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Pairing Theories in Very High Magnetic Fields: Effects of Condensed and Non-condensed Pairs PETER SCHERPELZ, DAN WULIN, KATHRYN LEVIN, James Franck Institute and Department of Physics, University of Chicago, ATTIPAT RAJAGOPAL, Inspire Institute — In this talk we focus on the interplay of pseudogap effects with high magnetic fields. Our work is built on reformulating the Gor'kov equations in the non-linear regime into a Landau level basis. Here we explore two distinct fermionic pairing schemes associated with the Abrikosov lattice in real and reciprocal space. We show how both have antecedents in the literature and both can be extended to accommodate non-condensed pairs. With this formulation, we can calculate quantities including the local density of states and H_{c2} in this regime. Importantly, both pairing theories yield gapless excitations which should be relevant to cuprate magneto-oscillatory experiments. The additional implications for the high field diamagnetic susceptibility are discussed.

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