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The temperature dependence of the conductance anisotropy of the pnictides studied via Monte Carlo simulation of the Spin-Fermion model SHUHUA LIANG, CENGIZ SEN, ADRIANA MOREO, ELBIO DAGOTTO, Department of Physics, University of Tennessee and Materials Science and Technology Division, ORNL, GONZALO ALVAREZ, Computer Science and Mathematics Division and Center for Nanophase Materials Sciences, ORNL — The undoped three-orbital (xz, yz, xy) spin-fermion model for the pnictides is studied via Monte Carlo (MC) simulations [1], using both the standard exact diagonalization of the fermionic sector (supplemented by cooling down procedures) developed in the manganite context [2], as well as the truncated polynomial expansion techniques [3]. The magnetic order is found to be the expected $(\pi, 0)$ wavevector and the angle-resolved photoemission signal is in good agreement with experiments. The low-temperature conductance reveals the experimentally observed anisotropy between the ferromagnetic and the antiferromagnetic (AFM) directions, with the largest conductance for the AFM case, similarly as observed in recent investigations using the Hartree-Fock approximation to the Hubbard model [4]. The finite temperature MC analysis also produces results in good agreement with transport experiments. [1] S. Liang, G. Alvarez, C. Sen, A. Moreo, and E. Dagotto, submitted for publication. [2] C. Sen, S. Liang, and E. Dagotto, arXiv: 1109.1797 ; and references therein. [3] C. Sen, G. Alvarez, Y. Motome, N. Furukawa, I. A. Sergienko, T. Schulthess, A. Moreo, and E. Dagotto. Phys. Rev. B 73, 224430 (2006). [4] X. Zhang and E. Dagotto, Phys. Rev. B 84 132505 (2011).

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