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Testing universality of Efimov Physics based on a mass-imbalanced Li-Cs mixture JACOB JOHANSEN, BRIAN DESALVO, KRUTIK PATEL, CHENG CHIN, The University of Chicago — Efimov states are notable for their universal geometric scaling and are observable in ultracold atomic systems employing magnetic Feshbach resonances. In addition to geometric scaling, which we observed previously by taking advantage of a reduced Efimov scaling constant in our mass imbalanced ^{6}Li-^{133}Cs system, an interesting pattern has emerged in Efimov measurements: while expected to be non-universal, the absolute positions of Efimov resonances appear to scale simply with van der Waals length. Theories attempting to explain this observation have predicted a dependence on the strength of the Feshbach resonance for narrow resonances, yet experiments attempting to probe this regime have so far been inconsistent with the predicted dependence. In this talk, we focus primarily on our recent measurements showing dependence on Feshbach resonance strength. We directly compare two Feshbach resonances, one broad and one very narrow, which are nearly identical with the exception of the resonance strength, and find a striking difference in the first Efimov resonance position. Our measurement makes significant strides toward resolving the discrepancy between experiment and theory which exists in the field today.

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