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## Heavy $K^*$ meson with hidden charm

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We report a robust prediction of heavy  $K^*$  meson, which can be viewed as the excited Kaon state with hidden charm, through a study of the three-body system  $KD\bar{D}^*$  using the fixed-center approximation to the Feddeev equations [1]. The two-body interactions are stringently constrained by the experimental as well as theoretical investigations. Concrete coupled channel three-body calculations yield the heavy  $K^*$  meson,  $4307 \pm 2 - i9 \pm 2$  MeV, with  $I(J^P) = 1/2(1^-)$ . With the motivation to investigate the properties of  $K^*(4307)$ , which can be observed in experiments, we further perform a study of the decay processes of  $K^*(4307)$  to two-body and three-body channels [2]. We hope that our findings could inspire the experimental community to investigate this exotic  $K^*$  meson and to study the so far unexplored heavy strange physics, help improve our understanding of nonperturbative strong interactions.

[1].Xiu-Lei Ren, Brenda B. Malabarba, Li-Sheng Geng, K.-P. Khemchandani and A.-Martínez Torres, Phys. Lett. B 785, 112 (2018), arXiv:1805.08330 [hep-ph].

[2].Xiu-Lei Ren, Brenda B. Malabarba, K.P. Khemchandani, A. Martínez Torres, JHEP 1905, 103 (2019), arXiv:1904.06768 [hep-ph]

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