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Zc(3900) from coupled-channel HAL QCD approach on the lattice

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We study the candidate of charmed tetraquark Zc(3900) from full QCD simulation. The Zc(3900) was first reported by both BESIII and Belle Collaborations in pi J/psi invariant mass spectrum. After that, structure of the Zc(3900) is actively discussed using many phenomenological models. However, due to lack of information of the interactions of the pi J/psi and its coupled systems, the predicted structures of the Zc(3900) are highly dependent on model parameters so that the information on the coupled-channel interactions are necessary to conclude the structure.
We perform the coupled-channel analysis for the Zc(3900) through the HAL QCD method. We measure wave functions (NBS wave functions) on the lattice, and extract the potential matrix. Using the interactions obtained from LQCD, we investigate the pi J/psi and DbarD* invariant mass spectra of 2-body scatterings, the pole position of the scattering amplitudes on the complex energy plane, and production reaction of the Zc(3900) from Y(4260) decay. I will report those results for the Zc(3900).

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