

# [Scdt] SCDT-FlexE Centre Weekly Tuesday Seminar-07.09.2021 at 7:30 PM]



**From** SCDT, IIT Kanpur <scdt@iitk.ac.in>  
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**Priority** Normal

Zoom Meeting for joining the webinar:

<https://zoom.us/j/99863678964?pwd=ZVJvdFN5T1UyQjdZbmXwS0htRUJOUT09>

Meeting ID: 998 6367 8964

Passcode: 064022

Dear Colleagues,

I would welcome you to attend the SCDT-FlexE Centre Weekly Tuesday Seminar by Dr. Rik Dey, who has recently joined the Electrical Engineering Department at our institute as an Assistant Professor. He has done some interesting work on spintronics. This is an opportunity to know about the subject and his work.

The details of the seminar (to be given in webinar format) are:

Title: "Topological Insulators and Two-dimensional Materials for Spin-Orbitronics Memory Devices"

Date: 7th September, 2021 (Tuesday)

Time: 7:30 PM to 8:30 PM

Presentation will be on zoom. The link is given above.

The seminar abstract and a brief bio of the speaker are given below. Please join the talk if you are in a position to do so.

With regards

S.K.I.

Abstract of talk by Dr. Rick Dey:

The discovery of high spin-orbit coupling (SOC) in different materials, such as, metals, semi-metals, semiconductors, oxides and topological insulators (TIs), have revolutionized the area of spintronics which focuses on the efficient interconversion of spin and charge degrees of freedom. The spin current generated from these materials created by an application of a charge current can be utilized for low-power switching of ferromagnetic materials (FM) proximity coupled to them, which can be employed for next-generation spin-orbit torque (SOT) based magnetoresistive random access memory (MRAM) devices replacing the traditional spin-transfer torque (STT) based MRAMs. In this regard, TI offers a promising platform for the channel material for SOT-MRAM devices because of near-ideal transduction efficiency between charge and spin on

on these materials-based heterostructures and potential applications in low-power spin-orbitronics devices.

About the Speaker:

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Dr. Rik Dey is currently an Assistant Professor in the Department of Electrical Engineering at Indian Institute of Technology (IIT) Kanpur. He received his Bachelor degree in Technology from IIT Kanpur in 2012 in Electrical Engineering, his Master's degree of Science in Engineering (MSE) and PhD degree from the University of Texas at Austin in 2014 and 2019, respectively, both in Electrical and Computer Engineering. Before joining IIT Kanpur, he was a Post-Doctoral Fellow at the Nanomanufacturing System for Mobile Computing and Mobile Energy Technologies (NASCENT) at the University of Texas at Austin from 2019 to 2020. His research interests include theoretical modelling and analysis of electrical and magnetic properties of topological insulators and two-dimensional materials based spin-orbitronics devices.

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