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Competiting multiple mode theory for s pairing mechanism in iron based superconductors DMITRI EFREMOV, IFW-Dresden, MICHAEL KISELEV, ICTP, Trieste, KONSTANTIN KIKOIN, School of Physics and Astronomy, Tel Aviv University, STEFAN DRESCHSLER, JEROEN VAN DEN BRINK, IFW-Dresden — We investigate the interplay between the magnetic and the superconducting degrees of freedom in unconventional multi-band superconductors such as iron pnictides. For this purpose a dynamical mode-mode coupling theory is developed based on the coupled Bethe-Salpeter equations. In order to investigate the region of the phase diagram not too far from the tetracritical point where the magnetic spin density wave, (SDW) and superconducting (SC) transition temperatures coincide, we also construct a Ginzburg-Landau functional including both SC and SDW fluctuations in a critical region above the transition temperatures. The fluctuation corrections tend to suppress the magnetic transition, but in the superconducting channel the intraband and interband contribution of the fluctuations nearly compensate each other.

Dmitri Efremov
IFW-Dresden

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