

Students' Annual Seminar

**Signature of gate-controlled interface magnetism
in the surface state of Bi₂Se₃ by proximity to EuS**

Satyaki Sasmal

Broken time reversal symmetry in the surface state (SS) of topological insulators is known to open up an exchange gap at the Dirac point of the SSs which houses many interesting quantum mechanical phenomena. Our work demonstrates the evidence of opening of such an exchange gap by placing a magnetic insulator (MI), EuS, in close proximity to a topological insulator (TI), Bi₂Se₃. We also observed a gate controlled RKKY-induced enhanced magnetism at the Bi₂Se₃/EuS interface and signature of chiral edge states along the domain boundaries when the Fermi level is tuned in the exchange gap by the bottom gate voltage. Our efforts in this direction will possibly allow us to engineer a device to observe half-integer quantum anomalous Hall effect in TI/MI systems.

Monday, Feb 3rd 2020

4:00 PM (Tea/Coffee at 3:45 PM)

Seminar Hall, TIFR-H