

Abstract Submitted
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Efimov Physics in a ${}^6\text{Li}$ Gas E.L. HAZLETT, J.R. WILLIAMS, R.W. STITES, Y. ZHANG, K.M. O'HARA, The Pennsylvania State University, University Park, PA 16802, J.H. HUCKANS, Bloomsburg University of Pennsylvania, Bloomsburg, PA 17815 — We have established the existence of ground- and first-excited Efimov trimers in a system of three distinguishable ${}^6\text{Li}$ fermions. The presence of the trimers is indicated by resonantly enhanced three-body recombination which occurs when the trimer binding energy intersects the three-atom scattering threshold. We find the three-body recombination rate, which varies by over eight orders of magnitude in our experiments, to be in good agreement with predictions based on the zero-range approximation. Furthermore, the relative location of the three-body recombination resonances are in agreement with a discrete universal scaling factor of 22.7 despite the fact that the scattering lengths cross through a non-universal regime between the resonances. These results demonstrate that the Efimov effect occurs in a system of three distinguishable fermions with the same universal scaling factor that occurs in a system of identical bosons. Finally, we will report on our progress toward direct production of Efimov trimers by radio-frequency photoassociation.

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