Charge Density Wave Proximity Effects on Spin-Orbit and Exchange Coupling in Graphene on 1T-TaS_2 Monolayer

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Abstract. Bare electronic structure of graphene limits its applications. Embedding it in van der Waals heterostructures opens new venues for utilizing induced proximity effects. Here we discuss induced spin-orbit coupling and exchange coupling proximity effects in graphene on transition metal dichalcogenide 1T-TaS_2 which undergoes charge density wave and spontaneous magnetic transition at low temperatures. The proximity effects on electronic states in graphene near the Dirac point will be discussed in terms of density functional theory and effective tight-binding model.

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