

Understanding Anisotropy to Develop Superconductors by Design

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In this talk, I will present an overview of our progress for identifying the relations among the evolution of correlated electron properties and T_c , as a function of tuning parameters, such as pressure or magnetic field in the heavy fermion superconductors. Our research focuses on using new theoretical tools guided by measurements on these prototypical correlated electron superconductors to identify the microscopic structural origin for changes in these physical properties that lead to a higher T_c . I will discuss our progress in identifying these key materials characteristics that will guide us toward designing the next generation of improved unconventional superconductors.