Phenomenology 2020 Symposium



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First measurements of isospin amplitudes in Lambda_b and Xi_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 $|A1(\Lambda b \rightarrow J/\psi \Sigma^{0})/A0(\Lambda b \rightarrow J/\psi \Lambda)|$, 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 $|A0(\Xi b^{0} \rightarrow J/\psi \Lambda)/A1/2(\Xi b^{0} \rightarrow J/\psi \Xi^{0})|=0.37\pm0.06\pm0.02$, where the uncertainties are statistical and systematic, respectively.

Summary

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