

The Z_{cs} states based on the molecular picture

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The $Z_{cs}(3985)$ state was reported as a new exotic state by BESIII collaboration. After its discovery, the $Z_{cs}(4000)$ and $Z_{cs}(4220)$ states were observed at LHCb. We study the $Z_{cs}(3985)$ state based on the $\bar{D}_s D^*$ with the coupled channels of the vector-pseudoscalar mesons [1]. We find that we can explain this state by the threshold effect from the coupled-channel interaction and our calculation is in fair agreement with the BESIII data. We also study the Z_{cs} state based on $D_s^* \bar{D}^*$ with the coupled channels of the vector-vector mesons [2]. The $D_s^* \bar{D}^*$ system does not develop a bound state, however, the $J^P = 2^+$ channel has enough attraction to create a strong cusp structure that shows up in the $J/\psi K^+$ invariant mass distribution in the $B^+ \rightarrow J/\psi \phi K^+$ decay at the $D_s^* \bar{D}^*$ threshold. I will give a presentation based on Refs. [1]-[2].

[1] N. Ikeno, R. Molina and E. Oset, Phys. Lett. B 814, 136120 (2021).

[2] N. Ikeno, R. Molina and E. Oset, Phys. Rev. D 105, 014012 (2022).

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