

Abstract Submitted
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Spin-Density Wave in Iron Pnictides¹ JIAN KANG, VALENTIN STANEV, ZLATKO TESANOVIC, Johns Hopkins University — Multi-band Hubbard-like model with appreciable nesting is applied to the study of spin-density wave (SDW) in iron pnictides². It is assumed that the SDW particle-hole pairing mechanism arises from the short range interaction between hole bands near Γ point and electron bands near M. Within the Hubbard-Stratonovich transformation, an auxiliary field is introduced to obtain the effective action. The mean-field solution is obtained by the stationary phase analysis of this action, and results in an itinerant, antiferromagnetically ordered ground state, with the staggered magnetic moment modulation at wavevector M. We study fluctuations of the spin order around M, both in its direction and amplitude. We present detailed results for the propagation velocity of this mode (spin-wave velocity) as a function of the various parameters of our model and compare them to the available experimental observations of the spin-wave spectrum.

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²V. Stanev, J. Kang, and Z. Tesanovic, Phys. Rev. B **78**, 184509 (2008).

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