

Physics Colloquium

Michigan Technological University

Thursday, November 13, 2008

4:00 pm

Room 139, Fisher Hall



Exploring Spin Transport and Ferromagnetism with Andreev Reflection Spectroscopy

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Abstract: The Point Contact Andreev Reflection (PCAR) technique is sensitive to the spin polarization of the current in a ferromagnet interfaced with a superconductor. The main conduction mechanism in such a channel below the superconducting gap is Andreev reflection process, in which a conventional quasiparticle current is converted into a supercurrent. However, as de Jong and Beenakker pointed out, for the spin-polarized fraction of the current Andreev reflection is prohibited, suppressing the conductance below the gap. I will discuss the application of this technique to spin polarization measurements and the studies of ferromagnetism in a new class of materials, dilute magnetic semiconducting oxides.

Biography: Boris Nadgorny is an Associate Professor at the Department of Physics and Astronomy at Wayne State University in Detroit, MI. He came to Wayne State in 2001, after spending four years at the Naval Research laboratory in Washington, DC as an ASEE/ONR Fellow, where he worked on spin transport, magnetism and superconductivity. He holds a Ph.D. in Physics from Stony Brook on High T_c superconductivity in cuprates. His current interest is in spintronics, dilute magnetic semiconductors, and interaction between superconductivity and magnetism.