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Efimov signatures of the K(1460) resonance

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The Efimov effect is a counterintuitive phenomenon concerning three non-relativistic particles with pairwise interactions supporting only one very shallow, two-particle bound state. In the so-called unitary limit, where the two-particle bound state energy goes to zero, the three-particle spectrum exhibits an infinite tower of bound states geometrically separated by a constant factor ~ 515. Efimov physics deals not only with the strict unitary regime, but also with the richer phenomenology slightly away from it, as long as the two-particle energies can still be considered shallow.

Observations of Efimov physics appear in cold atom experiments where the two-atom interactions can be tuned at will around the unitary regime via Feshbach resonance. In hadron physics, there are attempts at investigating some heavy exotic mesons as two- and three-body molecules and looking for universal correlations that are signatures of the Efimov effect. In this work we move away from the heavy quark sector, investigating a system with two kaons and one anti-kaon. The motivation is the shallow energies of the a_0 (~ 12 MeV) and f_0 (~ 2 MeV) below the two-kaon threshold. We present results for observables and evidence of universal correlations in the $K - f_0$ and $K - a_0$ scattering and the K(1460) state as candidate of an Efimov state.

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