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Algebraic techniques for meson masses and decays in the unquenched quark model

Saturday, 27 June 2026 15:00 (2 hours)

Novel algebraic methods are applied to quarkonium spectrum in the unquenched quark model, which incorporates the coupling between $Q\bar{Q}$ and $(Q\bar{q})(q\bar{Q})$ degrees of freedom. Working in the discrete position basis, the calculation of matrix elements simplifies considerably in comparison to other approaches, leading not only to improvements in computational efficiency, but also more flexibility in constructing the model and analysing its output. We illustrate several methods for the extraction of hadron parameters including masses, rms radii and decay widths, and explore qualitatively the effect of incorporating meson-meson interactions (via pion exchange) on the meson spectrum. We also investigate whether the $Q\bar{Q} \to (Q\bar{q})(q\bar{Q})$ coupling can effectively be absorbed into a modified $Q\bar{Q}$ potential.

Collaboration

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