Review of Particle Physics: C. Caso et al. (Particle Data Group), European Physical Journal C3, 1 (1998)

$$\Xi_b^0$$
, 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 $\Xi_b \to \Xi^-\ell^-\overline{\nu}_\ell X$. 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.

E_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.

$VALUE (10^{-12} \text{ s})$	<u>EVTS</u>		
$1.39^{+0.34}_{-0.28}$ OUR EVALUATION			

$1.35^{+0.37}_{-0.28}^{+0.15}_{-0.17}$
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BUSKULIC

DOCUMENT ID

96T ALEP Excess $\Xi^-\ell^-$, impact

TECN COMMENT

$$1.5 \ ^{+0.7}_{-0.4} \ \pm 0.3$$

8 ABREU

95V DLPH Excess $\Xi^-\ell^-$, decay lengths

Created: 6/29/1998 12:40

Ξ_b DECAY MODES

Mode

Fraction (Γ_i/Γ)

 $\Gamma_1 = \Xi^- \ell^- \overline{\nu}_\ell$ anything

seen

Ξ_b BRANCHING RATIOS

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

 Γ_1/Γ

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($b \to \Xi_b$) \times B($\Xi_b \to \Xi^- \ell^- \overline{\nu}_\ell$ anything)] = (5.4 \pm 1.1 \pm 0.8) \times 10⁻⁴ per lepton species, averaged over e and μ .

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E_b REFERENCES

BUSKULIC 96T PL B384 449 ABREU 95V ZPHY C68 541 $\begin{array}{lll} + \mbox{De Bonis, Decamp, Ghez} + \\ + \mbox{Adam, Adye, Agasi} + \end{array}$

(ALEPH Collab.) (DELPHI Collab.)

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