Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Competing electronic orders within a multi-band reconstructed Fermi surface in the layered cuprate superconductor Pr_2CuO_4 NICHOLAS BREZNAY, IAN HAYES, SYLVIA LEWIN, ALEX FRANO, TONI HELM, JAMES ANALYTIS, University of California, Berkeley, YOSHIHARU KROCKENBERGER, HIDEKI YAMAMOTO, NTT Basic Research Labs, ZENGWEI ZHU, KIMBERLY MODIC, ROSS MCDONALD, Los Alamos National Lab — The reconciliation of quantum oscillation, ARPES, and resonant x-ray scattering experiments provides a unique opportunity to understand competing electronic orders in the cuprates. In particular, the Fermi surface (FS) evolution with carrier doping, and the relevance of competing electronic orders (such as charge order), remain topics of active debate. In T' structure, electron-doped compounds such as Pr_2CuO_4, recent quantum oscillation measurements show evidence for a reconstructed FS near maximal T_c. However, discrepancies with ARPES measurements and the (π, π) reconstruction scenario - such as the absence of an electron pocket - still remain. In this talk I will describe recent high-field transport and resonant x-ray scattering studies on superconducting Pr_2CuO_4. We find evidence for weak, nearly temperature-independent charge order, along with a high-field Hall effect that indicates a reconstructed, multi-band Fermi surface. This developing picture illustrates a crucial link between non-superconducting electronic orders in the electron-doped cuprates.

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Date submitted: 11 Nov 2016 Electronic form version 1.4