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Universal Few-body Physics in Strongly Correlated Quantum Gases[1]

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In this talk, I will discuss universal properties of few-body collisions and their influence on ultracold quantum gases in the regime where interatomic interactions are strongly affected by a Feshbach resonance. Such universal properties are related to what is known today as Efimov physics. Predicted about 40 years ago, the Efimov effect is one of the most counterintuitive quantum phenomena that manifest in a "simple" few- particle system and is of crucial importance in determining the stability of condensates. Despite of many failed attempts to disprove the Efimov effect, today several experiments in ultracold quantum gases have found evidence of such phenomena and have established a new research venue. I will discuss our new finds on the extension of such phenomena for more particles and the prospects of using it for controlling ultracold chemical reactions.

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