

Subject: MSD Colloquium, Thurs, 1/25, 11am, 212, A-157
From: Suzanne Kokosz <kokosz@anl.gov>
Date: Thu, 11 Jan 2007 08:28:51 -0600
To: Materials Science Division <msd@anl.gov>

SPEAKER: Dr. Elbio Dagotto
University of Tennessee and Oak
Ridge National Laboratory
Knoxville, Tennessee

TITLE: Recent Developments in the Theoretical Study of
Strongly Correlated Electronic Systems in Bulk and Nanoscopic Forms

DATE: Thursday, January 25, 2007

TIME: 11:00 a.m.

PLACE: Building 212, Room A157

HOST: Ray Osborn

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

Abstract: I will review recent theoretical studies of strongly correlated electronic systems, using computational techniques [1]. For the first time, realistic double-exchange models for manganites are shown to present colossal magnetoresistance effects in the metal-insulator region of competition. Consequences of these studies for other oxides will be discussed. Preliminary studies using complex oxides in heterostructures will also be presented. In the second part of the talk, the study of conductances of nanoscopic strongly correlated systems will be addressed using a new technique involving the time-dependent density matrix renormalization group. Several tests of the technique and a variety of preliminary results will be shown.

[1] In collaboration with K. Al-Hassanieh, G. Alvarez, A. Feiguin, F. Heidrich-Meisner, G. Martins, A. Moreo, J. Riera, C. Sen, and S. Yunoki, at Univ. of Tennessee and Oak Ridge National Lab.