

Accidental order parameter nodes in Fe-pnictides: Origins and implications

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The new Fe-based superconductors have occasioned considerable excitement because transition temperatures are high and it is hoped that comparisons to cuprates can lead to new insights on the essential ingredients to high temperature superconductivity. According to conventional weak coupling spin fluctuation models, A_{1g} (sign-changing “s-wave”) states are probably favored. Such states may be isotropic on each Fermi surface sheet or highly anisotropic, possibly with order parameter nodes. Experiments indicating a possible gapped-nodal crossover will be discussed in this framework, with an emphasis on the multiorbital physics which appears to be very important.