Abstract Submitted
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Physics in Superconductors with a Spin Density Wave: Quasiclassical Description of a two-band Model[1] ANDREAS MOOR, ANATOLY VOLKOV, KONSTANTIN EFETOV, Ruhr-University Bochum — Using a simple model of a two-band superconductor with a spin density wave we investigate the physics in the coexistence regime of the two order parameters, i.e., the spin density wave (SDW) and the superconductivity (SC). We use the quasiclassical Green's functions approach. Our findings concern, i.a., the Knight shift, the proximity and the Josephson effects, and the time and spatial dependence of the magnetic order parameter near the quantum critical point. In particular we find a solution of the stationary equation which describes a domain wall in the magnetic structure. In the center of the domain wall we find a local enhancement of SC. Investigating the stability of a uniform commensurate SDW we obtain the values of the doping parameter at which the first order transition into the state with $m = 0$ takes place or to the state with an inhomogeneous SDW occurs.

[1] Andreas Moor, Anatoly F. Volkov, and Konstantin B. Efetov, Phys. Rev. B **83**, 134524 (2011).
[2] A. Moor, A F. Volkov, and K B. Efetov, Phys. Rev. B **85**, 014523 (2012).
[3] A. Moor, A F. Volkov, and K B. Efetov, Phys. Rev. B **87**, 100504(R) (2013).
[4] A. Moor, A F. Volkov, and K B. Efetov, arXiv:1309.2112 (2013)

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