Abstract Submitted
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Measurement of the Stability of P-Wave Pairs in a Quasi-1D Fermi Gas[1] DANYEL CAVAZOS, TSUNGLIN YANG, YATING CHANG, Department of Physics and Astronomy, Rice University, Houston TX, ZHENGHAO ZHAO, Rice Univ, RANDALL G. HULET, Department of Physics and Astronomy, Rice University, Houston TX — P-wave interactions are known to lead to intriguing quantum phenomena such as $p + ip$ topological superfluids and Majorana fermions. However, the experimental detection of these phenomena in ultracold atomic gases remains a challenge due to the severe atom losses from three-body recombination collisions near the p-wave Feshbach resonance in a 3D atomic gas. It has been recently predicted[2] that such effects could be suppressed by introducing 1D confinement, thus leading to the formation of p-wave atom pairs. We will study the stability of atom pairs in a quasi-1D Fermi gas interacting via a confinement-induced p-wave Feshbach resonance. We spin-polarize ^{6}Li atoms in one of the lowest hyperfine levels whose p-wave interactions are tunable via a Feshbach resonance. Quasi-1D confinement is achieved with a two-dimensional compensated optical lattice. The stability of the p-wave pairs will be evaluated by measuring the atom loss, which can be obtained by comparing the atom number before and after preparing the system near resonance.

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[2]Lihong Zhou and Xiaoling Cui, Phys. Rev. A 96, 030701 (2017).

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