

Abstract Submitted
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Spin conservation and Fermi liquid near a ferromagnetic quantum critical point ANDREY CHUBUKOV, University of Wisconsin, MASLOV DMITRII, University of Florida — We propose a new low-energy theory for itinerant fermions near a ferromagnetic quantum critical point. We show that the full low-energy model includes, in addition to conventional interaction via spin fluctuations, another type of interaction, whose presence is crucial for the theory to satisfy SU(2) spin conservation. We demonstrate the consistency between a loop-wise expansion and a Fermi liquid description for the full model. We further show that, prior to the ferromagnetic instability, the system develops a Pomeranchuk-type instability into a state with zero magnetization but with p-wave deformations of the Fermi surfaces of spin-up and -down electrons (a spin nematic).

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