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**Resonant interactions of Ytterbium-173 in mixed confinements** LUIS RIEGGER, NELSON DARKWAH OPPONG, MORITZ HOEFER, IMMANUEL BLOCH, SIMON FOELLING, LMU, Munich, Germany; MPQ, Garching, Germany — Due to its earth-alkaline atomic structure, fermionic $^{173}$Yb features the typical metastable excited orbital $^3P_0$, connected to the ground state orbital via an ultra-narrow clock transition. The zero angular momentum states additionally feature a strong decoupling of nuclear spin and electronic state. The particular isotope $^{173}$Yb features a near-resonant molecular bound state, leading to a Feshbach resonance between the two orbital states. We trap both atomic orbitals in state-dependent optical lattices with different AC polarizabilities, pinning the excited-state atoms while tunneling remains possible for the ground-state atoms. We investigate the resulting two- and few-body interactions in systems with separate confinement and dimensionality, which influence the effective interactions in the many-body system. These interactions in a state-dependent lattice configuration emulate a version of the two-orbital Kondo and Kondo-lattice model with unusual spin interactions.

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