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Zero-field magnetism in Nd-doped CeRhIn₅ under pressure¹

PRISCILA ROSA, Los Alamos National Laboratory, AARON OOSTRA, University of California at Irvine, YONGKANG LUO, NICHOLAS WAKEHAM, FILIP RONNING, ERIC BAUER, Los Alamos National Laboratory, ZACHARY FISK, University of California at Irvine, JOE THOMPSON, Los Alamos National Laboratory — Unconventional superconductivity is often found in heavy fermion compounds close to a magnetic instability. Although magnetism and superconductivity may coexist when $T_N > T_c$, evidence for magnetism is usually suddenly lost when $T_N < T_c$. Here we study the heavy-fermion compound Ce_{0.95}Nd_{0.05}RhIn₅ under pressure by means of electrical resistivity and AC calorimetry measurements. Our results show that, even at zero applied magnetic field, Nd substitution unveils a hidden magnetic instability below the superconducting dome. We examine the similarities and differences between our results and those on Nd-doped CeCoIn₅ as well as pure CeRhIn₅ under applied field and pressure. We discuss our results in light of recent calculations that include *d*-wave superconductivity and underlying magnetic correlations.

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