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Born–Oppenheimer Effective Theory for multiquark states

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The discovery of XYZ exotic states in the hadronic sector, particularly those containing two heavy quarks, remains one of the most intriguing open problems in particle physics. In this talk, I present the Born–Oppenheimer Effective Field Theory (BOEFT), a framework derived from QCD, capable of describing exotic hadrons of any composition. I present results on the key nonperturbative gauge-invariant correlators to be computed on lattice QCD—such as static energies, generalized Wilson loops, gluelumps, and adjoint mesons—for understanding the patterns of XYZ states. Moreover, I show for the first time new results on the behavior of static energies at short distances and mixing with the threshold at long distances based on BOEFT. As an application, I show results for the hybrid spectrum, hybrid decays to quarkonium, results for $X(3872)$ and $T_{cc}(3875)$, and pentaquark states.

Parallel Session (for talks only)

Hadronic and nuclear spectrum and interactions

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