

INVITED

The Interplay Between Superconductivity and Magnetism in the Sign Reversed Pairing Model of the Pnictides

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We have studied the interplay between the superconductivity and antiferromagnetism as a function of the temperature, T , and doping, x , of the Fe based superconductors. By a combination of the Ginzburg-Landau expansion around the tri/tetra-critical point and the self-consistent numerical calculations of the gap equation of the four band sign reversed pairing model, we construct the phase diagram in the T - x plane for the pnictides. Based on these results we discuss the conditions for the phase separation and coexistence of the superconducting and antiferromagnetic states. These are compared with the various experimental observations for the pnictide superconductors like $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$ and $\text{Ba}_{1-x}\text{K}_x\text{Fe}_2\text{As}_2$.

Keywords : superconductivity, antiferromagnetism, pnictide superconductors