



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

OMITTED FROM SUMMARY TABLE

ABREU 95V observe an excess of same-sign $\Xi^\mp \ell^\mp$ events in jets, which they interpret as $\Xi_b \rightarrow \Xi^- \ell^- \bar{\nu}_\ell X$. 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 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 corrections between the measurements and asymmetric lifetime errors.

VALUE (10^{-12} s)	EVTS	DOCUMENT ID	TECN	COMMENT
1.39^{+0.34}_{-0.28} OUR EVALUATION				
1.35 ^{+0.37} _{-0.28} ^{+0.15} _{-0.17}		1 BUSKULIC	96T ALEP	$e^+ e^- \rightarrow Z$
1.5 ^{+0.7} _{-0.4} ± 0.3	8	2 ABREU	95V DLPH	$e^+ e^- \rightarrow Z$

¹ Excess $\Xi^- \ell^-$, impact parameters.

² Excess $\Xi^- \ell^-$, decay lengths.

Ξ_b DECAY MODES

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

Ξ_b BRANCHING RATIOS

$\Gamma(\Xi^- \ell^- \bar{\nu}_\ell \text{ anything})/\Gamma_{\text{total}}$	Γ_1/Γ		
VALUE	DOCUMENT ID	TECN	COMMENT
seen	³ BUSKULIC	96T ALEP	Excess $\Xi^- \ell^-$ over $\Xi^- \ell^+$
seen	ABREU	95V DLPH	Excess $\Xi^- \ell^-$ over $\Xi^- \ell^+$

³ BUSKULIC 96T measures $[B(b \rightarrow \Xi_b) \times B(\Xi_b \rightarrow \Xi^- \ell^- \bar{\nu}_\ell \text{ anything})] = (5.4 \pm 1.1 \pm 0.8) \times 10^{-4}$ per lepton species, averaged over e and μ .

Ξ_b REFERENCES

BUSKULIC	96T	PL B384 449	D. Buskulic <i>et al.</i>	(ALEPH Collab.)
ABREU	95V	ZPHY C68 541	P. Abreu <i>et al.</i>	(DELPHI Collab.)
