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# Unravelling the physics of strongly correlated electron systems through nuclear magnetic resonance

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Correlated electron materials exhibit a rich spectrum of unusual ordered states at low temperature, including magnetism, superconductivity, and other exotic ground states. Often the ground state can be tuned by an external parameter such as pressure or field, and in some cases there exists a quantum phase transition that gives rise to a breakdown of conventional Fermi liquid theory in the disordered phase at high temperature. Nuclear Magnetic Resonance (NMR) is an ideal probe these materials because the nuclei offer a window into the microscopic electronic degrees of freedom via the hyperfine coupling. Furthermore, NMR can be performed under a broad range of extreme pressures, fields and temperatures, and is a microscopic *in situ* probe that does not perturb the electrons. Several examples of the power of this technique to study the phenomena of superconductivity, heavy fermion behavior, and inhomogeneous magnetism will be discussed.

## Biography

Nicholas Curro received his PhD in 1998 from the University of Illinois at Urbana-Champaign, and did his Postdoctoral studies at Los Alamos National Laboratory. He then transitioned to a permanent staff member at Los Alamos for several years before joining the faculty at UC Davis in 2008. He has published over 100 papers on NMR studies of the physics of correlated electron systems.

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