

MAR14-2013-020451

Abstract for an Invited Paper
for the MAR14 Meeting of
the American Physical Society

Peculiarities under the Superconducting Dome in Iron Based Superconductors

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Pairing symmetry in Fe based superconductors is a heavily investigated topic. Of the many materials across several families, the K-doped (hole doped) BaFe_2As_2 is one of the most investigated ones. Upon heavy hole doping this material undergoes a change in the Fermi Surface topology which opens up discussion on its effect on the symmetry and structure of the superconducting order parameter. I will highlight some of the important consequences this has in the context of KFe_2As_2 (the end member of the above family) such as nodal s-wave gap structure with higher harmonics and also a possibility of a superconducting state that spontaneously breaks time reversal symmetry.