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Scanning tunneling microscopy studies of heavy fermion compound $\text{CeCo}(\text{In}_{1-x}\text{Cd}_x)_5$ ANDRAS GYENIS, PEGOR AYNAJIAN, EDUARDO H. DA SILVA NETO, Princeton University, ZACHARY FISK, University of California, Irvine, ERIC D. BAUER, Los Alamos National Laboratory, ALI YAZDANI, Princeton University — Heavy fermion materials, such as those forming in actinide- or lanthanide-based compounds, have a rich variety of phases from unconventional superconductivity to antiferromagnetism to possibly exotic and non-Fermi liquid states. Central to all these ground states is the interaction between the magnetic impurities and the conduction electrons. In the Ce-based heavy fermions compounds (e.g. CeCoIn_5), the ground state can be tuned by doping or isovalent substitution, for example, Cd doping tunes the system toward antiferromagnetism. We present scanning tunneling microscopy/spectroscopy measurements on the Cd-doped CeCoIn_5 heavy fermion compounds as a function of temperature. These results will be analyzed within the context of how tuning the chemical structure impacts the formation of heavy electron band and various ground states of this material system.

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