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Unified unquenched quark model for heavy-light mesons with chiral dynamics

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We propose an unquenched quark model for describing the heavy-light mesons by taking into account the coupled-channel effects induced by chiral dynamics. After including a relativistic correction term for the strong transition amplitudes, both the mass spectra and decay widths of the observed heavy-light mesons can be successfully described simultaneously in a unified framework, several long-standing puzzles related to the small masses and broad widths are overcome naturally. We also provide valuable guidance in searching new heavy-light mesons by the detailed predictions of their masses, widths, and branching ratios.

Primary author(s) : Mr ⊠⊠, ⊠ (Hunan Normal University)

Co-author(s) : Prof. JIA JUN, Wu (University of Chinese Academy of Sciences); Prof. XIAN HUI, Zhong (Hunan Normal University)

Presenter(s) : Mr ⊠⊠, ⊠ (Hunan Normal University)

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