Peculiarities under the Superconducting Dome in Iron Based Superconductors

SAURABH MAITI, University of Florida

Pairing symmetry in Fe based superconductors is a heavily investigated topic. Of the many materials across several families, the K-doped (hole doped) BaFe$_2$As$_2$ 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$_2$As$_2$ (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.