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Nonlinear Hall effect and Shubnikov-de Haas quantum oscillations in thin films of the electron doped superconductor Pr2CuO4 NICHOLAS BREZNAY, Lawrence Berkeley National Lab, NITYAN NAIR, JAMES ANALYTIS, University of California Berkeley, ZENGWEI ZHU, KIMBERLY MODIC, ROSS MCDONALD, Los Alamos National Lab, YOSHIHARU KROCK-ENBERGER, NTT Basic Research Labs — Recent quantum oscillation studies in cuprate superconductors have allowed for considerable progress in understanding their Fermi surface topography. However, important questions remain about the influence of quantum criticality and competing orders, as well as the universality of these results; in particular quantum oscillation studies to date have been largely confined to a limited range of hole-doped bulk crystal systems. We have observed a field nonlinear Hall effect in superconducting thin films of the cuprate Pr₂CuO₄, and studied the temperature and magnetic field dependence of this behavior. The Hall effect data are consistent with a simple two-band transport model in this material, and we will interpret them in light of recently observed Shubnikov-de Haas quantum oscillations in these films.

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