

Abstract Submitted
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Spin fluctuation dynamics and multiband superconductivity in iron pnictides¹ VALENTIN STANEV, JIAN KANG, ZLATKO TESANOVIC, Johns Hopkins University — Multiband superconductivity, involving resonant pair scattering between different bands, has emerged as a likely possibility for the iron pnictides. In this scenario the gap changes sign between the hole and the electron Fermi surfaces (separated by wave-vector M). In the quest to distinguish this extended s- from an ordinary s- wave state, it is essential to use experiments that have momentum space resolution and can probe momenta of order M^2 . We study the fluctuation dynamics of these superconducting states, as well as d- and p-wave states. The coupling between spin fluctuations and the quasiparticles of the superconducting state leads to damping of the former. The gap structure leaves a signature in the form of this damping. This can be used to diagnose the order parameter in spin sensitive experiments. We also discuss the case of coexistence of superconductivity and spin-density wave.

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