

Molecular states from effective field theory

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The last 20 years are being highlighted by theoretical and experimental endeavours towards understanding all possible hadronic structures allowed by QCD. Since the discovery of the exotic meson $X(3872)$ by the Belle Collaboration, a handful amount of other exotic hadrons with unexpected properties appeared in particle accelerations around the world. As for their elusive structure, one of the most popular and successful explanations is of a weakly-bound, molecule-like state made of other conventional hadrons.

Weakly-bound molecular structures play a driving role in low-energy nuclear and cold-atom physics. The main physics and associated phenomena have been successfully addressed with short-range contact interactions, especially in the framework of effective field theories, with the emergence of universal correlations associated with the Efimov effect. In this talk I will introduce the counter-intuitive Efimov effect and the related correlations that appear in systems with two, three, and four particles.

Author: HIGA, Renato (University of São Paulo)

Presenter: HIGA, Renato (University of São Paulo)