

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Superconductivity in the multiband matrix t -J1-J2 model and its implications for the iron pnictides QIMIAO SI, PALLAB GOSWAMI, PRE-DRAG NIKOLIC, Rice University, ELIHU ABRAHAMS, Rutgers University — We describe the iron pnictides in terms of an incipient Mott picture. We use local moments with frustrating J1-J2 interactions to model the incoherent electronic excitations, and couple them to the coherent electronic carriers. The resulting multiband matrix t -J1-J2 model is analyzed in terms of a slave boson theory, leading to a superconducting phase diagram as a function of doping and J2/J1 ratio. The different pairing symmetries reflect a competition between the strong coupling effects of the J1-J2 interactions, and the kinematic effects associated with the multiple sheets of Fermi surfaces.

Qimiao Si
Rice University

Date submitted: 21 Nov 2008

Electronic form version 1.4