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Electronic Structure of Graphene on Co_2FeSi Heusler Alloy

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Abstract. Due to high carrier mobility and long spin diffusion length graphene is a promising material for spintronics applications. In order to achieve effective spin transport and increase spin injection efficiency, graphene interfaces with highly spin-polarised materials, such as Heusler alloys, are needed. In this work, first-principles calculations of graphene/Co_2FeSi electronic structure are done in the frame of density functional theory. It is shown that the high percent of spin polarization in this system is combined with the linear dispersion of the π-states of graphene. The results suggest that the Co_2FeSi Heusler alloy is a promising candidate for graphene-based spintronic devices.

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