Efimov physics in an ultracold Bose-Fermi mixture with large mass imbalance

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An ultracold Bose-Fermi mixture of Cs and Li atoms constitutes a prototypical system with large mass imbalance that allows the exploration of many intriguing phenomena in few- and many-body physics. One of such is the heteronuclear Efimov effect, due to which an infinite geometrical series of bound three-body states can be formed, given that the two-body interactions are resonant. Here we present the recent observations of consecutive Efimov resonances through measurements of three-body loss coefficients near the broad Feshbach resonance. A refined analysis of the Feshbach resonance allows us to obtain an improved determination of the scaling of the Efimov resonances, which slightly deviates from the predicted universal scaling factor for the LiCs system. In a recent study, we have determined the effect of the Cs-Cs scattering length on the three-body parameter of the Efimov resonances.

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