



Few-body Physics in 2D materials

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Abstract

We briefly review the rich aspects of the three-body physics in two dimensions with attractive short-range potentials and contrast it with the three-dimensional case. Then we address the interesting case of two attractive and one repulsive potential appropriate to describe trions in 2D materials. The emergent property is the frustration of the trion binding with respect to the exciton, which is a distinctive feature dominating the structure of the e-e-h bound system, exemplified in the non-realistic case of a short-range potential acting between the charge carriers. The negative trion in a layer of MoS₂ computed with Rytova-Keldysh potentials is shown to exhibit the same characteristic in its structure, albeit the interaction is long-ranged. This model-independent behavior is traced back to the frustration of binding the trion resulting in a weakly bound system. Based on these considerations, some prospects for future directions will be discussed.