

## Erratum

# Inclusive decays and lifetimes of doubly charmed baryons

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We have corrected wrong numerical factors in the expressions for decay rates. Predictions for doubly charmed lifetimes and branching ratios are slightly changed, but the lifetime pattern and conclusions given in the original paper persist.

Recently we have noticed wrong prefactors in the expressions (8) and (13) in the published version of our paper "Inclusive decays and lifetimes of doubly-charmed baryons" [1].

The factor 5 in front of the wave function  $|\psi(0)|^2$  in (8) should be changed to 10/3:

$$\tilde{\Gamma}_{SL} = \frac{G_F^2}{12\pi} m_c^2 (4\sqrt{\kappa} - 1) \frac{10}{3} |\psi(0)|^2. \quad (8)$$

The spin-correlation factors are also changed in the nonleptonic part with the final expressions as given below:

$$\begin{aligned} \Gamma^{ex} &= \frac{G_F^2}{2\pi} m_c^2 [c_-^2 + \frac{2}{3}(1 - \sqrt{\kappa})(c_+^2 - c_-^2)] 6|\psi(0)|^2, \\ \Gamma_-^{int} &= \frac{G_F^2}{2\pi} m_c^2 [-\frac{1}{2}c_+(2c_- - c_+) \\ &\quad - \frac{1}{6}(1 - \sqrt{\kappa})(5c_+^2 + c_-^2 - 6c_+c_-)] \frac{10}{3} |\psi(0)|^2, \\ \Gamma_+^{int} &= \frac{G_F^2}{2\pi} m_c^2 [\frac{1}{2}c_+(2c_- + c_+) \\ &\quad - \frac{1}{6}(1 - \sqrt{\kappa})(5c_+^2 + c_-^2 + 6c_+c_-)] \frac{10}{3} |\psi(0)|^2. \end{aligned} \quad (13)$$

The above changes are also reflected in the expression for mass corrections:

$$P_{int}(x) = (1 - x)^2(1 + x)(1 - \frac{4}{5} \frac{x}{1 + x}), \quad (29)$$

and

$$\tilde{P}_{int}(x) = \sqrt{1 - 4x}(1 - \frac{8}{5}x). \quad (30)$$

New corrected prefactors, if implemented in the calculation, give the results shown in Table 1.

**Table 1.** Predictions for nonleptonic widths, semileptonic widths, semileptonic branching ratios and lifetimes of doubly charmed baryons for the values of the parameters  $m_c = 1.35 GeV$ ,  $\mu = 1 GeV$ ,  $\Lambda_{QCD} = 300 MeV$ ,  $f_D = 170 MeV$

	$\Xi_{cc}^{++}$	$\Xi_{cc}^+$	$\Omega_{cc}^+$
	Nonleptonic widths in $ps^{-1}$		
$\Gamma_{NL}$	0.655	4.699	2.394
	Semileptonic widths in $ps^{-1}$		
$\Gamma_{SL}$	0.151	0.166	0.454
	Semileptonic branching ratios in %		
$BR_{SL}$	15.8	3.3	13.7
	Lifetimes in ps		
$\tau$	1.05	0.20	0.30

The numerical values change, mainly increasing  $\Gamma_{NL}(\Xi_{cc}^{++})$  by almost a factor of two and decreasing the semileptonic branching ratio  $BR_{SL}(\Xi_{cc}^{++})$  by 35%. Together with the slight decrement in the nonleptonic and semileptonic decay rate of  $\Omega_{cc}^+$ ,  $\Gamma_{SL}(\Omega_{cc}^+)$  is now predicted to be three times larger than  $\Gamma_{SL}(\Xi_{cc}^{++})$ . The behavior of  $\tau(\Xi_{cc}^{++})$  with the variation of  $|\psi(0)|^2$ , shown in Fig. 3b in the original paper, becomes now more moderate.

However, all conclusions given in the original version are valid. The hierarchy for the semileptonic BR is

$$BR_{SL}(\Xi_{cc}^+) \ll BR_{SL}(\Omega_{cc}^+) < BR_{SL}(\Xi_{cc}^{++}), \quad (18)$$

and the predicted lifetime pattern of doubly charmed mesons

$$\tau(\Xi_{cc}^+) \sim \tau(\Omega_{cc}^+) \ll \tau(\Xi_{cc}^{++}) \quad (19)$$

is retained.

## References

1. B. Guberina, B. Melić, H. Štefančić, Eur. Phys. J. C **9**, (1999) 213

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