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Metamagnetism in CeIrIn5: magnetoresistance and dHvA study
C. CAPAN, R.G. GOODRICH, J.F. DITUSA, Louisiana State University, L. BALICAS, T.P. MURPHY, E.C. PALM, S.W. TOZER, National High Magnetic Field Laboratory, R. MOVSHOVICH, E.D. BAUER, M.F. HUNDLEY, J.L. SARRAO, J.D. THOMPSON, Los Alamos National Laboratory, D. HALL, Physical Review Letters — Quantum phase transitions correspond to a continuous ground state transformation at T=0 driven by quantum fluctuations. A Fermi Surface change might be expected at a quantum critical point. The metamagnetic transition, corresponding to a non-linear increase in magnetization of a paramagnet, has been focus of attention since strong deviations from Fermi Liquid theory reported in $Sr_3Ru_2O_7$ have raised the possibility of a metamagnetic quantum critical end-point. $CeIrIn_5$, a heavy fermion compound with a recently discovered metamagnetic transition at high fields, offers yet another playground for such investigations. We report a study of magnetoresistance and de-Haas-van-Alphen effect (dHvA) in CeIrIn5 for magnetic fields up to 45T and in the temperature range 0.03K-1K. We found that the metamagnetic transition is marked by a concomitant drop in the resistivity and in the amplitude of dHvA oscillations as the magnetic field is increased, while the Fermi Surface remains intact. Possible scenarios will be discussed.

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