

Abstract Submitted  
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**Microscopic investigation of electronic inhomogeneity induced by substitutions in quantum critical CeCoIn<sub>5</sub>.** FILIP RONNING, Los Alamos National Lab, HIRONORI SAKAI, Japanese Atomic Energy Agency, JIANXIN ZHU, NICHOLAS WAKEHAM, HIROSHI YASUOKA, Los Alamos National Lab, YO TOKUNAGA, SHIN KAMBE, Japanese Atomic Energy Agency, ERIC BAUER, JOE THOMPSON, Los Alamos National Lab — In Cd-doped CeCoIn<sub>5</sub> magnetic order can be suppressed by pressure giving rise to a dome of superconductivity surrounding a quantum critical point (QCP). However, the typical non-Fermi liquid (NFL) signatures expected at this QCP are absent. In contrast, in Sn-doped CeRhIn<sub>5</sub>, pressure also suppresses magnetism giving rise to a dome of superconductivity, but in this case, the NFL signatures ARE observed at the QCP. We presents results using nuclear quadrupole resonance to probe microscopically the response of the prototypical quantum-critical metal CeCoIn<sub>5</sub> to substitutions of small amounts of Sn and Cd for In. These substituents induce very different local electronic environments as observed by site dependent spin lattice relaxation rates  $1/T_1$ . Cd-doped samples generate a much more inhomogeneous spin environment than observed in Sn-doped samples. This difference naturally explains the presence and absence of NFL signatures at the respective QCPs mentioned above. The effects found here illustrate the need for care in general when interpreting NFL properties determined by macroscopic measurements achieved by chemical substitutions.

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