Low symmetry structures and strong *f*-*s* (*d*-*s*) hybridization as key ingredients to find unconventional superconductors

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Several families of intermetallic superconductors occurred in related low symmetry crystal structures. We discuss the evolution of the magnetic and superconducting properties of the structurally related family of heavy-fermions superconductors $CeMIn_5$ e Ce_2MIn_8 (M = Rh, Ir, Co) and their non-superconducting relatives based on other rare-earths such as Gd, Nd and Tb.
The pressure –composition phase diagrams for Sn and La-doped $CeRhIn_5$, Sn-doped $CeCoIn_5$, pure and Cd-doped $Ce_2Rh_{1-x}Ir_xIn_8$ are also explored to understand the role of hybridization on the tuning of the superconducting phase. The connection of our results to analysis of 3*d* structurally related intermetallic superconductors such as the FeAs-based compounds, which also presents doping and pressure induced superconducting phases, allows us to speculate about new routes for finding new superconductors using hybridization and low-dimensionality as the key elements.