MAR12-2011-006006

Abstract for an Invited Paper
for the MAR12 Meeting of
the American Physical Society

**Strong Versus Weak Coupling Pairing in Iron-Based Superconductors**[1]

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We use the functional renormalization group as well as strong-coupling methods to analyze the phase diagram of several of the iron-based superconductors. As in the previous studies by F. Wang, D.H. Lee et. al., we observe a nodeless sign-changing order parameter to be favored over a sizable part of the parameter space, but the physics quickly develops peculiarities depending on the doping, shape, size and orbital content of the Fermi surfaces in the different superconducting compounds. Using several new one-body models available in the literature (due to Kuroki, Graser and Raghu), we analyze the orbital content of the superconducting gap, which should be observable in spin-polarized ARPES experiments. We find that the effective theory of the Iron-based superconductors is a $J_1 - J_2$ model in orbital space with $J_2 > |J_1|$ and antiferromagnetic, and analyze the behavior of the physical properties such as superconducting gap for systems ranging from electron overdoped $(K, Cs)Fe_{2?x}Se_x$ to hole-doped $K_xBa_{1-x}Fe_2As_2$.

[1]NFS, Packard