

# POZVÁNKA

na seminář oddělení 15 Fyzikálního ústavu AV ČR, v.v.i.

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Seminář se koná

**ve čtvrtek 16. května 2013 ve 14:00**

v zasedací místnosti budovy B Fyzikálního ústavu, Cukrovarnická 10,  
Praha 6.

Na programu je přednáška

## **Spin injection in ferromagnet/semiconductor hybrid structures: building blocks to spintronic circuits**

kterou prosloví

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### Abstrakt

Despite the substantial progress in understanding spin injection and transport in semiconductors over the past decade, the promise of technological breakthroughs using semiconductor spintronics for information processing, storage, and communication remains unfulfilled. Efficient electrical spin injection into semiconductor structures is considered to be a pre-requisite for the functionality of most proposed devices, such as spin transistors. Certain ferromagnetic Heusler alloys such as  $\text{Co}_2\text{FeSi}$  are considered to be excellent candidates as spin injectors due to their theoretically predicted half-metallicity, high Curie temperatures, and good crystal lattice matching to some semiconductors. The first part of my talk will address major materials challenges that prohibit perfect spin injection using Heusler alloys, namely atomic disorder and magnetic impurity in-diffusion, while arguing the case for inserting tunnel barriers to mitigate these problems. The second part of my talk will be dedicated to spin injection devices as building blocks for functional spintronic circuits. In particular, I will discuss optical communication of spin information using spin-LEDs as well as novel arrays of spin extraction spin-valves capable of carrying out logic functions and efficient read-out of magnetic memory.