

Abstract Submitted
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Sensitivity of gap anisotropy to electronic structure in spin-fluctuation pairing models of Fe-pnictide superconductors¹ ALEXANDER KEMPER, University of Florida, THOMAS MAIER, Oak Ridge National Laboratory, SIEGFRIED GRASER, University of Augsburg, DOUGLAS SCALAPINO, University of California, Santa Barbara, HAI-PING CHENG, PETER HIRSCHFELD, University of Florida — We discuss the dependence of gap anisotropy on doping and band structure in the framework of RPA spin-fluctuation calculations, computed within the framework of a 5-orbital model. Either doping or changes in electronic interactions may induce the creation of an additional Fermi surface pocket near π, π in the unfolded zone. The additional nesting provided by this pocket stabilizes a nodeless state, allowing for a concrete description of possible nodal-gapped transitions. This mechanism works, however, only provided the character of the pocket is predominantly d_{xy} -orbital in character, consistent with the dominant intraorbital pairing in these systems. We discuss generally the orbital dependence of the pairing vertex, and the effect of electronic structure changes on the commensurability of the magnetic resonance observed in experiment. Our results offer a possible explanation for the proliferation of experimental results regarding the superconducting gap structure in the various Fe-pnictide materials.

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