

## Molecular states of $D^* D^* \bar{K}^*$ and $B^* B^* K^*$ natures

Tuesday, June 6, 2023 4:30 PM (20 minutes)

We study the interaction of two  $D^*$  and a  $\bar{K}^*$  by using the Fixed Center Approximation to the Faddeev equations to search for bound states of the three body system. Since the  $D^* D^*$  interaction is attractive and gives a bound state, and so is the case of the  $D^* \bar{K}^*$  interaction, where the  $J^P = 0^+$  bound state is identified with the  $X_0(2900)$ , the  $D^* D^* \bar{K}^*$  system leads to manifestly exotic bound states with  $ccs$  open quarks. We obtain bound states of isospin  $I = 1/2$ , negative parity and total spin  $J = 0, 1, 2$ . For  $J = 0$  we obtain one state, and for  $J = 1, 2$  we obtain two states in each case. The binding energies range from 56 MeV to 151 MeV and the widths from 80 MeV to 100 MeV. Using the analogy of  $D^* D^* \bar{K}^*$  system, we also study the three-body system  $B^* B^* K^*$  containing the  $bbc$  open quarks. We obtain bound states for all the channels considered  $J = 0, 1$  and  $2$ , all of them with  $I = 1/2$  and negative parity. I will give a presentation based on Refs. [1]-[2].

[1] N. Ikeno, M. Bayar and E.Oset, Phys. Rev. D 107, 034006 (2023).

[2] M. Bayar, N. Ikeno and L. Roca, Phys. Rev. D 107, 054042 (2023).

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