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Van der Waals three-body systems and Efimov state

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Van der Waals molecules at ultralow energies are of significant interest in both experimental and theoretical research [1]. The ability to control the scattering length in ultracold gases makes these systems ideal for studying Efimov physics experimentally. Following the first successful observation of Efimov states in an ultracold cesium gas [2], numerous experimental studies have reported evidence of Efimov states in three-atomic systems consisting of He, Li, K, Rb, Cs, and their combinations (see review [3]).
The properties of ultracold triatomic systems are governed by van der Waals interactions. By analyzing the interaction potentials between different atomic species, we investigate the possible existence of Efimov states in these three-body systems.

1. V. Efimov, Phys. Lett. B 33, 563 (1970).
2. T. Kramer et al., Nature 440, 315 (2006).
3. P. Naidon and Sh. Endo, Rep. Prog. Phys. 80, 056001 (2017).

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