

Abstract Submitted
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Quantum oscillations in a non-Fermi liquid cuprate pseudogap state YAN HE, PETER SCHERPELZ, K. LEVIN, University of Chicago — We analyze the properties of quantum oscillations in a pseudogap (ie, non-Fermi liquid) state and, thereby, address recent experiments in the high-field regime of cuprate superconductors. We use a Gor'kov-based, Landau level model of the pseudogap state appropriate for very high fields, and find that a gapped state will generally display oscillations in this regime. This is due both to d-wave pairing and to the presence of gap inhomogeneities, reflecting a blurred vortex state [1]. We calculate the temperature dependence of these oscillations and show that for realistic cuprate parameters, these systems display behavior essentially indistinguishable from that of Fermi liquids [2]. [1] P. Scherpelz, D. Wulin, K. Levin and A. Rajagopal, PRA 87 063602 (2013). [2] P. Scherpelz, Y. He and K. Levin, arXiv:1310.2645.

Peter Scherpelz
University of Chicago

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