

ID: P2.17

Title: Complex States in the Models of Colossal Magnetoresistive Manganites

Name: Sen, Cengiz

Affiliation: University of Tennessee

We report in detail the competitor to the FM metallic state at electronic density $x=1/4$ in the CMR regime using the two-orbital double-exchange model with Jahn-Teller lattice distortions on two-dimensional clusters, employing a very careful large-scale cooling down process in the Monte Carlo simulations to avoid being trapped in metastable states. We show that this competing insulator has a very unexpected complex structure, involving diagonal stripes with alternating regions with FM and CE-like order. The level of complexity of this new state even surpasses that of the recently unveiled spin-orthogonal-stripe states and their associated high degeneracy. Similar results at $x=1/3$ are also presented. This new state complements the long-standing scenario of phase separation, since the alternating FM-CE pattern appears even in the present study which is carried out in the clean limit. The present and recent investigations are also in agreement with the many "glassy" characteristics of the CMR state found experimentally, due to the high degeneracy of the insulating states involved in the process.