Abstract Submitted
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Studies of the Efimov Effect in ^{7}Li[1] D. LUO, J. H. V. NGUYEN, R. G. HULET, Department of Physics and Astronomy and Rice Center for Quantum Materials, Rice University, Houston, TX 77005. — Ultracold atomic gases provide an ideal environment to study few body physics in the universal regime. Passive techniques, such as monitoring loss of the atomic sample while varying the hold time allows us to explore properties such as the scaling behavior of Efimov trimers. In our experiment, we explore how the Efimov states are affected by non-zero temperature. We measure the three-body loss rate for a ^{7}Li atom gas at different scattering lengths and extract the location and width of an Efimov recombination minimum for various temperatures. Alternatively, we may perform more active experiments such as creating dimers using RF-field modulation as a probe of molecular binding energies. We use RF-association to form Feshbach dimers and Efimov trimers, and find a strong enhancement of the dimer formation rate at the atom-dimer resonance, which could be explained by an avalanche mechanism. In the past the enhancement in the three-body recombination rate at the same location had also been observed[2], and attributed to the avalanche. We explore the link between these findings with a side-by-side comparison of the dimer-formation rate and the three-body loss rate.

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[2]S.E. Pollack, D. Dries, & R.G. Hulet, Science, 326, 1683 (2009)

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