



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

Neither of J or P has actually been measured.

Ξ_c^+ MASS

The fit uses the Ξ_c^+ and Ξ_c^0 mass and mass-difference measurements.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
2467.71 ± 0.23 OUR FIT		Error includes scale factor of 1.3.		
2467.95 ± 0.19 OUR AVERAGE				
2467.97 ± 0.14 ± 0.17	3.8k	¹ AAIJ	14Z LHCb	pp at 7, 8 TeV
2468.00 ± 0.18 ± 0.51	5.1k	AALTONEN	14B CDF	$p\bar{p}$ at 1.96 TeV
2468.1 ± 0.4 ^{+0.2} / _{-1.4}	4.9k	² LESIAK	05 BELL	e^+e^- , $\Upsilon(4S)$
2465.8 ± 1.9 ± 2.5	90	FRABETTI	98 E687	γ Be, $\bar{E}_\gamma = 220$ GeV
2467.0 ± 1.6 ± 2.0	147	EDWARDS	96 CLE2	$e^+e^- \approx \Upsilon(4S)$
2465.1 ± 3.6 ± 1.9	30	ALBRECHT	90F ARG	e^+e^- at $\Upsilon(4S)$
2467 ± 3 ± 4	23	ALAM	89 CLEO	e^+e^- 10.6 GeV
2466.5 ± 2.7 ± 1.2	5	BARLAG	89C ACCM	π^- Cu 230 GeV
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
2464.4 ± 2.0 ± 1.4	30	FRABETTI	93B E687	See FRABETTI 98
2459 ± 5 ± 30	56	³ COTEUS	87 SPEC	$nA \simeq 600$ GeV
2460 ± 25	82	BIAGI	83 SPEC	Σ^- Be 135 GeV

¹ AAIJ 14Z systematic error includes in quadrature the 0.14 MeV uncertainty from the $m(\Lambda_c^+)$ mass value.

² The systematic error was (wrongly) given the other way round in LESIAK 05; see the erratum.

³ Although COTEUS 87 claims to agree well with BIAGI 83 on the mass and width, there appears to be a discrepancy between the two experiments. BIAGI 83 sees a single peak (stated significance about 6 standard deviations) in the $\Lambda K^- \pi^+ \pi^+$ mass spectrum. COTEUS 87 sees *two* peaks in the same spectrum, one at the Ξ_c^+ mass, the other 75 MeV lower. The latter is attributed to $\Xi_c^+ \rightarrow \Sigma^0 K^- \pi^+ \pi^+ \rightarrow (\Lambda \gamma) K^- \pi^+ \pi^+$, with the γ unseen. The *combined* significance of the double peak is stated to be 5.5 standard deviations. But the absence of any trace of a lower peak in BIAGI 83 seems to us to throw into question the interpretation of the lower peak of COTEUS 87.

Ξ_c^+ MEAN LIFE

VALUE (10^{-15} s)	EVTS	DOCUMENT ID	TECN	COMMENT
453 ± 5 OUR AVERAGE				
454 ± 5 ± 2	56k	¹ AAIJ	19AG LHCb	$\Xi_c^+ \rightarrow p K^- \pi^+$
503 ± 47 ± 18	250	MAHMOOD	02 CLE2	$e^+e^- \approx \Upsilon(4S)$
439 ± 22 ± 9	532	LINK	01D FOCS	γ nucleus, $\bar{E}_\gamma \approx 180$ GeV

$340_{-50}^{+70} \pm 20$	56	FRABETTI	98	E687	γ Be, $\bar{E}_\gamma = 220$ GeV
$400_{-120}^{+180} \pm 100$	102	COTEUS	87	SPEC	$nA \simeq 600$ GeV
$480_{-150}^{+210+200} - 100$	53	BIAGI	85C	SPEC	Σ^- Be 135 GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$410_{-80}^{+110} \pm 20$	30	FRABETTI	93B	E687	See FRABETTI 98
200_{-60}^{+110}	6	BARLAG	89C	ACCM	π^- (K^-) Cu 230 GeV

¹ AAIJ 19AG reports $[\Xi_C^+ \text{ MEAN LIFE}] / [D^\pm \text{ MEAN LIFE}] = 0.4392 \pm 0.0034 \pm 0.0028$ which we multiply by our best value $D^\pm \text{ MEAN LIFE} = (1.033 \pm 0.005) \times 10^{-12}$ s. Our first error is their experiment's error and our second error is the systematic error from using our best value.

Ξ_C^+ DECAY MODES

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 $\Xi_C^+ \rightarrow \Sigma^+ \bar{K}^*(892)^0$ seen in $\Xi_C^+ \rightarrow \Sigma^+ K^- \pi^+$ has been multiplied up to include $\bar{K}^*(892)^0 \rightarrow \bar{K}^0 \pi^0$ decays.

Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
Cabibbo-favored ($S = -2$) decays		
Γ_1 $p2K_S^0$	$(2.5 \pm 1.3) \times 10^{-3}$	
Γ_2 $\Lambda \bar{K}^0 \pi^+$	—	
Γ_3 $\Sigma(1385)^+ \bar{K}^0$	[a] $(2.9 \pm 2.0) \%$	
Γ_4 $\Lambda K^- 2\pi^+$	$(9 \pm 4) \times 10^{-3}$	
Γ_5 $\Lambda \bar{K}^*(892)^0 \pi^+$	[a] $< 5 \times 10^{-3}$	CL=90%
Γ_6 $\Sigma(1385)^+ K^- \pi^+$	[a] $< 6 \times 10^{-3}$	CL=90%
Γ_7 $\Sigma^+ K^- \pi^+$	$(2.7 \pm 1.2) \%$	
Γ_8 $\Sigma^+ \bar{K}^*(892)^0$	[a] $(2.3 \pm 1.1) \%$	
Γ_9 $\Sigma^0 K^- 2\pi^+$	$(8 \pm 5) \times 10^{-3}$	
Γ_{10} $\Xi^0 \pi^+$	$(1.6 \pm 0.8) \%$	
Γ_{11} $\Xi^- 2\pi^+$	$(2.9 \pm 1.3) \%$	
Γ_{12} $\Xi(1530)^0 \pi^+$	[a] $< 2.9 \times 10^{-3}$	CL=90%
Γ_{13} $\Xi(1620)^0 \pi^+$	seen	
Γ_{14} $\Xi(1690)^0 \pi^+$	seen	
Γ_{15} $\Xi^0 \pi^+ \pi^0$	$(6.7 \pm 3.5) \%$	
Γ_{16} $\Xi^0 \pi^- 2\pi^+$	$(5.0 \pm 2.6) \%$	
Γ_{17} $\Xi^0 e^+ \nu_e$	$(7 \pm 4) \%$	
Γ_{18} $\Omega^- K^+ \pi^+$	$(2.0 \pm 1.5) \times 10^{-3}$	

Cabibbo-suppressed decays

Γ_{19}	$\rho K^- \pi^+$	$(6.2 \pm 3.0) \times 10^{-3}$	$S=1.5$
Γ_{20}	$\rho \bar{K}^*(892)^0$	[a] $(3.3 \pm 1.7) \times 10^{-3}$	
Γ_{21}	$\Sigma^+ \pi^+ \pi^-$	$(1.4 \pm 0.8) \%$	
Γ_{22}	$\Sigma^- 2\pi^+$	$(5.1 \pm 3.4) \times 10^{-3}$	
Γ_{23}	$\Sigma^+ K^+ K^-$	$(4.3 \pm 2.5) \times 10^{-3}$	
Γ_{24}	$\Sigma^+ \phi$	[a] $< 3.2 \times 10^{-3}$	CL=90%
Γ_{25}	$\Xi(1690)^0 K^+, \Xi^0 \rightarrow \Sigma^+ K^-$	$< 1.3 \times 10^{-3}$	CL=90%
Γ_{26}	$\rho \phi(1020)$	$(1.2 \pm 0.6) \times 10^{-4}$	

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

 Ξ_c^+ BRANCHING RATIOS**Cabibbo-favored ($S = -2$) decays**

$\Gamma(\rho 2K_S^0)/\Gamma(\Xi^- 2\pi^+)$ Γ_1/Γ_{11}

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$0.087 \pm 0.016 \pm 0.014$	168 ± 27	LESLIAK	05	BELL $e^+ e^-$, $\gamma(4S)$

$\Gamma(\Sigma(1385)^+ \bar{K}^0)/\Gamma(\Xi^- 2\pi^+)$ Γ_3/Γ_{11}

Unseen decay modes of the $\Sigma(1385)^+$ are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$1.00 \pm 0.49 \pm 0.24$	20	LINK	03E	FOCS < 1.72 , 90% CL

$\Gamma(\Lambda K^- 2\pi^+)/\Gamma(\Xi^- 2\pi^+)$ Γ_4/Γ_{11}

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.323 ± 0.033 OUR AVERAGE				
$0.32 \pm 0.03 \pm 0.02$	1177 ± 55	LESLIAK	05	BELL $e^+ e^-$, $\gamma(4S)$
$0.28 \pm 0.06 \pm 0.06$	58	LINK	03E	FOCS γ nucleus, $\bar{E}_\gamma \approx 180$ GeV
$0.58 \pm 0.16 \pm 0.07$	61	BERGFELD	96	CLE2 $e^+ e^- \approx \gamma(4S)$

$\Gamma(\Lambda \bar{K}^*(892)^0 \pi^+)/\Gamma(\Lambda K^- 2\pi^+)$ Γ_5/Γ_4

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

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
< 0.5	90	BERGFELD	96	CLE2 $e^+ e^- \approx \gamma(4S)$

$\Gamma(\Sigma(1385)^+ K^- \pi^+)/\Gamma(\Lambda K^- 2\pi^+)$ Γ_6/Γ_4

Unseen decay modes of the $\Sigma(1385)^+$ are included.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
< 0.7	90	BERGFELD	96	CLE2 $e^+ e^- \approx \gamma(4S)$

$\Gamma(\Sigma^+ K^- \pi^+)/\Gamma(\Xi^- 2\pi^+)$ Γ_7/Γ_{11}

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.94 ± 0.10 OUR AVERAGE				
$0.91 \pm 0.11 \pm 0.04$	251	LINK	03E	FOCS γ nucleus, $\bar{E}_\gamma \approx 180$ GeV
$0.92 \pm 0.20 \pm 0.07$		¹ JUN	00	SELX Σ^- nucleus, 600 GeV
$1.18 \pm 0.26 \pm 0.17$	119	BERGFELD	96	CLE2 $e^+ e^- \approx \gamma(4S)$

¹ This JUN 00 result is redundant with other results given below.

$\Gamma(\Sigma^+ \bar{K}^*(892)^0)/\Gamma(\Xi^- 2\pi^+)$ Γ_8/Γ_{11} Unseen decay modes of the $\bar{K}^*(892)^0$ are included.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.81±0.15 OUR AVERAGE				
0.78±0.16±0.06	119	LINK	03E FOCS	γ nucleus, $\bar{E}_\gamma \approx 180$ GeV
0.92±0.27±0.14	61	BERGFELD	96 CLE2	$e^+e^- \approx \Upsilon(4S)$

 $\Gamma(\Sigma^0 K^- 2\pi^+)/\Gamma(\Lambda K^- 2\pi^+)$ Γ_9/Γ_4

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.84±0.36	47	¹ COTEUS	87 SPEC	$nA \simeq 600$ GeV

¹ See, however, the note on the COTEUS 87 Ξ_c^+ mass measurement. $\Gamma(\Xi^0 \pi^+)/\Gamma(\Xi^- 2\pi^+)$ Γ_{10}/Γ_{11}

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.55±0.13±0.09	39	EDWARDS	96 CLE2	$e^+e^- \approx \Upsilon(4S)$

 $\Gamma(\Xi^- 2\pi^+)/\Gamma_{\text{total}}$ Γ_{11}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
2.86±1.21±0.38	24	¹ LI	19C BELL	$e^+e^- \approx \Upsilon(4S)$

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

seen	131	BERGFELD	96 CLE2	$e^+e^- \approx \Upsilon(4S)$
seen	160	AVERY	95 CLE2	$e^+e^- \approx \Upsilon(4S)$
seen	30	FRABETTI	93B E687	γ Be, $\bar{E}_\gamma = 220$ GeV
seen	30	ALBRECHT	90F ARG	e^+e^- at $\Upsilon(4S)$
seen	23	ALAM	89 CLEO	e^+e^- 10.6 GeV

¹ LI 19C report a significance of 6.8 σ for the observation of this decay mode, observed in Ξ_c^+ from $B^0 \rightarrow \bar{\Lambda}_c^- \Xi_c^+$. $\Gamma(\Xi(1530)^0 \pi^+)/\Gamma(\Xi^- 2\pi^+)$ Γ_{12}/Γ_{11} Unseen decay modes of the $\Xi(1530)^0$ are included.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.1	90	LINK	03E FOCS	γ nucleus, $\bar{E}_\gamma \approx 180$ GeV
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.2	90	BERGFELD	96 CLE2	$e^+e^- \approx \Upsilon(4S)$

 $\Gamma(\Xi(1620)^0 \pi^+)/\Gamma_{\text{total}}$ Γ_{13}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
seen	SUMIHAMA 19	BELL	e^+e^- mostly at $\Upsilon(4S)$

 $\Gamma(\Xi(1690)^0 \pi^+)/\Gamma_{\text{total}}$ Γ_{14}/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
seen	SUMIHAMA 19	BELL	e^+e^- mostly at $\Upsilon(4S)$

 $\Gamma(\Xi^0 \pi^+ \pi^0)/\Gamma(\Xi^- 2\pi^+)$ Γ_{15}/Γ_{11}

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
2.34±0.57±0.37	81	EDWARDS	96 CLE2	$e^+e^- \approx \Upsilon(4S)$

$$\Gamma(\Xi(1530)^0 \pi^+) / \Gamma(\Xi^0 \pi^+ \pi^0) \quad \Gamma_{12} / \Gamma_{15}$$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.3	90	EDWARDS	96	CLE2 $e^+ e^- \approx \gamma(4S)$

$$\Gamma(\Xi^0 \pi^- 2\pi^+) / \Gamma(\Xi^- 2\pi^+) \quad \Gamma_{16} / \Gamma_{11}$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
1.74 ± 0.42 ± 0.27	57	EDWARDS	96	CLE2 $e^+ e^- \approx \gamma(4S)$

$$\Gamma(\Xi^0 e^+ \nu_e) / \Gamma(\Xi^- 2\pi^+) \quad \Gamma_{17} / \Gamma_{11}$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
2.3 ± 0.6^{+0.3}_{-0.6}	41	ALEXANDER	95B	CLE2 $e^+ e^- \approx \gamma(4S)$

$$\Gamma(\Omega^- K^+ \pi^+) / \Gamma(\Xi^- 2\pi^+) \quad \Gamma_{18} / \Gamma_{11}$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.07 ± 0.03 ± 0.03	14	LINK	03E	FOCS < 0.12, 90% CL

$$\Gamma(p K^- \pi^+) / \Gamma_{\text{total}} \quad \Gamma_{19} / \Gamma$$

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
6.2 ± 3.0 OUR AVERAGE	Error	includes scale factor of 1.5.		
11.35 ± 0.02 ± 3.87	1.6M	¹ AAIJ	20AH	LHCB pp at 13 TeV
4.5 ± 2.1 ± 0.7	24	² LI	19C	BELL $e^+ e^- \approx \gamma(4S)$

¹AAIJ 20AH extracts $B(\Xi_c^+ \rightarrow p K^- \pi^+)$ assuming production fraction ratios $f_{\Xi_c^0} / f_{\Lambda_c^+} = (9.7 \pm 0.9 \pm 3.1) \times 10^{-2}$ (from AAJ 19AB plus heavy quark symmetry arguments) as well as $f_{\Xi_c^0} / f_{\Xi_c^+} = 1.00 \pm 0.01$, and uses the input $B(\Lambda_c^+ \rightarrow p K^- \pi^+) = (6.23 \pm 0.33) \times 10^{-2}$. Its correlation with $B(\Xi_c^0 \rightarrow \Lambda_c^+ \pi^-)$, as measured in AAJ 20AH, is 0.414.

²LI 19C report a significance of 4.4σ for the observation of this decay mode, observed in Ξ_c^+ from $\bar{B}^0 \rightarrow \bar{\Lambda}_c^- \Xi_c^+$.

———— Cabibbo-suppressed decays ————

$$\Gamma(p K^- \pi^+) / \Gamma(\Xi^- 2\pi^+) \quad \Gamma_{19} / \Gamma_{11}$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.21 ± 0.04 OUR AVERAGE				
0.194 ± 0.054	47 ± 11	VAZQUEZ-JA..08	SELX	Σ^- nucleus, 600 GeV
0.234 ± 0.047 ± 0.022	202	LINK	01B	FOCS γ nucleus
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.20 ± 0.04 ± 0.02	76	JUN	00	SELX See VAZQUEZ-JAUREGUI 08

$$\Gamma(p \bar{K}^*(892)^0) / \Gamma(p K^- \pi^+) \quad \Gamma_{20} / \Gamma_{19}$$

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

VALUE	DOCUMENT ID	TECN	COMMENT
0.54 ± 0.09 ± 0.05	LINK	01B	FOCS γ nucleus

$$\Gamma(\Sigma^+ \pi^+ \pi^-) / \Gamma(\Xi^- 2\pi^+) \quad \Gamma_{21} / \Gamma_{11}$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.48 ± 0.20	21 ± 8	VAZQUEZ-JA...08	SELX	Σ^- nucleus, 600 GeV

$$\Gamma(\Sigma^- 2\pi^+) / \Gamma(\Xi^- 2\pi^+) \quad \Gamma_{22} / \Gamma_{11}$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.18 ± 0.09	10 ± 4	VAZQUEZ-JA...08	SELX	Σ^- nucleus, 600 GeV

$$\Gamma(\Sigma^+ K^+ K^-) / \Gamma(\Sigma^+ K^- \pi^+) \quad \Gamma_{23} / \Gamma_7$$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.16 ± 0.06 ± 0.01	17	LINK	03E FOCS	γ nucleus, $\bar{E}_\gamma \approx 180$ GeV

$$\Gamma(\Sigma^+ \phi) / \Gamma(\Sigma^+ K^- \pi^+) \quad \Gamma_{24} / \Gamma_7$$
Unseen decay modes of the ϕ are included.

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.12	90	LINK	03E FOCS	γ nucleus, $\bar{E}_\gamma \approx 180$ GeV

$$\Gamma(p\phi(1020)) / \Gamma(pK^- \pi^+) \quad \Gamma_{26} / \Gamma_{19}$$

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
19.8 ± 0.7 ± 0.9 ± 0.2	3.4k	¹ AAIJ	19i LHCb	pp at 8 TeV

¹ The last uncertainty is due to the uncertainty in the $\phi \rightarrow K^+ K^-$ branching fraction.
$$\Gamma(\Xi(1690)^0 K^+ \times B(\Xi(1690)^0 \rightarrow \Sigma^+ K^-)) / \Gamma(\Sigma^+ K^- \pi^+) \quad \Gamma_{25} / \Gamma_7$$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<0.05	90	LINK	03E FOCS	γ nucleus, $\bar{E}_\gamma \approx 180$ GeV

Ξ_c^+ REFERENCES

AAIJ	20AH	PR D102 071101	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	19AB	PR D99 052006	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	19AG	PR D100 032001	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	19I	JHEP 1904 084	R. Aaij <i>et al.</i>	(LHCb Collab.)
LI	19C	PR D100 031101	Y.B. Li <i>et al.</i>	(BELLE Collab.)
SUMIHAMA	19	PRL 122 072501	M. Sumihama <i>et al.</i>	(BELLE Collab.)
AAIJ	14Z	PRL 113 032001	R. Aaij <i>et al.</i>	(LHCb Collab.)
AALTONEN	14B	PR D89 072014	T. Aaltonen <i>et al.</i>	(CDF Collab.)
VAZQUEZ-JA...	08	PL B666 299	E. Vazquez-Jauregui <i>et al.</i>	(SELEX Collab.)
LESIK	05	PL B605 237	T. Lesiak <i>et al.</i>	(BELLE Collab.)
Also		PL B617 198 (erratum)	T. Lesiak <i>et al.</i>	(BELLE Collab.)
LINK	03E	PL B571 139	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)
MAHMOOD	02	PR D65 031102	A.H. Mahmood <i>et al.</i>	(CLEO Collab.)
LINK	01B	PL B512 277	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)
LINK	01D	PL B523 53	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)
JUN	00	PRL 84 1857	S.Y. Jun <i>et al.</i>	(FNAL SELEX Collab.)
FRABETTI	98	PL B427 211	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
BERGFELD	96	PL B365 431	T. Bergfeld <i>et al.</i>	(CLEO Collab.)
EDWARDS	96	PL B373 261	K.W. Edwards <i>et al.</i>	(CLEO Collab.)
ALEXANDER	95B	PRL 74 3113	J. Alexander <i>et al.</i>	(CLEO Collab.)
Also		PRL 75 4155 (erratum)	J. Alexander <i>et al.</i>	(CLEO Collab.)
AVERY	95	PRL 75 4364	P. Avery <i>et al.</i>	(CLEO Collab.)
FRABETTI	93B	PRL 70 1381	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
ALBRECHT	90F	PL B247 121	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
ALAM	89	PL B226 401	M.S. Alam <i>et al.</i>	(CLEO Collab.)
BARLAG	89C	PL B233 522	S. Barlag <i>et al.</i>	(ACCMOR Collab.)
COTEUS	87	PRL 59 1530	P. Coteus <i>et al.</i>	(FNAL E400 Collab.)
BIAGI	85C	PL 150B 230	S.F. Biagi <i>et al.</i>	(CERN WA62 Collab.)
BIAGI	83	PL 122B 455	S.F. Biagi <i>et al.</i>	(CERN WA62 Collab.)