



Institute of Electrical Engineering SAS

Cordially invite you to attend a lecture by

Dr. Denis Kochan

(University of Regensburg)

***Spin relaxation, and pseudo-topological states in
graphene based systems***

May 29, 2018, at 10,30 a.m.

IEE SAS, Dúbravská cesta 9 Bratislava,
Meeting Room 101 (1st floor)

Abstract:

Based on the standard theory the spin relaxation time in graphene is expected to be cca hundred of nanoseconds. However, recent experiments show a time that is in order of hundreds of picoseconds. I will show that this discrepancy can be explained assuming electrons are resonantly scattered off local magnetic moments. While they weakly affect momentum relaxation, they have a pronounced effect on spin relaxation.

In the second part I will discuss orbital and spin-orbital proximity effects emerging in graphene deposited on a monolayer transition-metal dichalcogenides (TMDCs: MoS₂, MoSe₂, WS₂, WSe₂) and analyze the impact on spin transport at such graphene/TMDC heterostructures. Based on DFT calculations we predict pseudo-topologically protected helical edge states for graphene nanoribbons on WSe₂, and demonstrate the emergence of quantum spin Hall effect.