Self Spin-Orbit Torque in Proximitized Graphene on 1T-TaS_2 Monolayer

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Abstract. Spin-orbit torque represents an efficient mechanism for manipulation of magnetization in nanoelectronic devices. In the talk we discuss proximity-induced effects in graphene-based van der Waals heterostructures and self-induced spin-orbit torque on Dirac electrons. The effect originates from the non-equilibrium spin density induced by the charge to spin conversion mechanisms when charge current flows through the proximitized graphene. We demonstrate the effect theoretically in graphene on 1T-TaS_2 monolayer by performing first-principles calculations, tight-binding modeling, and non-equilibrium Green's function transport calculations.

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