



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

The parity has not actually been measured, but + is of course expected.

We have omitted some results that have been superseded by later experiments. See our earlier editions.

### $\Xi^-$ MASS

The fit uses the  $\Xi^-$ ,  $\Xi^+$ , and  $\Xi^0$  masses and the  $\Xi^- - \Xi^+$  mass difference. It assumes that the  $\Xi^-$  and  $\Xi^+$  masses are the same.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>1321.71 ± 0.07 OUR FIT</b>				
<b>1321.70 ± 0.08 ± 0.05</b>	2478 ± 68	ABDALLAH	06E	DLPH from Z decays
• • •				We do not use the following data for averages, fits, limits, etc. • • •
1321.46 ± 0.34	632	DIBIANCA	75	DBC 4.9 GeV/c $K^- d$
1321.12 ± 0.41	268	WILQUET	72	HLBC
1321.87 ± 0.51	195	<sup>1</sup> GOLDWASSER	70	HBC 5.5 GeV/c $K^- p$
1321.67 ± 0.52	6	CHIEN	66	HBC 6.9 GeV/c $\bar{p} p$
1321.4 ± 1.1	299	LONDON	66	HBC
1321.3 ± 0.4	149	PJERROU	65B	HBC
1321.1 ± 0.3	241	<sup>2</sup> BADIER	64	HBC
1321.4 ± 0.4	517	<sup>2</sup> JAUNEAU	63D	FBC
1321.1 ± 0.65	62	<sup>2</sup> SCHNEIDER	63	HBC

<sup>1</sup> GOLDWASSER 70 uses  $m_\Lambda = 1115.58$  MeV.

<sup>2</sup> These masses have been increased 0.09 MeV because the  $\Lambda$  mass increased.

### $\Xi^+$ MASS

The fit uses the  $\Xi^-$ ,  $\Xi^+$ , and  $\Xi^0$  masses and the  $\Xi^- - \Xi^+$  mass difference. It assumes that the  $\Xi^-$  and  $\Xi^+$  masses are the same.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>1321.71 ± 0.07 OUR FIT</b>				
<b>1321.73 ± 0.08 ± 0.05</b>	2256 ± 63	ABDALLAH	06E	DLPH from Z decays
• • •				We do not use the following data for averages, fits, limits, etc. • • •
1321.6 ± 0.8	35	VOTRUBA	72	HBC 10 GeV/c $K^+ p$
1321.2 ± 0.4	34	STONE	70	HBC
1320.69 ± 0.93	5	CHIEN	66	HBC 6.9 GeV/c $\bar{p} p$

$$(m_{\Xi^-} - m_{\Xi^+}) / m_{\Xi^-}$$

A test of *CPT* invariance.

VALUE	DOCUMENT ID	TECN	COMMENT
<b>(-2.5 ± 8.7) × 10<sup>-5</sup></b>	ABDALLAH	06E	DLPH from Z decays

$\Xi^-$  MEAN LIFE

Measurements with an error  $> 0.2 \times 10^{-10}$  s or with systematic errors not included have been omitted.

VALUE ( $10^{-10}$ s)	EVTS	DOCUMENT ID	TECN	COMMENT
<b><math>1.639 \pm 0.015</math></b>	<b>OUR AVERAGE</b>			
$1.65 \pm 0.07 \pm 0.12$	$2478 \pm 68$	ABDALLAH	06E	DLPH from Z decays
$1.652 \pm 0.051$	32k	BOURQUIN	84	SPEC Hyperon beam
$1.665 \pm 0.065$	41k	BOURQUIN	79	SPEC Hyperon beam
$1.609 \pm 0.028$	4286	HEMINGWAY	78	HBC 4.2 GeV/c $K^- p$
$1.67 \pm 0.08$		DIBIANCA	75	DBC 4.9 GeV/c $K^- d$
$1.63 \pm 0.03$	4303	BALTAY	74	HBC 1.75 GeV/c $K^- p$
$1.73 \begin{smallmatrix} +0.08 \\ -0.07 \end{smallmatrix}$	680	MAYEUR	72	HLBC 2.1 GeV/c $K^-$
$1.61 \pm 0.04$	2610	DAUBER	69	HBC
$1.80 \pm 0.16$	299	LONDON	66	HBC
$1.70 \pm 0.12$	246	PJERROU	65B	HBC
$1.69 \pm 0.07$	794	HUBBARD	64	HBC
$1.86 \begin{smallmatrix} +0.15 \\ -0.14 \end{smallmatrix}$	517	JAUNEAU	63D	FBC

 $\Xi^+$  MEAN LIFE

VALUE ( $10^{-10}$ s)	EVTS	DOCUMENT ID	TECN	COMMENT
<b><math>1.70 \pm 0.08 \pm 0.12</math></b>	<b>2256 <math>\pm</math> 63</b>	<b>ABDALLAH</b>	<b>06E</b>	<b>DLPH from Z decays</b>
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
$1.55 \begin{smallmatrix} +0.35 \\ -0.20 \end{smallmatrix}$	35	$^3$ VOTRUBA	72	HBC 10 GeV/c $K^+ p$
$1.6 \pm 0.3$	34	STONE	70	HBC
$1.9 \begin{smallmatrix} +0.7 \\ -0.5 \end{smallmatrix}$	12	$^3$ SHEN	67	HBC
$1.51 \pm 0.55$	5	$^3$ CHIEN	66	HBC 6.9 GeV/c $\bar{p} p$

$^3$ The error is statistical only.

$$(\tau_{\Xi^-} - \tau_{\Xi^+}) / \tau_{\Xi^-}$$

A test of *CPT* invariance.

VALUE	DOCUMENT ID	TECN	COMMENT
<b><math>-0.01 \pm 0.07</math></b>	ABDALLAH	06E	DLPH from Z decays

 $\Xi^-$  MAGNETIC MOMENT

See the "Quark Model" review.

VALUE ( $\mu_N$ )	EVTS	DOCUMENT ID	TECN	COMMENT
<b><math>-0.6507 \pm 0.0025</math></b>	<b>OUR AVERAGE</b>			
$-0.6505 \pm 0.0025$	4.36M	DURYEA	92	SPEC 800 GeV $p$ Be
$-0.661 \pm 0.036 \pm 0.036$	44k	TROST	89	SPEC $\Xi^- \sim 250$ GeV
$-0.69 \pm 0.04$	218k	RAMEIKA	84	SPEC 400 GeV $p$ Be

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

-0.674 ±0.021 ±0.020	122k	HO	90	SPEC	See
					DURYEA 92
-2.1 ±0.8	2436	COOL	74	OSPK	1.8 GeV/c K <sup>-</sup> p
-0.1 ±2.1	2724	BINGHAM	70B	OSPK	1.8 GeV/c K <sup>-</sup> p

### $\Xi^+$ MAGNETIC MOMENT

See the "Quark Model" review.

VALUE ( $\mu_N$ )	EVTs	DOCUMENT ID	TECN	COMMENT
<b>+0.657±0.028±0.020</b>	70k	HO	90	SPEC 800 GeV pBe

$$(\mu_{\Xi^-} + \mu_{\Xi^+}) / |\mu_{\Xi^-}|$$

A test of *CPT* invariance. We calculate this from the  $\Xi^-$  and  $\Xi^+$  magnetic moments above.

VALUE	DOCUMENT ID
<b>+0.01±0.05 OUR EVALUATION</b>	

### $\Xi^-$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )	Confidence level
$\Gamma_1$ $\Lambda\pi^-$	(99.887±0.035) %	
$\Gamma_2$ $\Sigma^-\gamma$	( 1.27 ±0.23 ) × 10 <sup>-4</sup>	
$\Gamma_3$ $\Lambda e^-\bar{\nu}_e$	( 5.63 ±0.31 ) × 10 <sup>-4</sup>	
$\Gamma_4$ $\Lambda\mu^-\bar{\nu}_\mu$	( 3.5 <sup>+3.5</sup> <sub>-2.2</sub> ) × 10 <sup>-4</sup>	
$\Gamma_5$ $\Sigma^0 e^-\bar{\nu}_e$	( 8.7 ±1.7 ) × 10 <sup>-5</sup>	
$\Gamma_6$ $\Sigma^0\mu^-\bar{\nu}_\mu$	< 8 × 10 <sup>-4</sup>	90%
$\Gamma_7$ $\Xi^0 e^-\bar{\nu}_e$	< 2.59 × 10 <sup>-4</sup>	90%

#### $\Delta S = 2$ forbidden (*S2*) modes

$\Gamma_8$ $n\pi^-$	<i>S2</i> < 1.9	× 10 <sup>-5</sup>	90%
$\Gamma_9$ $ne^-\bar{\nu}_e$	<i>S2</i> < 3.2	× 10 <sup>-3</sup>	90%
$\Gamma_{10}$ $n\mu^-\bar{\nu}_\mu$	<i>S2</i> < 1.5	%	90%
$\Gamma_{11}$ $p\pi^-\pi^-$	<i>S2</i> < 4	× 10 <sup>-4</sup>	90%
$\Gamma_{12}$ $p\pi^-e^-\bar{\nu}_e$	<i>S2</i> < 4	× 10 <sup>-4</sup>	90%
$\Gamma_{13}$ $p\pi^-\mu^-\bar{\nu}_\mu$	<i>S2</i> < 4	× 10 <sup>-4</sup>	90%
$\Gamma_{14}$ $p\mu^-\mu^-$	<i>L</i> < 4	× 10 <sup>-8</sup>	90%

**CONSTRAINED FIT INFORMATION**

An overall fit to 4 branching ratios uses 5 measurements and one constraint to determine 5 parameters. The overall fit has a  $\chi^2 = 1.0$  for 1 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.

$x_2$	-6			
$x_3$	-8	0		
$x_4$	-99	0	-1	
$x_5$	-5	0	0	0
	$x_1$	$x_2$	$x_3$	$x_4$

 **$\Xi^-$  BRANCHING RATIOS**

A number of early results have been omitted.

 **$\Gamma(\Sigma^- \gamma) / \Gamma(\Lambda \pi^-)$**  **$\Gamma_2 / \Gamma_1$** 

<u>VALUE (units <math>10^{-4}</math>)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>1.27 \pm 0.24</math> OUR FIT</b>				
<b><math>1.27 \pm 0.23</math> OUR AVERAGE</b>				
$1.22 \pm 0.23 \pm 0.06$	211	<sup>4</sup> DUBBS	94 E761	$\Xi^-$ 375 GeV
$2.27 \pm 1.02$	9	BIAGI	87B SPEC	SPS hyperon beam

<sup>4</sup>DUBBS 94 also finds weak evidence that the asymmetry parameter  $\alpha_\gamma$  is positive ( $\alpha_\gamma = 1.0 \pm 1.3$ ).

 **$\Gamma(\Lambda e^- \bar{\nu}_e) / \Gamma(\Lambda \pi^-)$**  **$\Gamma_3 / \Gamma_1$** 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>0.564 \pm 0.031</math> OUR FIT</b>				
<b><math>0.564 \pm 0.031</math></b>	2857	BOURQUIN	83 SPEC	SPS hyperon beam
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.30 \pm 0.13$	11	THOMPSON	80 ASPK	Hyperon beam

 **$\Gamma(\Lambda \mu^- \bar{\nu}_\mu) / \Gamma(\Lambda \pi^-)$**  **$\Gamma_4 / \Gamma_1$** 

<u>VALUE (units <math>10^{-3}</math>)</u>	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<b><math>0.35^{+0.35}_{-0.22}</math> OUR FIT</b>					
<b><math>0.35 \pm 0.35</math></b>		1	YEH	74 HBC	Effective denom.=2859
• • • We do not use the following data for averages, fits, limits, etc. • • •					
< 2.3	90	0	THOMPSON	80 ASPK	Effective denom.=1017
< 1.3			DAUBER	69 HBC	
< 12			BERGE	66 HBC	

$\Gamma(\Sigma^0 e^- \bar{\nu}_e)/\Gamma(\Lambda\pi^-)$   $\Gamma_5/\Gamma_1$ 

VALUE (units $10^{-3}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
<b>0.087±0.017 OUR FIT</b>				
<b>0.087±0.017</b>	154	BOURQUIN 83	SPEC	SPS hyperon beam

 $[\Gamma(\Lambda e^- \bar{\nu}_e) + \Gamma(\Sigma^0 e^- \bar{\nu}_e)]/\Gamma(\Lambda\pi^-)$   $(\Gamma_3+\Gamma_5)/\Gamma_1$ 

VALUE (units $10^{-3}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.651±0.031	3011	<sup>5</sup> BOURQUIN 83	SPEC	SPS hyperon beam
0.68 ±0.22	17	<sup>6</sup> DUCLOS 71	OSPK	

<sup>5</sup>See the separate BOURQUIN 83 values for  $\Gamma(\Lambda e^- \bar{\nu}_e)/\Gamma(\Lambda\pi^-)$  and  $\Gamma(\Sigma^0 e^- \bar{\nu}_e)/\Gamma(\Lambda\pi^-)$  above.

<sup>6</sup>DUCLOS 71 cannot distinguish  $\Sigma^0$ 's from  $\Lambda$ 's. The Cabibbo theory predicts the  $\Sigma^0$  rate is about a factor 6 smaller than the  $\Lambda$  rate.

 $\Gamma(\Sigma^0 \mu^- \bar{\nu}_\mu)/\Gamma(\Lambda\pi^-)$   $\Gamma_6/\Gamma_1$ 

VALUE (units $10^{-3}$ )	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<b>&lt;0.76</b>	90	0	YEH 74	HBC	Effective denom.=3026
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<5			BERGE 66	HBC	

 $\Gamma(\Xi^0 e^- \bar{\nu}_e)/\Gamma_{\text{total}}$   $\Gamma_7/\Gamma$ 

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<b>&lt;2.59 × 10<sup>-4</sup></b>	90	ABLIKIM 21AH	BES3	$J/\psi \rightarrow \Xi \bar{\Xi}$

 $\Gamma(\Xi^0 e^- \bar{\nu}_e)/\Gamma(\Lambda\pi^-)$   $\Gamma_7/\Gamma_1$ 

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<2.3 × 10 <sup>-3</sup>	90	YEH 74	HBC	Effective denom.=1000

 $\Gamma(n\pi^-)/\Gamma(\Lambda\pi^-)$   $\Gamma_8/\Gamma_1$ 

$\Delta S=2$ . Forbidden in first-order weak interaction.

VALUE (units $10^{-3}$ )	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<b>&lt;0.019</b>	90		BIAGI 82B	SPEC	SPS hyperon beam
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<3.0	90	0	YEH 74	HBC	Effective denom.=760
<1.1			DAUBER 69	HBC	
<5.0			FERRO-LUZZI 63	HBC	

 $\Gamma(ne^- \bar{\nu}_e)/\Gamma(\Lambda\pi^-)$   $\Gamma_9/\Gamma_1$ 

$\Delta S=2$ . Forbidden in first-order weak interaction.

VALUE (units $10^{-3}$ )	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<b>&lt; 3.2</b>	90	0	YEH 74	HBC	Effective denom.=715
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<10	90		BINGHAM 65	RVUE	

$\Gamma(n\mu^-\bar{\nu}_\mu)/\Gamma(\Lambda\pi^-)$   $\Gamma_{10}/\Gamma_1$

$\Delta S=2$ . Forbidden in first-order weak interaction.

VALUE (units $10^{-3}$ )	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<15.3	90	0	YEH 74	HBC	Effective denom.=150

$\Gamma(\rho\pi^-\pi^-)/\Gamma(\Lambda\pi^-)$   $\Gamma_{11}/\Gamma_1$

$\Delta S=2$ . Forbidden in first-order weak interaction.

VALUE (units $10^{-4}$ )	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<3.7	90	0	YEH 74	HBC	Effective denom.=6200

$\Gamma(\rho\pi^-e^-\bar{\nu}_e)/\Gamma(\Lambda\pi^-)$   $\Gamma_{12}/\Gamma_1$

$\Delta S=2$ . Forbidden in first-order weak interaction.

VALUE (units $10^{-4}$ )	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<3.7	90	0	YEH 74	HBC	Effective denom.=6200

$\Gamma(\rho\pi^-\mu^-\bar{\nu}_\mu)/\Gamma(\Lambda\pi^-)$   $\Gamma_{13}/\Gamma_1$

$\Delta S=2$ . Forbidden in first-order weak interaction.

VALUE (units $10^{-4}$ )	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<3.7	90	0	YEH 74	HBC	Effective denom.=6200

$\Gamma(\rho\mu^-\mu^-)/\Gamma(\Lambda\pi^-)$   $\Gamma_{14}/\Gamma_1$

A  $\Delta L=2$  decay, forbidden by total lepton number conservation.

VALUE (units $10^{-8}$ )	CL%	DOCUMENT ID	TECN	COMMENT
<4.0	90	RAJARAM 05	HYCP	$p$ Cu, 800 GeV

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

<3.7 $\times 10^4$	90	<sup>7</sup> LITTENBERG 92B	HBC	Uses YEH 74 data
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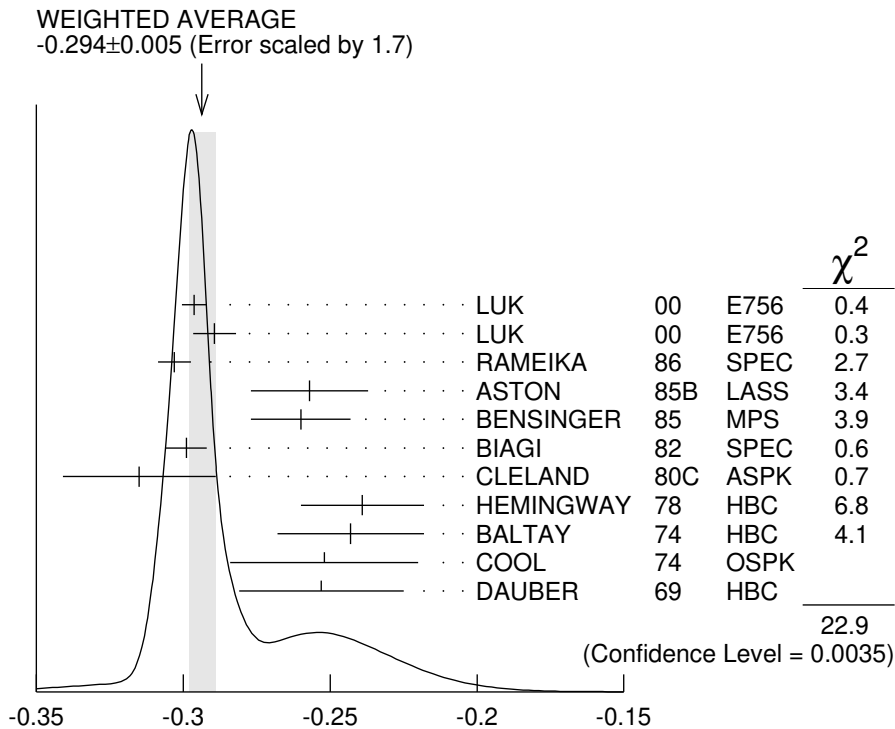
<sup>7</sup>This LITTENBERG 92B limit and the identical YEH 74 limits for the preceding three modes all result from nonobservance of any 3-prong decays of the  $\Xi^-$ . One could as well apply the limit to the *sum* of the four modes.

### $\Xi^-$ DECAY PARAMETERS

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

$\alpha(\Xi^-)\alpha_-(\Lambda)$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>-0.294 ± 0.005</b>	<b>OUR AVERAGE</b>	Error includes scale factor of 1.7. See the ideogram below.		
-0.2963 ± 0.0042	189k	LUK	00	E756 $p$ Be, 800 GeV
-0.2894 ± 0.0073	63k	<sup>8</sup> LUK	00	E756 $p$ Be, 800 GeV
-0.303 ± 0.004 ± 0.004	192k	RAMEIKA	86	SPEC 400 GeV $p$ Be
-0.257 ± 0.020	11k	ASTON	85B	LASS 11 GeV/c $K^- p$
-0.260 ± 0.017	21k	BENSINGER	85	MPS 5 GeV/c $K^- p$
-0.299 ± 0.007	150k	BIAGI	82	SPEC SPS hyperon beam
-0.315 ± 0.026	9046	CLELAND	80C	ASPK BNL hyperon beam
-0.239 ± 0.021	6599	HEMINGWAY	78	HBC 4.2 GeV/c $K^- p$
-0.243 ± 0.025	4303	BALTAY	74	HBC 1.75 GeV/c $K^- p$
-0.252 ± 0.032	2436	COOL	74	OSPK 1.8 GeV/c $K^- p$
-0.253 ± 0.028	2781	DAUBER	69	HBC



<sup>8</sup> This LUK 00 value is for  $\alpha(\Xi^+) \alpha_+(\bar{\Lambda})$ . We assume  $CP$  conservation here by including it in the average for  $\alpha(\Xi^-) \alpha_-(\Lambda)$ . But see the second data block below for the  $CP$  test.  $\alpha(\Xi^-) \alpha_-(\Lambda)$

### $\alpha$ FOR $\Xi^- \rightarrow \Lambda \pi^-$

The above average,  $\alpha(\Xi^-) \alpha_-(\Lambda) = -0.294 \pm 0.005$ , divided by our current average  $\alpha_-(\Lambda) = 0.732 \pm 0.014$ , gives the following value for  $\alpha(\Xi^-)$ :

VALUE	DOCUMENT ID
<b><math>-0.401 \pm 0.010</math> OUR EVALUATION</b>	

$$\frac{[\alpha(\Xi^-)\alpha_-(\Lambda) - \alpha(\Xi^+)\alpha_+(\bar{\Lambda})]}{[\alpha(\Xi^-)\alpha_-(\Lambda) + \alpha(\Xi^+)\alpha_+(\bar{\Lambda})]}$$

This is zero if  $CP$  is conserved. The  $\alpha$ 's are the decay-asymmetry parameters for  $\Xi^- \rightarrow \Lambda \pi^-$  and  $\Lambda \rightarrow p \pi^-$  and for  $\Xi^+ \rightarrow \bar{\Lambda} \pi^+$  and  $\bar{\Lambda} \rightarrow \bar{p} \pi^+$ .

VALUE (units $10^{-4}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
<b><math>0.0 \pm 5.1 \pm 4.4</math></b>	158M	HOLMSTROM 04	HYCP	$p$ Cu, 800 GeV
••• We do not use the following data for averages, fits, limits, etc. •••				
+120 $\pm$ 140	252k	LUK	00 E756	$p$ Be, 800 GeV

### $\phi$ ANGLE FOR $\Xi^- \rightarrow \Lambda \pi^-$

$$(\tan \phi = \beta/\gamma)$$

VALUE ( $^\circ$ )	EVTS	DOCUMENT ID	TECN	COMMENT
<b><math>-2.1 \pm 0.8</math> OUR AVERAGE</b>				
$-2.39 \pm 0.64 \pm 0.64$	144M	<sup>9</sup> HUANG 04	HYCP	$p$ Cu, 800 GeV
$-1.61 \pm 2.66 \pm 0.37$	1.35M	<sup>10</sup> CHAKRAVO... 03	E756	$p$ Be, 800 GeV
5 $\pm$ 10	11k	ASTON 85B	LASS	$K^- p$
14.7 $\pm$ 16.0	21k	<sup>11</sup> BENSINGER 85	MPS	5 GeV/c $K^- p$
11 $\pm$ 9	4303	BALTAY 74	HBC	1.75 GeV/c $K^- p$
5 $\pm$ 16	2436	COOL 74	OSPK	1.8 GeV/c $K^- p$

-14	$\pm 11$	2781	DAUBER	69	HBC	Uses $\alpha_\Lambda = 0.647 \pm 0.020$
0	$\pm 12$	1004	12 BERGE	66	HBC	
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●						
-26	$\pm 30$	2724	BINGHAM	70B	OSPK	
0	$\pm 20.4$	364	12 LONDON	66	HBC	Using $\alpha_\Lambda = 0.62$
54	$\pm 30$	356	12 CARMONY	64B	HBC	

<sup>9</sup> From this result and  $\alpha_\Xi$ , HUANG 04 gets  $\beta_\Xi = -0.037 \pm 0.011 \pm 0.010$  and  $\gamma_\Xi = 0.888 \pm 0.0004 \pm 0.006$ . And the strong p-s phase difference for  $\Lambda\pi^-$  scattering is  $(4.6 \pm 1.4 \pm 1.2)^\circ$ .

<sup>10</sup> From this result and  $\alpha_\Xi$ , CHAKRAVORTY 03 obtains  $\beta_\Xi = -0.025 \pm 0.042 \pm 0.006$  and  $\gamma_\Xi = 0.889 \pm 0.001 \pm 0.007$ . And the strong p-s phase difference for  $\Lambda\pi^-$  scattering is  $(3.17 \pm 5.28 \pm 0.73)^\circ$ .

<sup>11</sup> BENSINGER 85 used  $\alpha_\Lambda = 0.642 \pm 0.013$ .

<sup>12</sup> The errors have been multiplied by 1.2 due to approximations used for the  $\Xi$  polarization; see DAUBER 69 for a discussion.

### $g_A / g_V$ FOR $\Xi^- \rightarrow \Lambda e^- \bar{\nu}_e$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
<b>-0.25 ± 0.05</b>	1992	<sup>13</sup> BOURQUIN 83	SPEC	SPS hyperon beam

<sup>13</sup> BOURQUIN 83 assumes that  $g_2 = 0$ . Also, the sign has been changed to agree with our conventions, given in the "Note on Baryon Decay Parameters" in the neutron Listings.

## $\Xi^-$ REFERENCES

We have omitted some papers that have been superseded by later experiments. See our earlier editions.

ABLIKIM	21AH	PR D104 072007	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABDALLAH	06E	PL B639 179	J. Abdallah <i>et al.</i>	(DELPHI Collab.)
RAJARAM	05	PRL 94 181801	D. Rajaram <i>et al.</i>	(FNAL HyperCP Collab.)
HOLMSTROM	04	PRL 93 262001	T. Holmstrom <i>et al.</i>	(FNAL HyperCP Collab.)
HUANG	04	PRL 93 011802	M. Huang <i>et al.</i>	(FNAL HyperCP Collab.)
CHAKRAVO...	03	PRL 91 031601	A. Chakravorty <i>et al.</i>	(FNAL E756 Collab.)
LUK	00	PRL 85 4860	K.B. Luk <i>et al.</i>	(FNAL E756 Collab.)
DUBBS	94	PRL 72 808	T. Dubbs <i>et al.</i>	(FNAL E761 Collab.)
DURYEA	92	PRL 68 768	J. Duryea <i>et al.</i>	(MINN, FNAL, MICH, RUTG)
LITTENBERG	92B	PR D46 892	L.S. Littenberg, R.E. Shrock	(BNL, STON)
HO	90	PRL 65 1713	P.M. Ho <i>et al.</i>	(MICH, FNAL, MINN, RUTG)
Also		PR D44 3402	P.M. Ho <i>et al.</i>	(MICH, FNAL, MINN, RUTG)
TROST	89	PR D40 1703	L.H. Trost <i>et al.</i>	(FNAL-715 Collab.)
BIAGI	87B	ZPHY C35 143	S.F. Biagi <i>et al.</i>	(BRIS, CERN, GEVA+)
RAMEIKA	86	PR D33 3172	R. Rameika <i>et al.</i>	(RUTG, MICH, WISC+)
ASTON	85B	PR D32 2270	D. Aston <i>et al.</i>	(SLAC, CARL, CNRC, CINC)
BENSINGER	85	NP B252 561	J.R. Bensinger <i>et al.</i>	(CHIC, ELMT, FNAL+)
BOURQUIN	84	NP B241 1	M.H. Bourquin <i>et al.</i>	(BRIS, GEVA, HEIDP+)
RAMEIKA	84	PRL 52 581	R. Rameika <i>et al.</i>	(RUTG, MICH, WISC+)
BOURQUIN	83	ZPHY C21 1	M.H. Bourquin <i>et al.</i>	(BRIS, GEVA, HEIDP+)
BIAGI	82	PL 112B 265	S.F. Biagi <i>et al.</i>	(BRIS, CAVE, GEVA+)
BIAGI	82B	PL 112B 277	S.F. Biagi <i>et al.</i>	(LOQM, GEVA, RL+)
CLELAND	80C	PR D21 12	W.E. Cleland <i>et al.</i>	(PITT, BNL)
THOMPSON	80	PR D21 25	J.A. Thompson <i>et al.</i>	(PITT, BNL)
BOURQUIN	79	PL 87B 297	M.H. Bourquin <i>et al.</i>	(BRIS, GEVA, HEIDP+)
HEMINGWAY	78	NP B142 205	R.J. Hemingway <i>et al.</i>	(CERN, ZEEM, NIJM+)
DIBIANCA	75	NP B98 137	F.A. Dibianca, R.J. Endorf	(CMU)
BALTAY	74	PR D9 49	C. Baltay <i>et al.</i>	(COLU, BING) J
COOL	74	PR D10 792	R.L. Cool <i>et al.</i>	(BNL)
Also		PRL 29 1630	R.L. Cool <i>et al.</i>	(BNL)
YEH	74	PR D10 3545	N. Yeh <i>et al.</i>	(BING, COLU)



MAYEUR	72	NP B47 333	C. Mayeur <i>et al.</i>	(BRUX, CERN, TUFTS, LOUC)
VOTRUBA	72	NP B45 77	M.F. Votruba, A. Safder, T.M. Ratcliffe	(BIRM+)
WILQUET	72	PL 42B 372	G. Wilquet <i>et al.</i>	(BRUX, CERN, TUFTS+)
DUCLOS	71	NP B32 493	J. Duclos <i>et al.</i>	(CERN)
BINGHAM	70B	PR D1 3010	G.M. Bingham <i>et al.</i>	(UCSD, WASH)
GOLDWASSER	70	PR D1 1960	E.L. Goldwasser, P.F. Schultz	(ILL)
STONE	70	PL 32B 515	S.L. Stone <i>et al.</i>	(ROCH)
DAUBER	69	PR 179 1262	P.M. Dauber <i>et al.</i>	(LRL) J
SHEN	67	PL 25B 443	B.C. Shen, A. Firestone, G. Goldhaber	(UCB+)
BERGE	66	PR 147 945	J.P. Berge <i>et al.</i>	(LRL)
CHIEN	66	PR 152 1171	C.Y. Chien <i>et al.</i>	(YALE, BNL)
LONDON	66	PR 143 1034	G.W. London <i>et al.</i>	(BNL, SYRA)
BINGHAM	65	PRSL 285 202	H.H. Bingham	(CERN)
PJERROU	65B	PRL 14 275	G.M. Pjerrou <i>et al.</i>	(UCLA)
Also		Thesis	G.M. Pjerrou	(UCLA)
BADIER	64	Dubna Conf. 1 593	J. Badier <i>et al.</i>	(EPOL, SAACL, ZEEM)
CARMONY	64B	PRL 12 482	D.D. Carmony <i>et al.</i>	(UCLA) J
HUBBARD	64	PR 135 B183	J.R. Hubbard <i>et al.</i>	(LRL)
FERRO-LUZZI	63	PR 130 1568	M. Ferro-Luzzi <i>et al.</i>	(LRL)
JAUNEAU	63D	Siena Conf. 4	L. Jauneau <i>et al.</i>	(EPOL, CERN, LOUC+)
Also		PL 5 261	L. Jauneau <i>et al.</i>	(EPOL, CERN, LOUC+)
SCHNEIDER	63	PL 4 360	J. Schneider	(CERN)

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