

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Microwave Conductivity Measurements of URu₂Si₂ JAMES DAY, MAHYAD AGHIGH, JORDAN BAGLO, University of British Columbia, RYAN BAUMBACH, ERIC BAUER, Los Alamos National Laboratory, DOUG BONN, University of British Columbia — Narrow, free-carrier spectra occur in the heavy fermion metals, in which the high quasiparticle effective mass renormalizes the width of the Drude conductivity peak from infrared frequencies, where it is found in more typical metals, down to the microwave region. This narrow peak has been observed [1] in a thin film of UPd₂Al₃, occurring with a Lorentzian lineshape due to the dominant defect-scattering in the film. We have taken microwave conductivity measurements on URu₂Si₂ in a temperature range in which the sample has entered into its hidden order state but above the superconducting transition. These measurements exhibit a narrow Lorentzian lineshape, indicating high sample purity and considerably reduced impurity scattering. If the inelastic scattering is sufficiently low, there is the possibility for an observation of electron-electron scattering. Results to date will be presented.

[1] Scheffler, M. *et al.*, *Nature* **438**, 1135 (2005).

James Day
University of British Columbia

Date submitted: 14 Nov 2013

Electronic form version 1.4