 parameters. The overall fit has a $\chi^2 = 2.1$ for 5 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\langle \delta x_i \delta x_j \rangle / (\delta x_i \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

x_{34}		91		
x_{42}		87	93	
x_{43}		84	90	84
		x_2	x_{34}	x_{42}

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Λ_c^+ BRANCHING RATIOS

————— **Hadronic modes with a p : $S = -1$ final states** —————

$\Gamma(p\bar{K}^0)/\Gamma(pK^-\pi^+)$						Γ_1/Γ_2
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
0.47±0.04 OUR AVERAGE						
0.46±0.02±0.04	1025	ALAM	98 CLE2	$e^+e^- \approx \Upsilon(4S)$		
0.44±0.07±0.05	133	AVERY	91 CLEO	e^+e^- 10.5 GeV		
0.55±0.17±0.14	45	ANJOS	90 E691	γ Be 70–260 GeV		
0.62±0.15±0.03	73	ALBRECHT	88C ARG	e^+e^- 10 GeV		

$\Gamma(pK^- \pi^+)/\Gamma_{\text{total}}$

Γ_2/Γ

See the note on " Λ_C^+ Branching Fractions" above.

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.050±0.013 OUR FIT				
0.050±0.013		PDG	02	See note at top of ratios
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
0.050±0.005±0.012	1205	¹ JAFFE	00 CLE2	e^+e^- 10.52–10.58 GeV
0.041±0.010		^{2,3} ALBRECHT	920 ARG	$e^+e^- \approx \Upsilon(4S)$
0.044±0.012		^{2,4} CRAWFORD	92 CLEO	e^+e^- 10.5 GeV

¹ JAFFE 00 assumes that a \bar{D} meson and an antiproton in opposite hemispheres tags for a Λ_C^+ in the hemisphere of the \bar{p} . The fraction of such $\bar{D}\bar{p}$ events with a $\Lambda_C^+ \rightarrow pK^- \pi^+$ decay then gives the $pK^- \pi^+$ branching fraction. See the paper for assumptions, caveats, etc.

² To extract $\Gamma(pK^- \pi^+)/\Gamma_{\text{total}}$, we use $B(\bar{B} \rightarrow \Lambda_C^+ X) \cdot B(\Lambda_C^+ \rightarrow pK^- \pi^+) = (0.28 \pm 0.06)\%$, which is the average of measurements from ARGUS (ALBRECHT 88C) and CLEO (CRAWFORD 92).

³ ALBRECHT 920 measures $B(\bar{B} \rightarrow \Lambda_C^+ X) = (6.8 \pm 0.5 \pm 0.3)\%$.

⁴ CRAWFORD 92 measures $B(\bar{B} \rightarrow \Lambda_C^+ X) = (6.4 \pm 0.8 \pm 0.8)\%$.

$\Gamma(p\bar{K}^*(892)^0)/\Gamma(pK^- \pi^+)$

Γ_3/Γ_2

Unseen decay modes of the $\bar{K}^*(892)^0$ are included.

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.31±0.04 OUR AVERAGE				
0.29±0.04±0.03		⁵ AITALA	00 E791	$\pi^- N$, 500 GeV
0.35 ^{+0.06} _{-0.07} ±0.03	39	BOZEK	93 NA32	$\pi^- \text{Cu}$ 230 GeV
0.42±0.24	12	BASILE	81B CNTR	$pp \rightarrow \Lambda_C^+ e^- X$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
0.35±0.11		BARLAG	90D NA32	See BOZEK 93

⁵ AITALA 00 makes a coherent 5-dimensional amplitude analysis of $946 \pm 38 \Lambda_C^+ \rightarrow pK^- \pi^+$ decays.

$\Gamma(\Delta(1232)^{++} K^-)/\Gamma(pK^- \pi^+)$

Γ_4/Γ_2

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.17±0.04 OUR AVERAGE				Error includes scale factor of 1.1.
0.18±0.03±0.03		⁶ AITALA	00 E791	$\pi^- N$, 500 GeV
0.12 ^{+0.04} _{-0.05} ±0.05	14	BOZEK	93 NA32	$\pi^- \text{Cu}$ 230 GeV
0.40±0.17	17	BASILE	81B CNTR	$pp \rightarrow \Lambda_C^+ e^- X$

⁶ AITALA 00 makes a coherent 5-dimensional amplitude analysis of $946 \pm 38 \Lambda_C^+ \rightarrow pK^- \pi^+$ decays.

$\Gamma(\Lambda(1520)\pi^+)/\Gamma(\rho K^- \pi^+)$ Γ_5/Γ_2

Unseen decay modes of the $\Lambda(1520)$ are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.119^{+0.032}_{-0.028} OUR AVERAGE				
0.15 ± 0.04 ± 0.02		⁷ AITALA	00 E791	$\pi^- N$, 500 GeV
0.09 ^{+0.04} _{-0.03} ± 0.02	12	BOZEK	93 NA32	$\pi^- Cu$ 230 GeV

⁷ AITALA 00 makes a coherent 5-dimensional amplitude analysis of $946 \pm 38 \Lambda_c^+ \rightarrow \rho K^- \pi^+$ decays.

$\Gamma(\rho K^- \pi^+ \text{nonresonant})/\Gamma(\rho K^- \pi^+)$ Γ_6/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.55 ± 0.06 OUR AVERAGE				
0.55 ± 0.06 ± 0.04		⁸ AITALA	00 E791	$\pi^- N$, 500 GeV
0.56 ^{+0.07} _{-0.09} ± 0.05	71	BOZEK	93 NA32	$\pi^- Cu$ 230 GeV

⁸ AITALA 00 makes a coherent 5-dimensional amplitude analysis of $946 \pm 38 \Lambda_c^+ \rightarrow \rho K^- \pi^+$ decays.

$\Gamma(\rho \bar{K}^0 \pi^0)/\Gamma(\rho K^- \pi^+)$ Γ_7/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.66 ± 0.05 ± 0.07	774	ALAM	98 CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\rho \bar{K}^0 \eta)/\Gamma(\rho K^- \pi^+)$ Γ_8/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.25 ± 0.04 ± 0.04	57	AMMAR	95 CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\rho \bar{K}^0 \pi^+ \pi^-)/\Gamma(\rho K^- \pi^+)$ Γ_9/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.51 ± 0.06 OUR AVERAGE				
0.52 ± 0.04 ± 0.05	985	ALAM	98 CLE2	$e^+ e^- \approx \Upsilon(4S)$
0.43 ± 0.12 ± 0.04	83	AVERY	91 CLEO	$e^+ e^-$ 10.5 GeV
0.98 ± 0.36 ± 0.08	12	BARLAG	90D NA32	π^- 230 GeV

$\Gamma(\rho K^- \pi^+ \pi^0)/\Gamma(\rho K^- \pi^+)$ Γ_{10}/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.67 ± 0.04 ± 0.11	2606	ALAM	98 CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\rho K^*(892)^- \pi^+)/\Gamma(\rho \bar{K}^0 \pi^+ \pi^-)$ Γ_{11}/Γ_9

Unseen decay modes of the $K^*(892)^-$ are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.44 ± 0.14	17	ALEEV	94 BIS2	$n N$ 20–70 GeV

$\Gamma(\rho(K^- \pi^+)_{\text{nonresonant}} \pi^0)/\Gamma(\rho K^- \pi^+)$ Γ_{12}/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.73 ± 0.12 ± 0.05	67	BOZEK	93 NA32	$\pi^- Cu$ 230 GeV

$\Gamma(\Delta(1232)\bar{K}^*(892))/\Gamma_{\text{total}}$ Γ_{13}/Γ

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
seen	35	AMENDOLIA	87	SPEC γ Ge-Si

$\Gamma(\rho K^- \pi^+ \pi^+ \pi^-)/\Gamma(\rho K^- \pi^+)$ Γ_{14}/Γ_2

VALUE	DOCUMENT ID	TECN	COMMENT
0.022±0.015	BARLAG	90D NA32	π^- 230 GeV

$\Gamma(\rho K^- \pi^+ \pi^0 \pi^0)/\Gamma(\rho K^- \pi^+)$ Γ_{15}/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.16±0.07±0.03	15	BOZEK	93 NA32	π^- Cu 230 GeV

$\Gamma(\rho K^- \pi^+ \pi^0 \pi^0 \pi^0)/\Gamma(\rho K^- \pi^+)$ Γ_{16}/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$0.10 \pm 0.06 \pm 0.02$	8	BOZEK	93 NA32	π^- Cu 230 GeV

• • • We do not use the following data for averages, fits, limits, etc. • • •

————— Hadronic modes with a ρ : $S = 0$ final states —————

$\Gamma(\rho \pi^+ \pi^-)/\Gamma(\rho K^- \pi^+)$ Γ_{17}/Γ_2

VALUE	DOCUMENT ID	TECN	COMMENT
0.069±0.036	BARLAG	90D NA32	π^- 230 GeV

$\Gamma(\rho f_0(980))/\Gamma(\rho K^- \pi^+)$ Γ_{18}/Γ_2

Unseen decay modes of the $f_0(980)$ are included.

VALUE	DOCUMENT ID	TECN	COMMENT
0.055±0.036	BARLAG	90D NA32	π^- 230 GeV

$\Gamma(\rho \pi^+ \pi^+ \pi^- \pi^-)/\Gamma(\rho K^- \pi^+)$ Γ_{19}/Γ_2

VALUE	DOCUMENT ID	TECN	COMMENT
0.036±0.023	BARLAG	90D NA32	π^- 230 GeV

$\Gamma(\rho K^+ K^-)/\Gamma(\rho K^- \pi^+)$ Γ_{20}/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.015±0.006 OUR AVERAGE				Error includes scale factor of 2.1.

$0.014 \pm 0.002 \pm 0.002$ 676 ABE 02C BELL $e^+ e^- \approx \Upsilon(4S)$

$0.039 \pm 0.009 \pm 0.007$ 214 ALEXANDER 96C CLE2 $e^+ e^- \approx \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

$0.096 \pm 0.029 \pm 0.010$ 30 FRABETTI 93H E687 γ Be, \bar{E}_γ 220 GeV

0.048 ± 0.027 BARLAG 90D NA32 π^- 230 GeV

$\Gamma(\rho \phi)/\Gamma(\rho K^- \pi^+)$ Γ_{21}/Γ_2

Unseen decay modes of the ϕ are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.0164±0.0032 OUR AVERAGE				Error includes scale factor of 1.2.

$0.015 \pm 0.002 \pm 0.002$ 345 ABE 02C BELL $e^+ e^- \approx \Upsilon(4S)$

$0.024 \pm 0.006 \pm 0.003$ 54 ALEXANDER 96C CLE2 $e^+ e^- \approx \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.040 ± 0.027 BARLAG 90D NA32 π^- 230 GeV

$\Gamma(\rho\phi)/\Gamma(\rho K^+ K^-)$ Γ_{21}/Γ_{20}

Unseen decay modes of the ϕ are included.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.58	90	FRABETTI	93H E687	γ Be, \bar{E}_γ 220 GeV

$\Gamma(\rho K^+ K^- \text{ non-}\phi)/\Gamma(\rho K^- \pi^+)$ Γ_{22}/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.007 ± 0.002 ± 0.002	344	ABE	02C BELL	$e^+ e^- \approx \Upsilon(4S)$

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

$\Gamma(\Lambda\pi^+)/\Gamma(\rho K^- \pi^+)$ Γ_{23}/Γ_2

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
0.180 ± 0.032 OUR AVERAGE					
0.18 ± 0.03 ± 0.04			ALBRECHT	92 ARG	$e^+ e^- \approx 10.4$ GeV
0.18 ± 0.03 ± 0.03		87	AVERY	91 CLEO	$e^+ e^-$ 10.5 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.33	90		ANJOS	90 E691	γ Be 70–260 GeV
<0.16	90		ALBRECHT	88C ARG	$e^+ e^-$ 10 GeV

$\Gamma(\Lambda\pi^+\pi^0)/\Gamma(\rho K^- \pi^+)$ Γ_{24}/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.73 ± 0.09 ± 0.16	464	AVERY	94 CLE2	$e^+ e^- \approx \Upsilon(3S), \Upsilon(4S)$

$\Gamma(\Lambda\rho^+)/\Gamma(\rho K^- \pi^+)$ Γ_{25}/Γ_2

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.95	95	AVERY	94 CLE2	$e^+ e^- \approx \Upsilon(3S), \Upsilon(4S)$

$\Gamma(\Lambda\pi^+\pi^+\pi^-)/\Gamma(\rho K^- \pi^+)$ Γ_{26}/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.66 ± 0.11 OUR AVERAGE				
0.65 ± 0.11 ± 0.12	289	AVERY	91 CLEO	$e^+ e^-$ 10.5 GeV
0.82 ± 0.29 ± 0.27	44	ANJOS	90 E691	γ Be 70–260 GeV
0.94 ± 0.41 ± 0.13	10	BARLAG	90D NA32	π^- 230 GeV
0.61 ± 0.16 ± 0.04	105	ALBRECHT	88C ARG	$e^+ e^-$ 10 GeV

$\Gamma(\rho\bar{K}^0\pi^+\pi^-)/\Gamma(\Lambda\pi^+\pi^+\pi^-)$ Γ_9/Γ_{26}

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.6 ± 1.2		ALEEV	96 SPEC	n nucleus, 50 GeV/c
4.3 ± 1.2	130	ALEEV	84 BIS2	n C 40–70 GeV

$\Gamma(\Lambda\pi^+\eta)/\Gamma(\rho K^- \pi^+)$ Γ_{27}/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.35 ± 0.05 ± 0.06	116	AMMAR	95 CLE2	$e^+ e^- \approx \Upsilon(4S)$

$\Gamma(\Sigma(1385)^+\eta)/\Gamma(\rho K^-\pi^+)$ Γ_{28}/Γ_2 Unseen decay modes of the $\Sigma(1385)^+$ are included.

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.17±0.04±0.03	54	AMMAR	95 CLE2	$e^+e^- \approx \gamma(4S)$

 $\Gamma(\Lambda K^+\bar{K}^0)/\Gamma(\rho K^-\pi^+)$ Γ_{29}/Γ_2

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.12 ±0.02 ±0.02	59	AMMAR	95 CLE2	$e^+e^- \approx \gamma(4S)$

 $\Gamma(\Xi(1690)^0 K^+, \Xi(1690)^0 \rightarrow \Lambda\bar{K}^0)/\Gamma(\Lambda K^+\bar{K}^0)$ Γ_{30}/Γ_{29}

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.26±0.08±0.03	93	ABE	02C BELL	$e^+e^- \approx \gamma(4S)$

 $\Gamma(\Sigma^0\pi^+)/\Gamma(\rho K^-\pi^+)$ Γ_{31}/Γ_2

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.20±0.04 OUR AVERAGE				
0.21±0.02±0.04	196	AVERY	94 CLE2	$e^+e^- \approx \gamma(3S), \gamma(4S)$
0.17±0.06±0.04		ALBRECHT	92 ARG	$e^+e^- \approx 10.4 \text{ GeV}$

 $\Gamma(\Sigma^+\pi^0)/\Gamma(\rho K^-\pi^+)$ Γ_{32}/Γ_2

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.20±0.03±0.03	93	KUBOTA	93 CLE2	$e^+e^- \approx \gamma(4S)$

 $\Gamma(\Sigma^+\eta)/\Gamma(\rho K^-\pi^+)$ Γ_{33}/Γ_2

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.11±0.03±0.02	26	AMMAR	95 CLE2	$e^+e^- \approx \gamma(4S)$

 $\Gamma(\Sigma^+\pi^+\pi^-)/\Gamma(\rho K^-\pi^+)$ Γ_{34}/Γ_2

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.73±0.08 OUR NEW UNCHECKED FIT [0.72 ± 0.08 OUR 2002 FIT]				
0.68±0.09 OUR AVERAGE				
0.74±0.07±0.09	487	KUBOTA	93 CLE2	$e^+e^- \approx \gamma(4S)$
0.54 ^{+0.18} _{-0.15}	11	BARLAG	92 NA32	$\pi^- \text{Cu } 230 \text{ GeV}$

 $\Gamma(\Sigma^+\rho^0)/\Gamma(\rho K^-\pi^+)$ Γ_{35}/Γ_2

<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.27	95	KUBOTA	93 CLE2	$e^+e^- \approx \gamma(4S)$

 $\Gamma(\Sigma^-\pi^+\pi^+)/\Gamma(\Sigma^+\pi^+\pi^-)$ Γ_{36}/Γ_{34}

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.53±0.15±0.07	56	FRABETTI	94E E687	$\gamma \text{Be}, \bar{E}_\gamma 220 \text{ GeV}$

 $\Gamma(\Sigma^0\pi^+\pi^0)/\Gamma(\rho K^-\pi^+)$ Γ_{37}/Γ_2

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.36±0.09±0.10	117	AVERY	94 CLE2	$e^+e^- \approx \gamma(3S), \gamma(4S)$

 $\Gamma(\Sigma^0\pi^+\pi^+\pi^-)/\Gamma(\rho K^-\pi^+)$ Γ_{38}/Γ_2

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.21±0.05±0.05	90	AVERY	94 CLE2	$e^+e^- \approx \gamma(3S), \gamma(4S)$

$\Gamma(\Sigma^+\omega)/\Gamma(pK^-\pi^+)$ Γ_{40}/Γ_2

Unseen decay modes of the ω are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.54±0.13±0.06	107	KUBOTA	93 CLE2	$e^+e^- \approx \Upsilon(4S)$

$\Gamma(\Sigma^+\pi^+\pi^+\pi^-\pi^-)/\Gamma(pK^-\pi^+)$ Γ_{41}/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
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• • • We do not use the following data for averages, fits, limits, etc. • • •

0.06 ^{+0.08} _{-0.04}	1	BARLAG	92 NA32	π^- Cu 230 GeV
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$\Gamma(\Sigma^+K^+K^-)/\Gamma(pK^-\pi^+)$ Γ_{42}/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
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0.057±0.008 OUR NEW UNCHECKED FIT [0.058 ± 0.009 OUR 2002 FIT]

0.070±0.011±0.011 59 AVERY 93 CLE2 $e^+e^- \approx 10.5$ GeV

$\Gamma(\Sigma^+K^+K^-)/\Gamma(\Sigma^+\pi^+\pi^-)$ Γ_{42}/Γ_{34}

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
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0.078±0.009 OUR NEW UNCHECKED FIT [0.081 ± 0.010 OUR 2002 FIT]

0.074±0.009 OUR NEW AVERAGE [0.076 ± 0.011 OUR 2002 AVERAGE]

0.076±0.007±0.009 246 ABE 02C BELL $e^+e^- \approx \Upsilon(4S)$

0.071±0.011±0.011 103 LINK 02G FOCS γ nucleus, ≈ 180 GeV

$\Gamma(\Sigma^+\phi)/\Gamma(pK^-\pi^+)$ Γ_{43}/Γ_2

Unseen decay modes of the ϕ are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
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0.063±0.011 OUR NEW UNCHECKED FIT [0.063 ± 0.013 OUR 2002 FIT]

0.069±0.023±0.016 26 AVERY 93 CLE2 $e^+e^- \approx 10.5$ GeV

$\Gamma(\Sigma^+\phi)/\Gamma(\Sigma^+\pi^+\pi^-)$ Γ_{43}/Γ_{34}

Unseen decay modes of the ϕ are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
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0.087±0.012 OUR NEW UNCHECKED FIT [0.087 ± 0.016 OUR 2002 FIT]

0.086±0.012 OUR NEW AVERAGE [0.085 ± 0.017 OUR 2002 AVERAGE]

0.085±0.012±0.012 129 ABE 02C BELL $e^+e^- \approx \Upsilon(4S)$

0.087±0.016±0.006 57 LINK 02G FOCS γ nucleus, ≈ 180 GeV

$\Gamma(\Xi(1690)^0 K^+, \Xi(1690)^0 \rightarrow \Sigma^+ K^-)/\Gamma(\Sigma^+\pi^+\pi^-)$ Γ_{44}/Γ_{34}

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
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0.023±0.005 OUR NEW AVERAGE [0.023 ± 0.007 OUR 2002 AVERAGE]

0.023±0.005±0.005 75 ABE 02C BELL $e^+e^- \approx \Upsilon(4S)$

0.022±0.006±0.006 34 LINK 02G FOCS γ nucleus, ≈ 180 GeV

$\Gamma(\Sigma^+K^+K^- \text{ nonresonant})/\Gamma(\Sigma^+\pi^+\pi^-)$ Γ_{45}/Γ_{34}

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
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<0.018 90 ABE 02C BELL $e^+e^- \approx \Upsilon(4S)$

• • • We do not use the following data for averages, fits, limits, etc. • • •

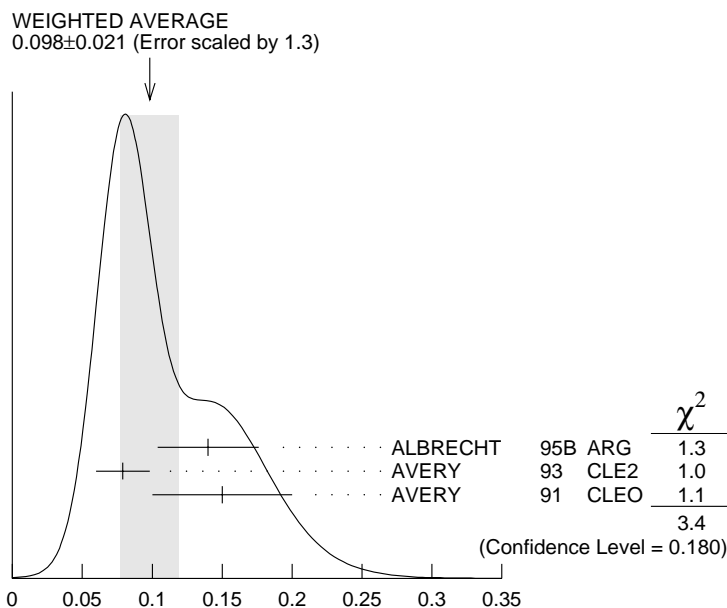
<0.028 90 LINK 02G FOCS γ nucleus, ≈ 180 GeV

$\Gamma(\Xi^0 K^+)/\Gamma(\rho K^- \pi^+)$ Γ_{46}/Γ_2

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.078±0.013±0.013	56	AVERY	93 CLE2	$e^+ e^- \approx 10.5$ GeV

$\Gamma(\Xi^- K^+ \pi^+)/\Gamma(\rho K^- \pi^+)$ Γ_{47}/Γ_2

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.098±0.021 OUR AVERAGE		Error includes scale factor of 1.3. See the ideogram below.		
0.14 ±0.03 ±0.02	34	ALBRECHT	95B ARG	$e^+ e^- \approx 10.4$ GeV
0.079±0.013±0.014	60	AVERY	93 CLE2	$e^+ e^- \approx 10.5$ GeV
0.15 ±0.04 ±0.03	30	AVERY	91 CLEO	$e^+ e^- 10.5$ GeV



$$\Gamma(\Xi^- K^+ \pi^+)/\Gamma(\rho K^- \pi^+)$$

$\Gamma(\Xi(1530)^0 K^+)/\Gamma(\rho K^- \pi^+)$ Γ_{48}/Γ_2

Unseen decay modes of the $\Xi(1530)^0$ are included.

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.052±0.014 OUR AVERAGE				
0.05 ±0.02 ±0.01	11	ALBRECHT	95B ARG	$e^+ e^- \approx 10.4$ GeV
0.053±0.016±0.010	24	AVERY	93 CLE2	$e^+ e^- \approx 10.5$ GeV

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

$\Gamma(\Lambda K^+)/\Gamma(\Lambda \pi^+)$ Γ_{49}/Γ_{23}

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.074±0.010±0.012	265	ABE	02C BELL	$e^+ e^- \approx \gamma(4S)$

$\Gamma(\Sigma^0 K^+)/\Gamma(\Sigma^0 \pi^+)$					Γ_{50}/Γ_{31}
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.056±0.014±0.008	75	ABE	02C BELL	$e^+ e^- \approx \Upsilon(4S)$	

$\Gamma(\Sigma^+ K^+ \pi^-)/\Gamma(p K^- \pi^+)$					Γ_{51}/Γ_2
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.13 ^{+0.12} _{-0.07}	2	BARLAG	92 NA32	π^- Cu 230 GeV
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$\Gamma(\Sigma^+ K^+ \pi^-)/\Gamma(\Sigma^+ \pi^+ \pi^-)$					Γ_{51}/Γ_{34}
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.047±0.011±0.008	105	ABE	02C BELL	$e^+ e^- \approx \Upsilon(4S)$	

$\Gamma(\Sigma^+ K^*(892)^0)/\Gamma(\Sigma^+ \pi^+ \pi^-)$					Γ_{52}/Γ_{34}
Unseen decay modes of the $K^*(892)^0$ are included.					
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
0.078±0.018±0.013	49	LINK	02G FOCS	γ nucleus, ≈ 180 GeV	

$\Gamma(\Sigma^- K^+ \pi^+)/\Gamma(\Sigma^+ K^*(892)^0)$					Γ_{53}/Γ_{52}
<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<0.35	90	LINK	02G FOCS	γ nucleus, ≈ 180 GeV	

————— Semileptonic modes —————

$\Gamma(\Lambda \ell^+ \nu_\ell)/\Gamma(p K^- \pi^+)$					Γ_{54}/Γ_2
We average here the averages of the next two data blocks.					
<u>VALUE</u>	<u>DOCUMENT ID</u>		<u>COMMENT</u>		
0.41±0.05 OUR AVERAGE					
0.42±0.07	PDG		02	Our $\Gamma(\Lambda e^+ \nu_e)/\Gamma(p K^- \pi^+)$	
0.39±0.08	PDG		02	Our $\Gamma(\Lambda \mu^+ \nu_\mu)/\Gamma(p K^- \pi^+)$	

$\Gamma(\Lambda e^+ \nu_e)/\Gamma(p K^- \pi^+)$					Γ_{55}/Γ_2
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
0.42±0.07 OUR AVERAGE					
0.43±0.08	^{9,10} BERGFELD	94 CLE2	$e^+ e^- \approx \Upsilon(4S)$		
0.38±0.14	^{10,11} ALBRECHT	91G ARG	$e^+ e^- \approx 10.4$ GeV		

⁹ BERGFELD 94 measures $\sigma(e^+ e^- \rightarrow \Lambda_c^+ X) \cdot B(\Lambda_c^+ \rightarrow \Lambda e^+ \nu_e) = (4.87 \pm 0.28 \pm 0.69)$ pb.

¹⁰ To extract $\Gamma(\Lambda_c^+ \rightarrow \Lambda e^+ \nu_e)/\Gamma(\Lambda_c^+ \rightarrow p K^- \pi^+)$, we use $\sigma(e^+ e^- \rightarrow \Lambda_c^+ X) \cdot B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (11.2 \pm 1.3)$ pb, which is the weighted average of measurements from ARGUS (ALBRECHT 96E) and CLEO (AVERY 91).

¹¹ ALBRECHT 91G measures $\sigma(e^+ e^- \rightarrow \Lambda_c^+ X) \cdot B(\Lambda_c^+ \rightarrow \Lambda e^+ \nu_e) = (4.20 \pm 1.28 \pm 0.71)$ pb.

$\Gamma(\Lambda\mu^+\nu_\mu)/\Gamma(pK^-\pi^+)$

Γ_{56}/Γ_2

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.39±0.08 OUR AVERAGE			
0.40±0.09	12,13 BERGFELD	94 CLE2	$e^+e^- \approx \Upsilon(4S)$
0.35±0.20	13,14 ALBRECHT	91G ARG	$e^+e^- \approx 10.4$ GeV
¹² BERGFELD 94 measures $\sigma(e^+e^- \rightarrow \Lambda_c^+ X) \cdot B(\Lambda_c^+ \rightarrow \Lambda\mu^+\nu_\mu) = (4.43 \pm 0.51 \pm 0.64)$ pb.			
¹³ To extract $\Gamma(\Lambda_c^+ \rightarrow \Lambda\mu^+\nu_\mu)/\Gamma(\Lambda_c^+ \rightarrow pK^-\pi^+)$, we use $\sigma(e^+e^- \rightarrow \Lambda_c^+ X) \cdot B(\Lambda_c^+ \rightarrow pK^-\pi^+) = (11.2 \pm 1.3)$ pb, which is the weighted average of measurements from ARGUS (ALBRECHT 96E) and CLEO (AVERY 91).			
¹⁴ ALBRECHT 91G measures $\sigma(e^+e^- \rightarrow \Lambda_c^+ X) \cdot B(\Lambda_c^+ \rightarrow \Lambda\mu^+\nu_\mu) = (3.91 \pm 2.02 \pm 0.90)$ pb.			

———— Inclusive modes ————

$\Gamma(e^+ \text{ anything})/\Gamma_{\text{total}}$

Γ_{57}/Γ

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.045±0.017	VELLA	82 MRK2	e^+e^- 4.5–6.8 GeV

$\Gamma(pe^+ \text{ anything})/\Gamma_{\text{total}}$

Γ_{58}/Γ

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.018±0.009	¹⁵ VELLA	82 MRK2	e^+e^- 4.5–6.8 GeV
¹⁵ VELLA 82 includes protons from Λ decay.			

$\Gamma(\Lambda e^+ \text{ anything})/\Gamma_{\text{total}}$

Γ_{59}/Γ

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.011±0.008	¹⁶ VELLA	82 MRK2	e^+e^- 4.5–6.8 GeV
¹⁶ VELLA 82 includes Λ 's from Σ^0 decay.			

$\Gamma(p \text{ anything})/\Gamma_{\text{total}}$

Γ_{60}/Γ

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.50±0.08±0.14	¹⁷ CRAWFORD	92 CLEO	e^+e^- 10.5 GeV
¹⁷ This CRAWFORD 92 value includes protons from Λ decay. The value is model dependent, but account is taken of this in the systematic error.			

$\Gamma(p \text{ anything (no } \Lambda))/\Gamma_{\text{total}}$

Γ_{61}/Γ

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.12±0.10±0.16	CRAWFORD	92 CLEO	e^+e^- 10.5 GeV

$\Gamma(n \text{ anything})/\Gamma_{\text{total}}$

Γ_{63}/Γ

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.50±0.08±0.14	¹⁸ CRAWFORD	92 CLEO	e^+e^- 10.5 GeV
¹⁸ This CRAWFORD 92 value includes neutrons from Λ decay. The value is model dependent, but account is taken of this in the systematic error.			

$\Gamma(n \text{ anything (no } \Lambda))/\Gamma_{\text{total}}$

Γ_{64}/Γ

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.29±0.09±0.15	CRAWFORD	92 CLEO	e^+e^- 10.5 GeV

$\Gamma(\rho \text{ hadrons})/\Gamma_{\text{total}}$

Γ_{62}/Γ

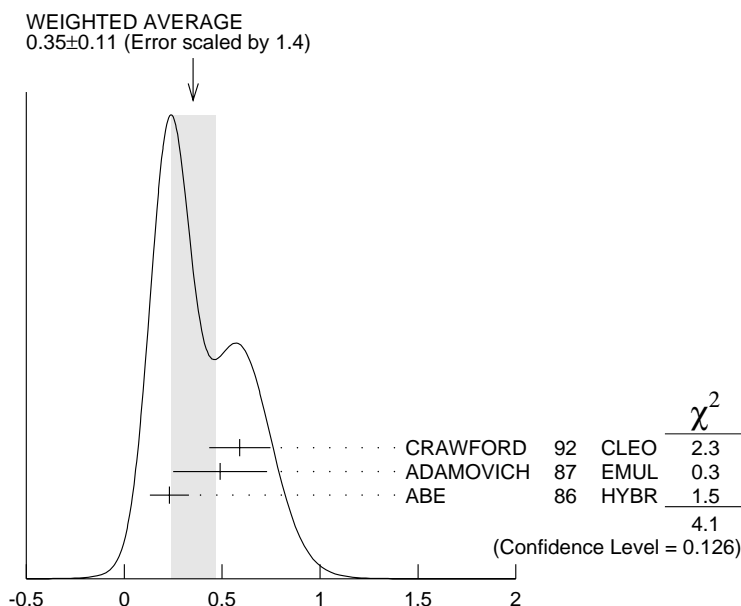
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.41 ± 0.24		ADAMOVICH 87	EMUL	γA 20–70 GeV/c

$\Gamma(\Lambda \text{ anything})/\Gamma_{\text{total}}$

Γ_{65}/Γ

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.35 ± 0.11 OUR AVERAGE		Error includes scale factor of 1.4. See the ideogram below.		
$0.59 \pm 0.10 \pm 0.12$		CRAWFORD 92	CLEO	$e^+ e^-$ 10.5 GeV
0.49 ± 0.24		ADAMOVICH 87	EMUL	γA 20–70 GeV/c
0.23 ± 0.10	8	¹⁹ ABE 86	HYBR	20 GeV γp

¹⁹ ABE 86 includes Λ 's from Σ^0 decay.



$\Gamma(\Lambda \text{ anything})/\Gamma_{\text{total}}$

$\Gamma(\Sigma^\pm \text{ anything})/\Gamma_{\text{total}}$

Γ_{66}/Γ

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.1 ± 0.05	5	ABE 86	HYBR	20 GeV γp

————— Rare or forbidden modes —————

$\Gamma(\rho \mu^+ \mu^-)/\Gamma_{\text{total}}$

Γ_{67}/Γ

A test for the $\Delta C=1$ weak neutral current. Allowed by higher-order electroweak interactions.

<u>VALUE</u>	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
$< 3.4 \times 10^{-4}$	90	0	KODAMA 95	E653	π^- emulsion 600 GeV

$\Gamma(\Sigma^- \mu^+ \mu^+)/\Gamma_{\text{total}}$ Γ_{68}/Γ

A test of lepton-number conservation.

VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
$<7.0 \times 10^{-4}$	90	0	KODAMA	95 E653	π^- emulsion 600 GeV

Λ_c^+ DECAY PARAMETERS

See the note on "Baryon Decay Parameters" in the neutron Listings.

α FOR $\Lambda_c^+ \rightarrow \Lambda \pi^+$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
-0.98 ± 0.19 OUR AVERAGE				
$-0.94 \pm 0.21 \pm 0.12$	414	²⁰ BISHAI	95 CLE2	$e^+ e^- \approx \Upsilon(4S)$
-0.96 ± 0.42		ALBRECHT	92 ARG	$e^+ e^- \approx 10.4$ GeV
-1.1 ± 0.4	86	AVERY	90B CLEO	$e^+ e^- \approx 10.6$ GeV

²⁰ BISHAI 95 actually gives $\alpha = -0.94^{+0.21+0.12}_{-0.06-0.06}$, chopping the errors at the physical limit -1.0 . However, for $\alpha \approx -1.0$, some experiments should *get* unphysical values ($\alpha < -1.0$), and for averaging with other measurements such values (or errors that extend below -1.0) should *not* be chopped.

α FOR $\Lambda_c^+ \rightarrow \Sigma^+ \pi^0$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$-0.45 \pm 0.31 \pm 0.06$	89	BISHAI	95 CLE2	$e^+ e^- \approx \Upsilon(4S)$

α FOR $\Lambda_c^+ \rightarrow \Lambda \ell^+ \nu_\ell$

The experiments don't cover the complete (or same incomplete) $M(\Lambda \ell^+)$ range, but we average them together anyway.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$-0.82^{+0.11}_{-0.07}$ OUR AVERAGE				
$-0.82^{+0.09+0.06}_{-0.06-0.03}$	700	²¹ CRAWFORD	95 CLE2	$e^+ e^- \approx \Upsilon(4S)$
$-0.91 \pm 0.42 \pm 0.25$		²² ALBRECHT	94B ARG	$e^+ e^- \approx 10$ GeV
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
$-0.89^{+0.17+0.09}_{-0.11-0.05}$	350	²³ BERGFELD	94 CLE2	See CRAWFORD 95

²¹ CRAWFORD 95 measures the form-factor ratio $R \equiv f_2/f_1$ for $\Lambda_c^+ \rightarrow \Lambda e^+ \nu_e$ events to be $-0.25 \pm 0.14 \pm 0.08$ and from this calculates α , averaged over q^2 , to be the above.

²² ALBRECHT 94B uses Λe^+ and $\Lambda \mu^+$ events in the mass range $1.85 < M(\Lambda \ell^+) < 2.20$ GeV.

²³ BERGFELD 94 uses Λe^+ events.

Λ_c^+ REFERENCES

We have omitted some papers that have been superseded by later experiments. The omitted papers may be found in our 1992 edition (Physical Review **D45**, 1 June, Part II) or in earlier editions.

ABE	02C	PL B524 33	K. Abe <i>et al.</i>	(KEK BELLE Collab.)
LINK	02C	PRL 88 161801	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)
LINK	02G	PL B540 25	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)
PDG	02	PR D66 010001	K. Hagiwara <i>et al.</i>	
KUSHNIR...	01	PRL 86 5243	A. Kushnirenko <i>et al.</i>	(FNAL SELEX Collab.)
MAHMOOD	01	PRL 86 2232	A.H. Mahmood <i>et al.</i>	(CLEO Collab.)
AITALA	00	PL B471 449	E.M. Aitala <i>et al.</i>	(FNAL E791 Collab.)
JAFFE	00	PR D62 072005	D.E. Jaffe <i>et al.</i>	(CLEO Collab.)
ALAM	98	PR D57 4467	M.S. Alam <i>et al.</i>	(CLEO Collab.)
ALBRECHT	96E	PRPL 276 223	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
ALEEV	96	JINRRC 3-77 31	A.N. Aleev <i>et al.</i>	(Serpukhov EXCHARM Collab.)
ALEXANDER	96C	PR D53 R1013	J.P. Alexander <i>et al.</i>	(CLEO Collab.)
ALBRECHT	95B	PL B342 397	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
AMMAR	95	PRL 74 3534	R. Ammar <i>et al.</i>	(CLEO Collab.)
BISHAI	95	PL B350 256	M. Bishai <i>et al.</i>	(CLEO Collab.)
CRAWFORD	95	PRL 75 624	G. Crawford <i>et al.</i>	(CLEO Collab.)
KODAMA	95	PL B345 85	K. Kodama <i>et al.</i>	(FNAL E653 Collab.)
ALBRECHT	94B	PL B326 320	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
ALEEV	94	PAN 57 1370	A.N. Aleev <i>et al.</i>	(Serpukhov BIS-2 Collab.)
		Translated from YF 57 1443.		
AVERY	94	PL B325 257	P. Avery <i>et al.</i>	(CLEO Collab.)
BERGFELD	94	PL B323 219	T. Bergfeld <i>et al.</i>	(CLEO Collab.)
FRABETTI	94E	PL B328 193	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
AVERY	93	PRL 71 2391	P. Avery <i>et al.</i>	(CLEO Collab.)
BOZEK	93	PL B312 247	A. Bozek <i>et al.</i>	(CERN NA32 Collab.)
FRABETTI	93D	PRL 70 1755	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
FRABETTI	93H	PL B314 477	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
KUBOTA	93	PRL 71 3255	Y. Kubota <i>et al.</i>	(CLEO Collab.)
ALBRECHT	92	PL B274 239	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
ALBRECHT	92O	ZPHY C56 1	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
BARLAG	92	PL B283 465	S. Barlag <i>et al.</i>	(ACCMOR Collab.)
CRAWFORD	92	PR D45 752	G. Crawford <i>et al.</i>	(CLEO Collab.)
JEZABEK	92	PL B286 175	M. Jezabek, K. Rybicki, R. Rylko	(CRAC)
ALBRECHT	91G	PL B269 234	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
AVERY	91	PR D43 3599	P. Avery <i>et al.</i>	(CLEO Collab.)
ALVAREZ	90	ZPHY C47 539	M.P. Alvarez <i>et al.</i>	(CERN NA14/2 Collab.)
ALVAREZ	90B	PL B246 256	M.P. Alvarez <i>et al.</i>	(CERN NA14/2 Collab.)
ANJOS	90	PR D41 801	J.C. Anjos <i>et al.</i>	(FNAL E691 Collab.)
AVERY	90B	PRL 65 2842	P. Avery <i>et al.</i>	(CLEO Collab.)
BARLAG	90D	ZPHY C48 29	S. Barlag <i>et al.</i>	(ACCMOR Collab.)
FRABETTI	90	PL B251 639	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
BARLAG	89	PL B218 374	S. Barlag <i>et al.</i>	(ACCMOR Collab.)
AGUILAR-...	88B	ZPHY C40 321	M. Aguilar-Benitez <i>et al.</i>	(LEBC-EHS Collab.)
Also	87	PL B189 254	M. Aguilar-Benitez <i>et al.</i>	(LEBC-EHS Collab.)
Also	87B	PL B199 462	M. Aguilar-Benitez <i>et al.</i>	(LEBC-EHS Collab.)
Also	88	SJNP 48 833	M. Begalli <i>et al.</i>	(LEBC-EHS Collab.)
		Translated from YAF 48 1310.		
ALBRECHT	88C	PL B207 109	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
ANJOS	88B	PRL 60 1379	J.C. Anjos <i>et al.</i>	(FNAL E691 Collab.)
ADAMOVICH	87	EPL 4 887	M.I. Adamovich <i>et al.</i>	(Photon Emulsion Collab.)
Also	87	SJNP 46 447	F. Viaggi <i>et al.</i>	(Photon Emulsion Collab.)
		Translated from YAF 46 799.		
AMENDOLIA	87	ZPHY C36 513	S.R. Amendolia <i>et al.</i>	(CERN NA1 Collab.)
JONES	87	ZPHY C36 593	G.T. Jones <i>et al.</i>	(CERN WA21 Collab.)
ABE	86	PR D33 1	K. Abe <i>et al.</i>	
ALEEV	84	ZPHY C23 333	A.N. Aleev <i>et al.</i>	(BIS-2 Collab.)
BOSETTI	82	PL 109B 234	P.C. Bosetti <i>et al.</i>	(AACH3, BONN, CERN+)
VELLA	82	PRL 48 1515	E. Vella <i>et al.</i>	(SLAC, LBL, UCB)
BASILE	81B	NC 62A 14	M. Basile <i>et al.</i>	(CERN, BGNA, PGIA, FRAS)
CALICCHIO	80	PL 93B 521	M. Calicchio <i>et al.</i>	(BARI, BIRM, BRUX+)

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MIGLIOZZI	99	PL B462 217	P. Migliozi <i>et al.</i>
DUNIETZ	98	PR D58 094010	I. Dunietz
