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The p-wave contact of one-dimensional Fermi gases SCOTT SMALE, KENNETH G. JACKSON, University of Toronto, BEN A. OLSEN, Yale-NUS, JOSEPH H. THYWISSEN, University of Toronto — Fermions with p-wave interactions, and other odd exchange parities, are of long-standing interest, but have also proven to be experimentally challenging to explore in both materials and ultracold gases. In contrast to broad s-wave resonances, a high closed-channel fraction of the p-wave Feshbach dimer is inevitable because the dimer is "stuck" behind a millikelvin centrifugal barrier. Recently, it has been conjectured that 1D odd-wave collisions might have a large open-channel fraction [1]. Since there is no rotation associated with odd-wave collisions in 1D, the antisymmetric collision will occur without a centrifugal barrier. Such a dimer would have a large spatial extent, much like 3D s-wave dimers. We report on work to test this conjecture in fermionic potassium. We use rf spin-flips to a weakly interacting state to measure the contact, the central quantity in a set of universal relations recently discovered for 3D p-wave gases [2]. By comparing with theoretical predictions of the p-wave contact [3] we aim to elucidate the nature of 1D p-wave physics near a Feshbach resonance, which is potentially a universal regime as in unitary 3D s-wave interactions. [1] Phys. Rev. A 96, 030701 (2017) [2] Nature Physics 12, 530 (2016) [3] Phys. Rev. A 98, 023605 (2018)

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