Ξ_b^0, Ξ_b^-

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

OMITTED FROM SUMMARY TABLE

ABREU 95V observe an excess of same-sign $\Xi^{\mp}\ell^{\mp}$ events in jets, which they interpret as $\Xi_b \rightarrow \Xi^- \ell^- \overline{\nu}_\ell X$. They find that the probability for these events to come from non-b-baryon decays is less than 5×10^{-4} and that Λ_b decays can account for less than 10% of these events.

In the quark model, Ξ_b^0 and Ξ_b^- are an isodoublet (usb, dsb) state; the lowest Ξ_b^0 and Ξ_b^- ought to have $J^P = 1/2^+$. None of I, J, or P have actually been measured.

Ξ_b MEAN LIFE

This is actually a measurement of the average lifetime of b-baryons that decay to a jet containing a same-sign $\Xi^{\mp}\ell^{\mp}$ pair. Presumably the mix is mainly Ξ_b, with some Λ_b.

"OUR EVALUATION" is an average of the data listed below performed by the LEP B Lifetimes Working Group as described in our review "Production and Decay of b-flavored Hadrons" in the $B^{\pm}$ Section of the Listings. The averaging procedure takes into account correlations between the measurements and asymmetric lifetime errors.

VALUE (10^{-12} s)	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
$\mathbf{1.39^{+0.34}_{-0.28}}$ **OUR EVALUATION**				
$1.35^{+0.37}_{-0.28}{}^{+0.15}_{-0.17}$		BUSKULIC	96T ALEP	Excess $\Xi^-\ell^-$, impact parameters
$1.5\ ^{+0.7}_{-0.4} \pm 0.3$	8	ABREU	95V DLPH	Excess $\Xi^-\ell^-$, decay lengths

Ξ_b DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$\Xi^-\ell^-\overline{\nu}_\ell$ anything	seen

Ξ_b BRANCHING RATIOS

$\Gamma(\Xi^-\ell^-\overline{\nu}_\ell\text{anything})/\Gamma_{\text{total}}$ $\qquad\Gamma_1/\Gamma$

VALUE	*DOCUMENT ID*	*TECN*	*COMMENT*
seen	[1] BUSKULIC	96T ALEP	Excess $\Xi^-\ell^-$ over $\Xi^-\ell^+$
seen	ABREU	95V DLPH	Excess $\Xi^-\ell^-$ over $\Xi^-\ell^+$

[1] BUSKULIC 96T measures $[B(b \rightarrow \Xi_b) \times B(\Xi_b \rightarrow \Xi^-\ell^-\overline{\nu}_\ell\text{anything})] = (5.4 \pm 1.1 \pm 0.8) \times 10^{-4}$ per lepton species, averaged over e and μ.

Ξ_b REFERENCES

BUSKULIC	96T	PL B384 449	+De Bonis, Decamp, Ghez+	(ALEPH Collab.)
ABREU	95V	ZPHY C68 541	+Adam, Adye, Agasi+	(DELPHI Collab.)