

Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Efimov scaling symmetry in ultracold Li-Cs mixtures SHIH-KUANG TUNG, JACOB JOHANSEN, KARINA JIMENEZ-GARCIA, COLIN PARKER, CHENG CHIN, The University of Chicago — In 1970, Vitaly Efimov predicted the existence of an infinite series of universal trimer states in a three-body system as well as a universal geometric scaling in those trimer states. After the first observation of the Cs-Cs-Cs trimer state in 2005, there have been many other observations of these homonuclear trimers in different atomic species. However, the universal scaling symmetry predicted by Efimov remains elusive in homonuclear systems due to a large scaling constant $\lambda_0 = 22.7$. For heteronuclear atomic systems this scaling constant can decrease dramatically for systems with large atomic mass ratios. I will report our investigation on the discrete scaling symmetry of Efimov quantum states for a heteronuclear mixture of Li-6 and Cs-133 atoms. We have identified three enhanced loss features associated with coupling to three different trimer states near an interspecies Feshbach resonance, from which we determine a geometric scaling factor. Our result represents the first model-independent experimental testing of the discrete scaling symmetry in three-body systems.

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Date submitted: 29 Jan 2014

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