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Extended Efimov scenario: Boson droplets without and with an impurity

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Three identical bosons at zero temperature exhibit the Efimov effect if the magnitude of the s-wave scattering length is much larger than the other length scales of the underlying two-body potentials. This talk discusses extensions of the Efimov scenario to more than three particles. Two different systems are considered: First, the properties of N identical bosons interacting through zero-range two-body potentials are discussed. Particular emphasis is placed on investigating how the N-boson properties depend on the regularization scheme employed in the three-body sector. Second, motivated by recent experimental investigations of Cs-Cs-Li Efimov resonances, the few-body properties of N-1 non-interacting identical heavy bosons, which interact with a light impurity through a large s-wave scattering length, are investigated. For Cs-Cs-Cs-Li, the existence of two four-body states, which are universally linked to the energy of the n-th Cs-Cs-Li Efimov trimer, is predicted.

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Classification de Session: Reduced Dimensional Systems and Extended Efimov Physics