Competing Pairing Symmetries in a Generalized Two-Orbital Model for the Pnictides

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An extended "*t*-*U*-*J*" two-orbital model for the pnictides will be discussed. The Hamiltonian consits of the standard two-orbital Hubbard model plus additional Heisenberg terms, arising from the strong coupling expansion, that render the $(\pi, 0)$ spin order in the undoped limit very robust. This stabilizes electronic bound states even in the small clusters that are studied via the Lanczos algorithm. Focussing on the symmetry of these bound states and varying couplings, it will be shown that the A_{1g} pairing dominates at intermediate and large Hubbard U while B_{2g} is stable at small U. In addition, dynamical pairing susceptibility calculations also unveil low-lying B_{1g} states in the model, suggesting that small changes in parameters may render any of the three channels stable. These numerical results are in agreement with RPA studies, although addressing the problem from quite a different perspective, and they provide a rationalization for the puzzling material/technique dependent results in pnictides where both nodeless and nodal states have been reported.