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Mass Predictions for Ω_{bc} and $\Omega_{bc}^{'}$ Baryons in a Quark–Diquark Rotating String Picture

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We present a detailed study of the mass spectra of the bottom–charm baryons (Ω_{bc} and $\Omega_{bc}^{'}$) within a quark–diquark rotating string framework. This model treats each Ω_{bc} and $\Omega_{bc}^{'}$ baryon as a b–c diquark core bound to a strange quark via a relativistic rotating string (flux tube), and it includes spin-dependent interactions to capture fine spectral details. Using this approach, we compute the masses of the ground and the excited states of the Ω_{bc} and $\Omega_{bc}^{'}$ baryons. The predicted masses for the ground-state Ω_{bc} and $\Omega_{bc}^{'}$ show close agreement with previous theoretical estimates, lending credibility to the approach. Furthermore, we provide predictions for a broad range of radially and orbitally excited Ω_{bc} and $\Omega_{bc}^{'}$ states. These theoretical predictions serve as valuable benchmarks for ongoing experimental efforts, offering a crucial reference point for guiding their potential observation.

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