Ξ_b^0, Ξ_b^-

$I(J^P) = \frac{1}{2}(\frac{1}{2}^+)$ 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 ($u s b$, $d s b$) 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 using rescaled values of the data listed below. The average and rescaling were performed by the Heavy Flavor Averaging Group (HFAG) and are described at http://www.slac.stanford.edu/xorg/hfag/. The averaging/rescaling procedure takes into account correlations between the measurements and asymmetric lifetime errors.

VALUE (10^{-12} s)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{1.42^{+0.28}_{-0.24}}$ **OUR EVALUATION**					
$1.48^{+0.40}_{-0.31} \pm 0.12$		[1] ABDALLAH	05C	DLPH	$e^+e^- \rightarrow Z^0$
$1.35^{+0.37}_{-0.28}{}^{+0.15}_{-0.17}$		[2] BUSKULIC	96T	ALEP	$e^+e^- \rightarrow Z$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1.5\ ^{+0.7}_{-0.4} \pm 0.3$	8	[3] ABREU	95V	DLPH	Repl. by ABDALLAH 05C

[1] Used the decay length of Ξ^- accompanied by a lepton of the same sign.
[2] Excess $\Xi^- \ell^-$, impact parameters.
[3] Excess $\Xi^- \ell^-$, decay lengths.

Ξ_b DECAY MODES

	Mode	Fraction (Γ_i/Γ)	Scale factor
Γ_1	$\Xi^- \ell^- \overline{\nu}_\ell X \times B(\overline{b} \rightarrow \Xi_b)$	$(3.9 \pm 1.2) \times 10^{-4}$	1.4

Ξ_b BRANCHING RATIOS

$\Gamma(\Xi^- \ell^- \overline{\nu}_\ell X \times B(\overline{b} \to \Xi_b))/\Gamma_{total}$ **Γ_1/Γ**

VALUE (units 10^{-4})	*DOCUMENT ID*		*TECN*	*COMMENT*
3.9±1.2 OUR AVERAGE	Error includes scale factor of 1.4.			
3.0±1.0±0.3	ABDALLAH	05C	DLPH	$e^+ e^- \to Z^0$
5.4±1.1±0.8	BUSKULIC	96T	ALEP	Excess $\Xi^- \ell^-$ over $\Xi^- \ell^+$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
5.9±2.1±1.0	ABREU	95V	DLPH	Repl. by ABDALLAH 05C

Ξ_b REFERENCES

ABDALLAH	05C	EPJ C44 299	J. Abdallah *et al.*	(DELPHI Collab.)
BUSKULIC	96T	PL B384 449	D. Buskulic *et al.*	(ALEPH Collab.)
ABREU	95V	ZPHY C68 541	P. Abreu *et al.*	(DELPHI Collab.)