Contribution ID: **108** Type: **not specified**

Resonance in $\eta_c\eta_c - J/\psi J/\psi$ Scattering from Lattice QCD

Thursday, 15 May 2025 15:20 (20 minutes)

Our research investigates the scattering of $\eta_c\eta_c$ and $J/\psi J/\psi$ in the 0^{++} channel, with center-of-mass energies up to 6.6\,GeV, on $N_f = 2$ lattice QCD.
The study is conducted at two pion masses, $m_\pi \approx 250\,(420)$\,MeV, on anisotropic lattices of different sizes.
We calculate the finite-volume energy levels from lattice QCD simulations with $N_f = 2$ dynamical quark flavors, employing the distillation method.
The scattering amplitudes are parametrized using the K-matrix formalism and extracted via L\"{u}scher's quantization condition.
A $J/\psi\, J/\psi$ resonance is observed at $\sqrt{s} = 6512\,(27) - i\,618\,(56)/2$ MeV on the M420 ensembles and $\sqrt{s} = 6527\,(20) - i\,638\,(62)/2$ MeV on the M250 ensembles, consistent with the experimental measurement of the $X(6400)$.

Primary author: LI, Geng

Presenter: LI, Geng

Session Classification: Parallel III: Lattice QCD