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Field induced density wave in the heavy fermion compound CeRhIn5 PHILIP MOLL, Department of Physics, University of California, Berkeley, California 94720, USA, BIN ZENG, LUIS BALICAS, National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL 32310, USA., STANISLAW GALESKI, Solid State Physics Laboratory, ETH Zurich, Switzerland, FEDOR BALAKIREV, National High Magnetic Field Laboratory, LANL, E536, Los Alamos, NM 87545, USA, ERIC BAUER, FILIP RONNING, Los Alamos National Laboratory, Los Alamos, NM 87545, USA.187 — We will present evidence for a magnetic field induced phase-transition to a state akin to a density-wave (DW) in the heavy fermion superconductor $CeRhIn_5$. The DW state is signaled by a hysteretic anomaly in the in-plane resistivity accompanied by the appearance of non-linear electrical transport at high magnetic fields (>27T), which are distinctive characteristics of density-wave states. The differential resistance dV/dI is strongly suppressed by currents in excess of an critical electric field E_c 15mV/cm, which would be a typical value for depinning thresholds in incommensurate density waves such as $NbSe_3$ or TaS_3. Intriguingly, the out-of-plane resistivity as well as the magnetic torque remain unaffected by the transition. The untypically large hysteresis enables us to directly investigate the Fermi surface of a supercooled electronic system and to clearly associate a Fermi surface reconstruction with the transition: additional frequencies suddenly appear at the transition in Shubnikov-de Haas measurements. Key to our observation is the fabrication of single crystal microstructures with μm^2 cross-sections, which are found to be highly sensitive to phase transitions involving small portions of the Fermi surface.

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