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Quasiparticle scattering spectroscopy (QPS) of Kondo lattice heavy fermions[1] L.H. GREENE, S.M. NARASIWODEYAR, P. BANERJEE, W.K. PARK, University of Illinois at Urbana-Champaign, E.D. BAUER, P.H. TOBASH, R.E. BAUMBACH, F. RONNING, J.L. SARRAO, J.D. THOMPSON, Los Alamos National Laboratory — Point-contact spectroscopy (PCS) is a powerful technique to study electronic properties via measurements of non-linear current-voltage characteristic across a ballistic junction. It has been frequently adopted to investigate novel and/or unconventional superconductors by detecting the energy-dependent Andreev scattering. PCS of non-superconducting materials has been much rarely reported. From our recent studies on heavy fermions [1], we have frequently observed strongly bias-dependent and asymmetric conductance behaviors. Based on a Fano resonance model in a Kondo lattice [2], we attribute them to energy-dependent quasiparticle scattering off hybridized renormalized electronic states, dubbing it QPS. We will present our QPS results on several heavy-fermion systems and discuss QPS as a novel technique to probe the bulk spectroscopic properties of the electronic structure. For instance, it reveals that the hybridization gap in URu_2Si_2 opens well above the hidden order transition [1].

[1] W. K. Park *et al.*, PRL **108**, 246403 (2012); *ibid.,* **100**, 177001 (2008).
[2] M. Maltseva, M. Dzero, P. Coleman, PRL **103**, 206402 (2009).

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Laura Greene
University of Illinois at Urbana-Champaign

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