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**First Order CMR Transitions and Spin-Charge Dynamics Above the Curie Temperature in the Two-Orbital Model for Manganites<sup>1</sup>** CENGIZ SEN, University of Tennessee, GONZALO ALVAREZ, Oak Ridge National Lab, ELBIO DAGOTTO, University of Tennessee — We study the two  $e_g$ -orbital model including Jahn-Teller lattice distortions and the superexchange interaction using exact diagonalization Monte Carlo techniques at various dopings,  $x$ . We report the presence of first order CMR transitions at the Curie temperature ( $T_C$ ) for doping  $x = 0.25$  for the clean system and with weak disorder [1], in qualitative agreement with several experiments. We also discuss spin and charge dynamics as a function of Monte Carlo time above  $T_C$ , addressing the properties that characterize the exotic CMR state. It is observed that in CMR regimes there are various quasidegenerate spin states that may play an important role in this phenomenon [2].

[1] C. Sen *et al.*, Phys. Rev. Lett. **105**, 097203 (2010).

[2] Shuhua Liang *et al.*, preprint, submitted to PRB. See also Hotta *et al.*, Phys. Rev. Lett. **86**, 4922 (2001).

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