

ÚSTAVNÍ SEMINÁŘ

Colloquium of the Institute of Physics CAS

ve středu dne 9. listopadu 2016 v 15:00 v knihovně Fyzikálního ústavu AV ČR v Cukrovarnické ul.

(on Wednesday, November 9th, 2016, starting at 15:00 in the library of the institute at Cukrovarnická)

Program:

Jan Honolka

Fyzikální ústav AV ČR, v. v. i.

2D systems in contact with spin degrees of freedom

Abstract:

Spintronic properties of 2D systems and their potential when in contact with magnetic atoms are discussed for the examples of topological insulator (TI) and graphene systems [1-5].

The interface between ferromagnetic and non-magnetic Bi₂Se₃ phases is presented as a material platform to investigate the influence of time-reversal symmetry breaking and band bending effect of spin degrees of freedom on 3D TI properties. Their impact on 2D magnetotransport is shortly discussed.

Ordered modulations of graphene electron and structural properties are mapped using spatially and wave-vector resolved photoemission microscopy (k-PEEM), including dark-field techniques. We find that properties such as graphene electronic doping and domain geometries can be steered by the symmetry of underlying vicinal substrates during CVD growth.

The general concept of this work is extended towards other 2D systems of current interest such as semiconducting transition metal dichalcogenides, e.g. MoS₂ or WS₂, insulating hexagonal boron nitride (h-BN) monolayers, and respective hybrid structures.

[1] M. Vondracek et al., Nature Scientific Reports 6, 23663 (2016)

[2] M. Valiska et al., Appl. Phys. Lett. 108, 262402 (2016)

[3] M. Vondracek et al., Rapid Commun. Phys. Rev. B (2016)

[4] R. Tarasenko et al., Physica B 481, 262 (2016)

[5] K. Carva et al., Phys. Rev. B 93, 214409 (2016)

Dr. Jan Honolka is one of the Purkyně Fellows at the Institute of Physics of the Czech Academy of Sciences. His fellowship started in 2012. Before his present appointment he worked as a postdoc and a DPG Fellow at California Institute of Technology in Pasadena, USA (2001-2003) and as a postdoc and later as a leader of the Nanoscale Magnetism Group at Max-Planck Institute for Solid State Physics in Stuttgart, Germany (2003-2012). He studied physics at Ludwig-Maximilians University in Munich, Germany and at Ruprecht-Karls University in Heidelberg, Germany. He obtained his PhD in Heidelberg in 2001.

Seminář bude přednesen v anglickém jazyce. / The colloquium will be held in English.

prof. Jan Řídký, DrSc.
ředitel / director