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Microscopic origin and universality classes of the three-body parameter

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Three particles resonantly interacting via short-range pairwise interactions experience the Efimov attraction which can bind them in an infinite series of three-body bound states. This phenomenon is well described in the zero-range theory, but this theory requires the introduction of a three-body parameter.

In this talk, I address the microscopic mechanism determining the three-body parameter from single-channel pairwise interaction potentials. I will show that it originates from a three-body deformation induced by pair correlation. This interpretation explains the universality of the three-body parameter observed for van der Waals potential, and suggest the existence of several universality classes depending on the nature of the pairwise potential.

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