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$X(3872)$ relevant $D\bar{D}^*$ scattering in $N_f = 2$ lattice QCD

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We study the S -wave $D\bar{D}^*(I=0)$ scattering at four different pion masses m_π ranging from 250 MeV to 417 MeV from $N_f = 2$ lattice QCD. There exists a state below $D\bar{D}^*$ threshold, which can be related to $X(3872)$ and can be either a bound state or a virtual state up to the analysis strategies applied. This observation is likely unaffected by the possible left-hand cut effect of the one pion exchange interaction. On the other hand, different analysis procedures of the finite volume energies give the same hint at the existence of a 1^{++} resonance below 4.0 GeV.

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