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Molecular association in a p-wave Fermi gas under variable confinement. KENNETH G. JACKSON, University of Toronto, DENISE BRAUN, Eindhoven University of Technology, COLIN DALE, SCOTT SMALE, University of Toronto, SERVAAS KOKKELMANS, Eindhoven University of Technology, JOSEPH H. THYWISSEN, University of Toronto — We study molecular formation near a p-wave Feshbach resonance in an ultracold Fermi gas. Radio-frequency association line shapes are fit using a thermally weighted Franck-Condon overlap function that correctly accounts for asymmetry in the profiles. We can then refine the effective range parameters for p-wave scattering in the second lowest magnetic hyperfine level of 40K. Using this model of the three-dimensional p-wave scattering phase shift, we load the atoms into a deep two-dimensional optical lattice and associate one-dimensional dimers to test different models of confinement. Specific attention is paid to the resonance position shift and the experimental feasibility of a 1D unitary regime for odd-wave scattering. The importance of many-body correlations is determined through measurements of the 1D p-wave contacts.

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