

Abstract Submitted
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Influence of the phonon-mediated spin-orbit coupling in graphene decorated with adatoms¹ JHIH-SHIH YOU, Department of Physics, University of California, San Diego, La Jolla, CA 92093, DAW-WEI WANG, MIGUEL A. CAZALILLA, Physics Department and Frontier Research Center on Fundamental and Applied Sciences of Matter, National Tsing-Hua University, Hsinchu, Taiwan — Graphene covered with certain heavy adatoms has been predicted(Conan Weeks et al., Phys. Rev. X 1, 021001 (2011)) to become a topological insulator by virtue of a proximity-effect induced spin-orbit coupling. In addition, the adatoms also induce a coupling between the electron spin and the phonons. Using group theory and tight-binding models, we systematically investigate the coupling between the electron spin and in-plane lattice phonons. We discuss the consequences of this coupling for the dynamics of electrons on the graphene π band.

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