

RPA approach to pairing in multiorbital models of the Fe pnictides

Abstract:

The multiorbital character of the low-energy band structure and the existence of multiple disconnected Fermi surface sheets in the new iron based superconductors poses difficulties to a theoretical description of the superconducting ground state. Using a multiorbital RPA description of the spin susceptibility we show that both, an extended nodal s-wave state and a d-wave state, can be nearly degenerate in energy. Details of the band structure, the doping and the relative strength of the different intra- and interorbital interactions can decide which ground state might be favored by a spin fluctuation mediated pairing interaction.