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First measurements of isospin amplitudes in Λ_b and Ξ_b decays

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Ratios of isospin amplitudes in hadron decays are a useful probe of the interplay between weak and strong interactions, and allow searches for physics beyond the Standard Model. We present the first results on isospin amplitudes in b-baryon decays, using data corresponding to an integrated luminosity of 8.5 fb^{-1} , collected with the LHCb detector in pp collisions at center of mass energies of 7, 8 and 13 TeV. The isospin amplitude ratio $|A_1(\Lambda_b \rightarrow J/\psi \Sigma^0)/A_0(\Lambda_b \rightarrow J/\psi \Lambda)|$, where the subscript on A indicates the final-state isospin, is measured to be less than $1/21.8$ at 95% confidence level. The Cabibbo suppressed $\Xi_b^0 \rightarrow J/\psi \Lambda$ decay is observed for the first time, allowing for the measurement $|A_0(\Xi_b^0 \rightarrow J/\psi \Lambda)/A_{1/2}(\Xi_b^0 \rightarrow J/\psi \Xi^0)| = 0.37 \pm 0.06 \pm 0.02$, where the uncertainties are statistical and systematic, respectively.

Summary

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