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Interplay of Composite Pairs and Magnetism in Heavy Fermion Superconductors REBECCA FLINT, PIERS COLEMAN, Rutgers University — Superconductivity in $PuMGa_5$, $M = \{Co,Rh\}$ and $NpPd_5Al_2$ can be treated within a two channel Kondo lattice model, where the electron-spin scattering develops an Andreev component, creating a composite bound state of a spin-flip and a pair of electrons. We extend this model to $CeMIn_5$, where magnetism and superconductivity exist in close proximity by including antiferromagnetic interactions. Different crystal symmetries lead to composite pairing with either a g-wave gap or d-wave gap, while antiferromagnetism leads to RVB superconductivity with a d-wave gap. Within a symplectic large N limit, we examine the effects of antiferromagnetic interactions on the composite pairing. If both gaps are d-wave, they couple linearly, mutually enhancing the superconducting transition temperature.

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