

Abstract Submitted  
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**Spatially resolved NMR spectra for the Swiss cheese model in heavy fermion PuCoGa<sub>5</sub> superconductor** TANMOY DAS, JIAN-XIN ZHU, A.V. BALATSKY, M.J. GRAF, Theoretical Division, Los Alamos National Laboratory — Spatially resolved NMR experiments, which probe the local electronic excitations, play a vital role for studying the pairing symmetry of unconventional superconductors. Here we calculate the spatial modulation of the NMR spin-lattice relaxation rate ( $1/T_1$ ) for the Swiss cheese model as a function of impurity concentration in PuCoGa<sub>5</sub> superconductor. The local suppression of the superconducting order parameter due to impurities is related to the number of holes in the Swiss cheese model. Our results indicate that Friedel-like oscillations, as seen in the local density of states near an impurity, are also present in the behavior of  $1/T_1$  as one moves away from the impurity site. We demonstrate that the gap nodes, which are filled by disorder, can be probed by NMR through the local information encoded in the spectra. The advantage of spatially resolved NMR compared to STM measurements is that the former probe is not sensitive to surface states. Work is supported by US DOE.

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