

DbarN meson-baryon scatter in Lattice QCD

Saturday, 10 October 2026 14:40 (15)

This project studies the low-energy $\bar{D}N$ scattering in lattice QCD, focusing on the S-wave channels $I(J^P) = 0\left(\frac{1}{2}^-\right), 1\left(\frac{1}{2}^-\right)$.

Finite-volume $\bar{D}N$ correlation functions are analyzed using the generalized eigenvalue problem (GEVP) to extract the two-body energy spectrum. The Lüscher formalism is then used to relate the finite-volume energy levels to infinite-volume scattering amplitudes. Near threshold, the effective range expansion (ERE) is employed to extract low-energy scattering parameters, including the scattering length and effective range. Possible effects from higher channel $\bar{D}^*N$, is also considered.

The overall aim is to obtain a first-principles understanding of the low-energy $\bar{D}N$ interaction and to clarify whether it supports any near-threshold structures.

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Session Classification : Section 7