Ξ^-

$I(J^P) = \frac{1}{2}(\frac{1}{2}^+)$ 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We have omitted some results that have been superseded by later experiments.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.

Ξ^- MASS

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

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1321.71±0.07 OUR FIT					
1321.70±0.08±0.05	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	[1] GOLDWASSER	70	HBC	5.5 GeV/c $K^- p$
1321.67±0.52	6	CHIEN	66	HBC	6.9 GeV/c $\overline{p}p$
1321.4 ±1.1	299	LONDON	66	HBC	
1321.3 ±0.4	149	PJERROU	65B	HBC	
1321.1 ±0.3	241	[2] BADIER	64	HBC	
1321.4 ±0.4	517	[2] JAUNEAU	63D	FBC	
1321.1 ±0.65	62	[2] SCHNEIDER	63	HBC	

[1] GOLDWASSER 70 uses m_Λ = 1115.58 MeV.

[2] These masses have been increased 0.09 MeV because the Λ mass increased.

$\overline{\Xi}^+$ MASS

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

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
1321.71±0.07 OUR FIT					
1321.73±0.08±0.05	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 $\overline{p}p$

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

A test of CPT invariance.

VALUE	DOCUMENT ID		TECN	COMMENT
$(-2.5\pm8.7) \times 10^{-5}$	ABDALLAH	06E	DLPH	from Z decays

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

$\overline{\Xi}^+$ MEAN LIFE

VALUE (10^{-10} s)	EVTS	DOCUMENT ID		TECN	COMMENT
1.70±0.08±0.12	2256 ± 63	ABDALLAH	06E	DLPH	from Z decays
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.55 $^{+0.35}_{-0.20}$	35	[1] VOTRUBA	72	HBC	10 GeV/c $K^+ p$
1.6 ±0.3	34	STONE	70	HBC	
1.9 $^{+0.7}_{-0.5}$	12	[1] SHEN	67	HBC	
1.51±0.55	5	[1] CHIEN	66	HBC	6.9 GeV/c $\overline{p} p$

[1] The error is statistical only.

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

A test of CPT invariance.

VALUE	DOCUMENT ID		TECN	COMMENT
−0.01±0.07	ABDALLAH	06E	DLPH	from Z decays

Ξ^- MAGNETIC MOMENT

See the "Quark Model" review.

VALUE (μ_N)	EVTS	DOCUMENT ID		TECN	COMMENT
−0.6507±0.0025 OUR AVERAGE					
−0.6505±0.0025	4.36M	DURYEA	92	SPEC	800 GeV p Be
−0.661 ±0.036 ±0.036	44k	TROST	89	SPEC	Ξ^- ∼ 250 GeV
−0.69 ±0.04	218k	RAMEIKA	84	SPEC	400 GeV pBe

• • • 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 $K^- p$
-0.1	±2.1		2724	BINGHAM 70B	OSPK	1.8 GeV/c $K^- p$

$\overline{\Xi}^+$ MAGNETIC MOMENT

See the "Quark Model" review.

VALUE (μ_N)	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
+0.657±0.028±0.020	70k	HO 90	SPEC	800 GeV pBe

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

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

VALUE	*DOCUMENT ID*
+0.01±0.05 OUR EVALUATION	

Ξ^- DECAY MODES

	Mode		Fraction (Γ_i/Γ)	Confidence level
Γ_1	$\Lambda\pi^-$		(99.887±0.035) %	
Γ_2	$\Sigma^-\gamma$		(1.27 ±0.23) $\times 10^{-4}$	
Γ_3	$\Lambda e^-\overline{\nu}_e$		(5.63 ±0.31) $\times 10^{-4}$	
Γ_4	$\Lambda\mu^-\overline{\nu}_\mu$		(3.5 $^{+3.5}_{-2.2}$) $\times 10^{-4}$	
Γ_5	$\Sigma^0 e^-\overline{\nu}_e$		(8.7 ±1.7) $\times 10^{-5}$	
Γ_6	$\Sigma^0\mu^-\overline{\nu}_\mu$		< 8 $\times 10^{-4}$	90%
Γ_7	$\Xi^0 e^-\overline{\nu}_e$		< 2.59 $\times 10^{-4}$	90%
	$\Delta S = 2$ forbidden (*S2*) modes			
Γ_8	$n\pi^-$	*S2*	< 1.9 $\times 10^{-5}$	90%
Γ_9	$n e^-\overline{\nu}_e$	*S2*	< 3.2 $\times 10^{-3}$	90%
Γ_{10}	$n\mu^-\overline{\nu}_\mu$	*S2*	< 1.5 %	90%
Γ_{11}	$p\pi^-\pi^-$	*S2*	< 4 $\times 10^{-4}$	90%
Γ_{12}	$p\pi^- e^-\overline{\nu}_e$	*S2*	< 4 $\times 10^{-4}$	90%
Γ_{13}	$p\pi^-\mu^-\overline{\nu}_\mu$	*S2*	< 4 $\times 10^{-4}$	90%
Γ_{14}	$p\mu^-\mu^-$	*L*	< 4 $\times 10^{-8}$	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 $\left\langle\delta x_i \delta x_j\right\rangle/(\delta x_i \cdot \delta x_j)$, 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

Ξ^- BRANCHING RATIOS

A number of early results have been omitted.

$\Gamma(\Sigma^-\gamma)/\Gamma(\Lambda\pi^-)$ — Γ_2/Γ_1

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.27±0.24 OUR FIT					
1.27±0.23 OUR AVERAGE					
1.22±0.23±0.06	211	[1] DUBBS	94	E761	Ξ^- 375 GeV
2.27±1.02	9	BIAGI	87B	SPEC	SPS hyperon beam

[1] DUBBS 94 also finds weak evidence that the asymmetry parameter α_γ is positive ($\alpha_\gamma = 1.0 \pm 1.3$).

$\Gamma(\Lambda e^-\overline{\nu}_e)/\Gamma(\Lambda\pi^-)$ — Γ_3/Γ_1

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

$\Gamma(\Lambda\mu^-\overline{\nu}_\mu)/\Gamma(\Lambda\pi^-)$ — Γ_4/Γ_1

VALUE (units 10^{-3})	*CL%*	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$0.35^{+0.35}_{-0.22}$ OUR FIT						
0.35±0.35		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	

$\Gamma(\Sigma^0 e^- \overline{\nu}_e)/\Gamma(\Lambda\pi^-)$ — Γ_5/Γ_1

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

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

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	[1] BOURQUIN	83	SPEC	SPS hyperon beam
0.68 ±0.22	17	[2] DUCLOS	71	OSPK	

[1] See the separate BOURQUIN 83 values for $\Gamma(\Lambda e^- \overline{\nu}_e)/\Gamma(\Lambda\pi^-)$ and $\Gamma(\Sigma^0 e^- \overline{\nu}_e)/\Gamma(\Lambda\pi^-)$ above.

[2] DUCLOS 71 cannot distinguish Σ^0's from Λ's. The Cabibbo theory predicts the Σ^0 rate is about a factor 6 smaller than the Λ rate.

$\Gamma(\Sigma^0 \mu^- \overline{\nu}_\mu)/\Gamma(\Lambda\pi^-)$ — Γ_6/Γ_1

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

$\Gamma(\Xi^0 e^- \overline{\nu}_e)/\Gamma_{\text{total}}$ — Γ_7/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<2.59 \times 10^{-4}$	90	ABLIKIM	21AH	BES3	$J/\psi \rightarrow \Xi\overline{\Xi}$

$\Gamma(\Xi^0 e^- \overline{\nu}_e)/\Gamma(\Lambda\pi^-)$ — Γ_7/Γ_1

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<2.3 \times 10^{-3}$	90	YEH	74	HBC	Effective denom.=1000

$\Gamma(n\pi^-)/\Gamma(\Lambda\pi^-)$ — Γ_8/Γ_1

ΔS=2. Forbidden in first-order weak interaction.

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<0.019	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	

$\Gamma(n e^- \overline{\nu}_e)/\Gamma(\Lambda\pi^-)$ — Γ_9/Γ_1

ΔS=2. Forbidden in first-order weak interaction.

VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
< 3.2	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	

$\Gamma(n\mu^-\overline{\nu}_\mu)/\Gamma(\Lambda\pi^-)$ — Γ_{10}/Γ_1

ΔS=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

$\Gamma(p\pi^-\pi^-)/\Gamma(\Lambda\pi^-)$ — Γ_{11}/Γ_1

ΔS=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

$\Gamma(p\pi^-e^-\overline{\nu}_e)/\Gamma(\Lambda\pi^-)$ — Γ_{12}/Γ_1

ΔS=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

$\Gamma(p\pi^-\mu^-\overline{\nu}_\mu)/\Gamma(\Lambda\pi^-)$ — Γ_{13}/Γ_1

ΔS=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

$\Gamma(p\mu^-\mu^-)/\Gamma(\Lambda\pi^-)$ — Γ_{14}/Γ_1

A ΔL=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. • • •					
$<3.7\times10^4$	90	[1] LITTENBERG	92B	HBC	Uses YEH 74 data

[1] 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 Ξ^-. One could as well apply the limit to the *sum* of the four modes.

Ξ DECAY PARAMETERS

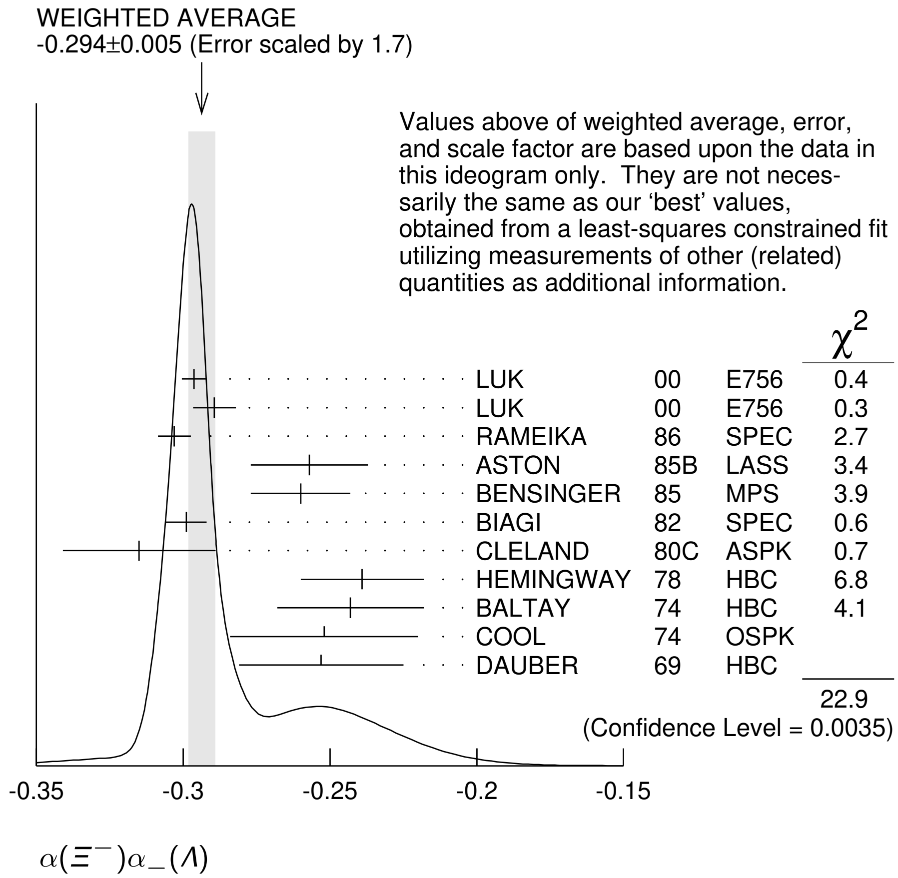
See the "Note on Baryon Decay Parameters" in the neutron Listings.

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

OUR FIT value is obtained from measurements of $\alpha(\Xi^-)$, $\alpha_-(\Lambda)$, and $\alpha(\Xi^-)\alpha_-(\Lambda)$.

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
−0.288 ±0.005 OUR FIT Error includes scale factor of 2.2.					
−0.294 ±0.005 OUR AVERAGE 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	[1] LUK	00	E756	p Be, 800 GeV
−0.303 ±0.004 ±0.004	192k	RAMEIKA	86	SPEC	400 GeV pBe
−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	

[1] This LUK 00 value is for $\alpha(\overline{\Xi}^+)\ \alpha_+(\overline{\Lambda})$. 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.



$\alpha(\Xi^-)$ for $\Xi^- \to \Lambda\pi^-$

OUR FIT value is obtained from measurements of $\alpha(\Xi^-)$, $\alpha_-(\Lambda)$, and $\alpha(\Xi^-)\alpha_-(\Lambda)$.

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
-0.385 ± 0.008 OUR FIT	Error includes scale factor of 2.4.			
$-0.367\pm0.004^{+0.003}_{-0.004}$	144k	ABLIKIM 24AR	BES3	$J/\psi \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$-0.376\pm0.007\pm0.003$	73k	ABLIKIM 22AD	BES3	$J/\psi \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
$-0.344\pm0.025\pm0.007$	5.4k	ABLIKIM 22BE	BES3	$\psi(3686) \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$

$\overline{\alpha}(\overline{\Xi}^+)$ for $\overline{\Xi}^+ \to \overline{\Lambda}\pi^+$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$0.374\pm0.004^{+0.003}_{-0.004}$	123k	ABLIKIM 24AR	BES3	$J/\psi \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.371\pm0.007\pm0.002$	73k	ABLIKIM 22AD	BES3	$J/\psi \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
$0.355\pm0.025\pm0.002$	5.4k	ABLIKIM 22BE	BES3	$\psi(3686) \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$

$(\alpha + \overline{\alpha})$ / $(\alpha - \overline{\alpha})$ for $\Xi^- \to \Lambda\pi^-$, $\overline{\Xi}^+ \to \overline{\Lambda}\pi^+$

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
$-9 \pm 8^{+7}_{-2}$	267k	ABLIKIM	24AR	BES3	$J/\psi \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$6 \pm 13 \pm 6$	73k	ABLIKIM	22AD	BES3	$J/\psi \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
$-15 \pm 51 \pm 10$	5.4k	ABLIKIM	22BE	BES3	$\psi(3686) \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$

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

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

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
$0.0 \pm 5.1 \pm 4.4$	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

ϕ_- ANGLE FOR $\Xi^- \to \Lambda\pi^-$ ($\tan\phi = \beta/\gamma$)

VALUE (°)	EVTS	DOCUMENT ID		TECN	COMMENT
-1.5 ± 0.6 OUR AVERAGE					
$-0.92 \pm 0.69^{+0.23}_{-0.46}$	144k	[1] ABLIKIM	24AR	BES3	$J/\psi \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
$-2.39 \pm 0.64 \pm 0.64$	144M	[2] HUANG	04	HYCP	p Cu, 800 GeV
$-1.61 \pm 2.66 \pm 0.37$	1.35M	[3] CHAKRAVO...	03	E756	p Be, 800 GeV
5 ± 10	11k	ASTON	85B	LASS	$K^- p$
14.7 ± 16.0	21k	[4] BENSINGER	85	MPS	5 GeV/c $K^- p$
11 ± 9	4303	BALTAY	74	HBC	1.75 GeV/c $K^- p$
5 ± 16	2436	COOL	74	OSPK	1.8 GeV/c $K^- p$
-14 ± 11	2781	DAUBER	69	HBC	Uses $\alpha_\Lambda = 0.647 \pm 0.020$
0 ± 12	1004	[5] BERGE	66	HBC	
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.63 \pm 1.09 \pm 0.52$	73k	[6] ABLIKIM	22AD	BES3	$J/\psi \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
$1.32 \pm 4.24 \pm 0.17$	5.4k	[7] ABLIKIM	22BE	BES3	$\psi(3686) \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
-26 ± 30	2724	BINGHAM	70B	OSPK	
0 ± 20.4	364	[5] LONDON	66	HBC	Using α_Λ=0.62
54 ± 30	356	[5] CARMONY	64B	HBC	

[1] Converted from radians to degrees. ABLIKIM 22BE reports a value of $(-1.6 \pm 1.2^{+0.4}_{-0.8}) \times 10^{-2}$ radians.

[2] From this result and α_Ξ, 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 $(4.6 \pm 1.4 \pm 1.2)^\circ$.

[3] From this result and α_Ξ, 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 $(3.17 \pm 5.28 \pm 0.73)^\circ$.

[4] BENSINGER 85 used $\alpha_\Lambda = 0.642 \pm 0.013$.

[5] The errors have been multiplied by 1.2 due to approximations used for the Ξ polarization; see DAUBER 69 for a discussion.

[6] Converted from radians to degrees. ABLIKIM 22AD reports a value of $(1.1 \pm 1.9 \pm 0.9) \times 10^{-2}$ radians.

[7] Converted from radians to degrees. ABLIKIM 22BE reports a value of $(2.3 \pm 7.4 \pm 0.3) \times 10^{-2}$ radians.

ϕ_+ ANGLE FOR $\Xi^+ \to \overline{\Lambda}\pi^+$ $(\tan\phi = \beta/\gamma)$

VALUE (°)	EVTS	DOCUMENT ID	TECN	COMMENT
$\mathbf{0.57 \pm 0.69 ^{+0.17}_{-0.75}}$	123k	[1] ABLIKIM 24AR	BES3	$J/\psi \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$-1.20 \pm 1.09 \pm 0.40$	73k	[2] ABLIKIM 22AD	BES3	$J/\psi \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
$-7.05 \pm 4.18 \pm 0.23$	5.4k	[3] ABLIKIM 22BE	BES3	$\psi(3686) \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$

[1] Converted from radians to degrees. ABLIKIM 22BE reports a value of $(1.0 \pm 1.2^{+0.3}_{-1.3}) \times 10^{-2}$ radians.
[2] Converted from radians to degrees. ABLIKIM 22AD reports a value of $(-2.1 \pm 1.9 \pm 0.7) \times 10^{-2}$ radians.
[3] Converted from radians to degrees. ABLIKIM 22BE reports a value of $(-12.3 \pm 7.3 \pm 0.4) \times 10^{-2}$ radians.

$\Delta\phi_{CP} = (\phi_- + \phi_+)/2$

VALUE (°)	EVTS	DOCUMENT ID	TECN	COMMENT
$\mathbf{-0.17 \pm 0.46 ^{+0.17}_{-0.40}}$	267k	[1] ABLIKIM 24AR	BES3	$J/\psi \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$-0.28 \pm 0.78 \pm 0.17$	73k	[2] ABLIKIM 22AD	BES3	$J/\psi \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$
$-2.86 \pm 2.98 \pm 0.17$	5.4k	[3] ABLIKIM 22BE	BES3	$\psi(3686) \to \Xi\overline{\Xi} \to \Lambda\overline{\Lambda}\pi\pi$

[1] Converted from radians to degrees. ABLIKIM 22BE reports a value of $(-0.3 \pm 0.8^{+0.3}_{-0.7}) \times 10^{-2}$ radians.
[2] Converted from radians to degrees. ABLIKIM 22AD reports a value of $(-0.5 \pm 1.4 \pm 0.3) \times 10^{-2}$ radians.
[3] Converted from radians to degrees. ABLIKIM 22BE reports a value of $(-5.0 \pm 5.2 \pm 0.3) \times 10^{-2}$ radians.

g_A / g_V FOR $\Xi^- \to \Lambda e^- \overline{\nu}_e$

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$\mathbf{-0.25 \pm 0.05}$	1992	[1] BOURQUIN 83	SPEC	SPS hyperon beam

[1] 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.

Ξ^- REFERENCES

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

ABLIKIM	24AR	PRL 132 101801	M. Ablikim et al.	(BESIII Collab.)
ABLIKIM	22AD	NAT 606 64	M. Ablikim et al.	(BESIII Collab.)
ABLIKIM	22BE	PR D106 L091101	M. Ablikim et al.	(BESIII Collab.)
ABLIKIM	21AH	PR D104 072007	M. Ablikim et al.	(BESIII Collab.)
ABDALLAH	06E	PL B639 179	J. Abdallah et al.	(DELPHI Collab.)
RAJARAM	05	PRL 94 181801	D. Rajaram et al.	(FNAL HyperCP Collab.)
HOLMSTROM	04	PRL 93 262001	T. Holmstrom et al.	(FNAL HyperCP Collab.)
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LUK	00	PRL 85 4860	K.B. Luk et al.	(FNAL E756 Collab.)
DUBBS	94	PRL 72 808	T. Dubbs et al.	(FNAL E761 Collab.)
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LITTENBERG	92B	PR D46 892	L.S. Littenberg, R.E. Shrock	(BNL, STON)
HO	90	PRL 65 1713	P.M. Ho et al.	(MICH, FNAL, MINN, RUTG)
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TROST	89	PR D40 1703	L.H. Trost *et al.*	(FNAL-715 Collab.)
BIAGI	87B	ZPHY C35 143	S.F. Biagi *et al.*	(BRIS, CERN, GEVA+)
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CLELAND	80C	PR D21 12	W.E. Cleland *et al.*	(PITT, BNL)
THOMPSON	80	PR D21 25	J.A. Thompson *et al.*	(PITT, BNL)
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HEMINGWAY	78	NP B142 205	R.J. Hemingway *et al.*	(CERN, ZEEM, NIJM+)
DIBIANCA	75	NP B98 137	F.A. Dibianca, R.J. Endorf	(CMU)
BALTAY	74	PR D9 49	C. Baltay *et al.*	(COLU, BING) J
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SHEN	67	PL 25B 443	B.C. Shen, A. Firestone, G. Goldhaber	(UCB+)
BERGE	66	PR 147 945	J.P. Berge *et al.*	(LRL)
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