

Abstract Submitted
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Reconstruction of the Fermi Surface Deep inside the Hidden-Order Phase of Very Clean URu₂Si₂ Y. MATSUDA, H. SHISHIDO, T. SHIBAUCHI, K. HASHIMOTO, Department of Physics, Kyoto University, Y. HAGA, T.D. MATSUDA, Advanced Science Reserach Center, Japan Atomic Energy Agency, Y. ONUKI, Graduate School of Science, Osaka University, T. SASAKI, T. OIZUMI, N. KOBAYASHI, Institute for Materials Research, Tohoku University, T. TAKAMASU, K. TAKEHANA, Y. IMANAKA, National Institute for material Science — The nature of the hidden order (HO) phase in URu₂Si₂ is a long standing mystery in heavy-fermion physics. It has been shown that the HO phase is destroyed at $H_0=36$ T ($T = 0$) and several new phases appear above H_0 . Here we studied the low temperature/high field phase of very clean URu₂Si₂ single crystals ($RRR=670$) by the transport properties. We find that the Hall resistivity jumps at $H_h=22$ T well inside the HO phase and new quantum oscillations appear at high fields starting slightly below H_h . These results indicate a reconstruction of the Fermi surface and a possible phase transition well inside the HO phase. The present results provide strong evidence that the HO transition is described by an itinerant rather than a localized electron picture.

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