BOSE COLLOQUIUM

Thursday, 2 January 2014 4.00 pm Fermion

Speaker:

Prof. G Baskaran

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Title:

Magic Electronic Carpets

Abstract:

Graphene, a two dimensional net of strongly bonded carbon atoms has enthused the scientific community for nearly a decade. A rich variety of electronic and mechanical properties exhibited by this elemental 2 dimensional `electronic carpet' has so far no match. After a brief review of graphene, I will introduce silicene, a Si analogue of graphene. I will present a thesis [1] that `silicene is not a carbon copy of graphene'. Using phenomenological and theoretical arguments, a Mott insulating ground state for silicene will be suggested. Further, the parameters are such that an optimally doped silicene has a prospect for exhibiting high Tc superconductivity, reaching room temperature scales, provided competing orders can be controlled.

[1] Room Temperature Superconductivity, Mott insulator and Spin liquid: Silicene and Germanene as prospective play grounds, arXiv: 1309:2242
