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The Role of Temperature in the Efimov Effect[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. — The formation of Efimov trimer states requires the system to be in the universal regime, where the temperature is low enough that the thermal de Broglie wavelength is large compared to the range of the interaction between the particles. While the zero-temperature limit of the Efimov effect has been carefully studied by mapping the three-body recombination rate as a function of the scattering length, how these states are affected by non-zero temperature is less well-understood. We explore the role of temperature in the Efimov effect by measuring the location of the recombination minimum a_2^+ and width η_* for a gas of ^{7}Li atoms in a temperature range of 0.1 to 7 μK. Our results are compared with a similar study with Cs atoms[2]. Contrary to that work we find that a_2^+ depends linearly on T at low temperature. We speculate that the difference is explained by the fact that $k_{th} r_{vdW} \ll 1$ for ^{7}Li in our temperature range, and thus, unlike Cs, is deeply in the universal regime.

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[2]B. Huang, L. A. Sidorenkov, & R. Grimm, Phys. Rev. A 91, 063622 (2015).

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