

Abstract Submitted
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Magnetic impurities in Graphene: Electronic structure and RKKY interaction MOHAMMAD SHERAFATI, SASHI SATPATHY, Department of Physics and Astronomy-University of Missouri Columbia — Graphene, a recently produced allotrope of carbon, is formed in a two-dimensional honeycomb structure and is a material of considerable current interest because of the possibilities in nano-device applications. Because of its unique linearly-dispersive band structure, graphene can have properties very different from any other two-dimensional material. We will present the nature of magnetic interaction between two magnetic impurities such as Fe placed on single layer graphene sheet. Results will be presented from detailed ab-initio electronic structure calculations as well as simple models incorporating the linear dispersion and compared to the results of the standard Ruderman-Kittel-Kasuya-Yosida model. It is shown that the linearly-dispersive band structure plays a significant role in determining the magnetic interaction between iron atoms.

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