Subject: MSD Colloquium, Thurs, 1/11, 11am, 212, A-157
From: Suzanne Kokosz <kokosz@anl.gov>
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To: Materials Science Division <msd@anl.gov>

SPEAKER: PROF. DANIEL KHOMSKII
Cologne University, GERMANY

TITLE: ^{3}Charge ordering instead of Jahn-Teller distortion: a novel feature close to Mott transition^{2}

DATE: Thursday, January 11, 2007

TIME: 11:00 a.m.

PLACE: Building 212, Room A-157

HOST: Ken Gray

Refreshments will be available at 10:45 a.m.

Abstract:
Solids on the verge of a crossover between localized and itinerant electrons often display rich and unexpected behavior. In this talk I will discuss one more such surprising feature: in this situation the systems with orbital degeneracy can lift this degeneracy not by the conventional Jahn-Teller distortion and orbital ordering, but by charge disproportionation (charge ordering). This novel phenomenon will be discussed on the example of nickelates RNiO3 (R rare earths). It may have
quite general significance and apparently is found in many other similar systems in this crossover region (in many ferrates, layered nickelates, etc). Thus for the orbitally-degenerate systems the Mott transition can occur via the formation of an intermediate charge-ordered state. The conditions for the appearance of this novel phase will be discussed, and the role of small or negative charge transfer gap in this phenomenon
will be stressed.
This work is done in collaboration with I.Mazin and with the experimentalists from the group of M. Abd-Elmeguid.