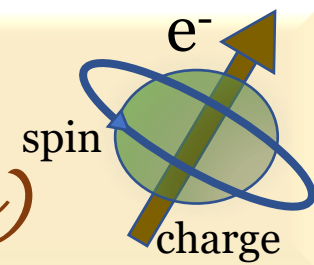




W2S Seminar

(Webinar series on Spintronics)



Introduction to Topological Insulators

Speaker:
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Date and time:
06.08.2020 at
6.30 pm
Via
Google meet

Abstract

2D materials are becoming building blocks for many new exotic phenomena and devices. Graphene, topological insulators, transition metal dichalcogenides, NbSe₂ superconductors etc. are the examples of some of the 2D materials. Topological insulators are materials characterized by an insulating bulk and gapless metallic states on the sample surface. Electrical transport in three dimensional topological insulators occurs through spin-momentum locked topological surface states that enclose an insulating bulk. In the presence of a magnetic field, surface states get quantized into Landau levels giving rise to chiral edge states that are naturally spin-polarized due to spin momentum locking. In this lecture, I will demonstrate that in bulk-insulating topological insulators, the surface states are highly amenable to detection and control using electrostatic gating. Here, for the first time, we study electrostatically defined n-p-n junctions of bulk insulating topological insulator BiSbTe_{1.25}Se_{1.75}. I will also demonstrate diverse devices such as topological insulator FETs and topological insulator/superconductor heterointerfaces exemplifying the potential of this new material class for advanced spintronics and quantum computing.

If interested to attend then please visit <https://www.niser.ac.in/w2s-seminar/index.php>