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Probing the Hidden Order in URu₂Si₂ by Impurity Doping

SEUNG-HO BAEK, Los Alamos National Laboratory, NICHOLAS CURRO, U. of California, Davis, M. GRAF, A. BALATSKY, ERIC BAUER, JASON COOLEY, JIM SMITH — URu₂Si₂ exhibits a clear broken symmetry ground state at 17.5 K, but the nature of the order parameter has not been known for more than two decades. Motivated by the fact that Rh doping in this compound induces antiferromagnetism, indicating that the hidden order is closely related with the antiferromagnetism, we studied ²⁹Si NMR with varying Rh concentration. This ²⁹Si NMR study reveals that the antiferromagnetism arises from the local suppression of the hidden order by Rh doping. We propose that the antiferromagnetism emerges as a result of the local suppression of the hidden order yet only within the long range hidden order phase.

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