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Three-body physics with multichannel two-body interactions[1] NIRAV MEHTA, JILA, University of Colorado, Boulder CO, 80309, SETH RITTENHOUSE, JILA and Dept. of Physics, University of Colorado, Boulder CO, 80309, JOSE D'INCAO, JILA, University of Colorado, Boulder CO, 80309, CHRIS GREENE, JILA and Dept. of Physics, University of Colorado, Boulder CO, 80309
— Atoms with internal hyperfine states (denoted by A, A', etc.) split by an external magnetic field are governed by complicated multichannel pair-wise interactions. We consider a simplified zero-range multichannel model designed to mimic atom-atom scattering near a Feshbach resonance. Our simple two-body interaction leads to a wide variety of rich physics at the three-body level absent in single channel models. Using a novel approach, we solve the three-body hyperangular Lippman-Schwinger equation and obtain adiabatic potential curves showing all available reaction channels and pathways for three-body proceses. This work is funded in part by the NSF.

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