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Cyclotron resonance of ultra-clean URu₂Si₂ single crystals in the hidden order and superconducting states SHO TONEGAWA, KEN-ICHIRO HASHIMOTO, YAO-HAN LIN, RYO KATSUMATA, KOUSUKE IKADA, Department of Physics, Kyoto University, YOSHINORI HAGA, TATSUMA MATSUDA, ETSUJI YAMAMOTO, Advanced Science Research Center, Japan Atomic Energy Agency, YOSHICHIKA ONUKI, Graduate School of Science, Osaka University, TAKASADA SHIBAUCHI, YUJI MATSUDA, Department of Physics, Kyoto University — The cyclotron resonance is a powerful probe to detect the effective mass and scattering time of the electron, but there is few example of the report in the heavy fermion compounds. We succeeded in observing cyclotron resonance in the heavy fermion superconductor URu₂Si₂ not only in the hidden ordered state, but also in the superconducting state. In the hidden ordered state, we observe the missing heavy band which has not been detected by de Haas van Alphen (dHvA) measurements. In the superconducting state, the resonance lines exhibit an unexpected sharpening below the transition temperature, suggesting the realization of quasiparticle Bloch state in the vortex lattice state. We will compare our data to the dHvA measuments and discuss the possible electronic structure of the hidden order state.

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