

Abstract Submitted
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The Itinerant Electron and Local Moment Hybrid Model of Iron-based Superconductors YIZHUANG YOU, Institute for Advanced Study, Tsinghua University, FANG YANG, Physics Department, Beijing Institute of Technology, SHUPENG KOU, Physics Department, Beijing Normal University, ZHENGYU WENG, Institute for Advanced Study, Tsinghua University — An itinerant electron and local moment hybrid model for iron-based superconductors is studied, with the band structure modeled simply by two pockets. Reasonable phase diagram is obtained on the mean field level. The spin and charge dynamics are further studied by the random phase approximation (RPA). The dynamic spin susceptibility displays a Goldstone mode of the collective itinerant electron and local moment excitations in the SDW phase, and a resonance mode in the superconducting phase which persists all the way to the normal state phase. It is found that the scattering with local moment always tends to reduce the pocket depth of the itinerant electron. The study also suggests that, to correctly account for the features in transport experiments, the multi-band effect that give rise to the nodal SDW should be included.

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