Abstract Submitted
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Modeling of Fe pnictides: the Magnetic Order and Pairing Channels[1] M. DAGHOFER, A. MOREO, Oak Ridge National Lab, University of Tennessee, J. A. RIERA, Universidad Nacional de Rosario, Argentina, E. ARRIGONI, TU Graz, Austria, D. J. SCALAPINO, University of California, Santa Barbara, E. R. DAGOTTO, Oak Ridge National Lab, University of Tennessee — We use numerical methods - exact diagonalization and the variational cluster approach - to study a two-orbital model for Fe-pnictide superconductors, including onsite Coulomb interaction U and Hund's rule coupling J [1]. Robust next-nearest neighbor hoppings stabilize the spin "striped" AF order for undoped clusters, in agreement with neutron scattering data. The ordered magnetic moment depends on U and J, and we find a bad metal with small ordered moment at intermediate U, as observed experimentally. By adding two electrons to the undoped cluster, we identify three different pairings channels: An inter-orbital triplet at small U, which transforms as the A_{2g} representation of the $D_{4\mathrm{h}}$ group, an inter-orbital singlet transforming as B_{2g} at the most realistic intermediate U, and an intra-orbital A_{1g} singlet at large U. We compare the results to a three-orbital model including the xy orbital in addition to the xz ans yz orbitals. [1] M. Daghofer et al., arXiv:0805.0148, to appear in PRL.

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