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Zc(3900) from Lattice QCD simulation

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The possible exotic meson $Z_c(3900)$, found in e^+e^- reactions, is studied by the method of coupled-channel scattering in lattice QCD. The interactions among $\pi J/\psi$, $\rho\eta_c$ and $\bar{D}D^*$ channels are derived from (2+1)-flavor QCD simulations at $m_\pi=410$ -700 MeV. The interactions are dominated by the off-diagonal $\pi J/\psi$ - $\bar{D}D^*$ and $\rho\eta_c$ - $\bar{D}D^*$ couplings, which indicates that the $Z_c(3900)$ is not a usual resonance but a threshold cusp. Semi-phenomenological analyses with the coupled-channel interaction are also presented to confirm this conclusion.

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