

Abstract Submitted  
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**Proximity effect in graphene-topological insulator heterostructures**<sup>1</sup> E. ROSSI, JUNHUA ZHANG, CHRISTOPHER TRIOLA, Department of Physics, College of William and Mary — We study the effect on graphene and bilayer graphene of the proximity of a strong three dimensional (3D) topological insulator (TI) by considering heterostructures formed by one sheet of graphene, or bilayer graphene, stacked on a strong 3D TI. We consider both the case of commensurate and incommensurate stacking. Our results [1] show that the proximity of the TI strongly enhances the spin-orbit coupling in the graphenic layer, especially for the case of bilayer graphene. We also find that, both for the commensurate and the incommensurate case, the hybridization of the graphene and TI states gives rise to bands with non-trivial spin and pseudospin textures.

[1] Junhua Zhang, C. Triola, E. Rossi, arXiv:1308.6287.

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