Sonderforschungsbereich 1277

Emergent Relativistic Effects in Condensed Matter -
From Fundamental Aspects to Electronic Functionality

SFB – Colloquium

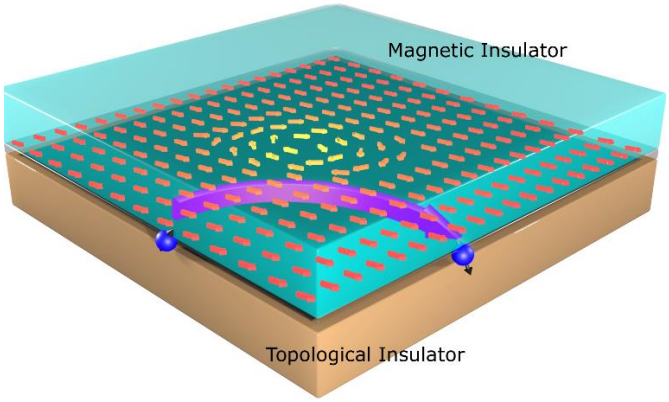
Speaker: **Dr. Dhavala Suri**
Technical University of Munich

Date: Tuesday, 25 January 2022, 14:15,
H34 and via Zoom

Topic: Emergent Spin Textures in Bulk Materials and Proximity Driven Exchange Coupled Heterostructures

Abstract:

Layered van der Waals and exchange coupled topological insulators have drawn great attention in recent times due to the plethora of possibilities they offer to realize novel quantum states. 2D layered ferromagnets attract the community due the ease of integrating with other high mobility materials such as graphene. I shall present some interesting aspects of one such attractive candidate - Cr_2Te_3, grown by molecular beam epitaxy (MBE). I will demonstrate how planar Hall effect (PHE) can be a sensitive tool to probe spin textures that might possibly be skyrmions in this material. When a topological insulator is brought near a magnetic insulator, time-reversal symmetry is broken at the interface. Such symmetry breaking is proposed to cause emergent phenomena such as quantum anomalous Hall effects and axion insulator states. However, do the surface states in the topological insulator affect the magnetism in the magnetic insulator? I shall review the research on topological insulator/magnetic insulator hetero structures along with our results on Bi_2Te_3/EuS.



Emergent spin texture at the interface of topological insulator and magnetic insulator.

Host: Prof. Dr. Jaroslav Fabian