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Measurement of the Shape of the Lambda_b -> Lambda_c mu nu Differential Decay Rate

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A measurement of the shape of the differential decay rate and associ- ated Isgur-Wise function for the decay Λ0b ⟶ Λc + μ−ν has been performed using data corresponding to 3fb−1 collected with the LHCb detector using proton-proton collisions. The Λ+c μ−ν final states are reconstructed by the detection of a muon and a Λ+c baryon decaying to pK−π+, and the decay Λ0b ⟶ Λ+c π+π−μ−ν is used to determine contributions from Λ0b ⟶ Λc ⁎+ μ−ν decays. The measured dependence of the differential decay rate upon the squared four-momentum transfer between the heavy baryons, q2, is compared with expectations from heavy-quark effective theory and from unquenched lattice QCD predictions.

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