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Mass bounds for fully bottom tetraquark from Regge phenomenology driven inequalities

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We present a study of the mass spectrum of fully bottom ($bb\bar{b}\bar{b}$) tetraquark states using a Regge phenomenology-based approach. Interpreting these tetraquarks as diquark–antidiquark bound systems, we employ quasi-linear Regge trajectories in the (J, M^2) plane to examine their mass behavior. Within this framework, we establish linear and quadratic mass inequalities that impose constraints on the ground-state masses without relying on specific interaction models. This method offers a straightforward and effective way to estimate mass bounds and yields results compatible with other theoretical predictions. Our findings may support experimental efforts to identify such states and help clarify their quantum numbers, contributing to the broader understanding of exotic hadronic structures in Quantum Chromodynamics.

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