

# Materials for Spin-Charge Interconversion: A New Perspective

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## Abstract:

There is broad interest, both basic and applied, in materials and devices for efficient spin-charge interconversion through a relativistic effect known as spin-orbit coupling. In this talk, I will present a physics-based model to describe such effects in diverse classes of materials including topological insulators, Kondo insulators, transition metals, semimetals, oxide interfaces, and narrow band-gap semiconductors. A number of predictions from our model have been confirmed by experiments, some of which are quite counter-intuitive.

[1] Phys. Rev. Applied 10, 054044, 2018. [2] Sci. Rep., 6, 35658, 2016. [3] Sci. Rep. 8:3397, 2018. [4] IEEE EDL, 38(12), 1665-1668, 2017. [5] arXiv:1812.00286, 2018 (to appear in Phys. Rev. Applied).

## Speaker-bio:

Shehrin Sayed is a Postdoctoral Researcher in Professor Sayeef Salahuddin's group in the department of Electrical Engineering and Computer Sciences at University of California, Berkeley. His research interest includes spintronics and magnetism. He received his PhD in 2018 and MSc in 2013, from department of Electrical and Computer Engineering, Purdue University. His PhD dissertation received the 2018 award by Dimitris N. Chorafas Foundation for contributions in spintronics.