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Few-body universality: from Efimov effect to super Efimov effect

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Physics is said to be universal when it emerges regardless of microscopic details. The most remarkable example is the Efimov effect, which predicts the emergence of an infinite tower of three-boson bound states in three dimensions with binding energies obeying the universal exponential scaling. In this talk, I will discuss our recent proposal for its condensed matter realization, namely, the Efimov effect in quantum magnets [1]. Also, I will discuss our recent discovery of new few-body universality, the super Efimov effect, which predicts the emergence of an infinite tower of three-fermion bound states in two dimensions with binding energies obeying the universal doubly exponential scaling [2].

[1] Y. Nishida, Y. Kato, and C. D. Batista, *Nature Physics* 9, 93-97 (2013).

[2] Y. Nishida, S. Moroz, and D. T. Son, *Phys. Rev. Lett.* 110, 235301 (2013).

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