

Can Cooper Pairs in Benzene Form Efimov States?

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Abstract

A Cooper pair (CP), a pseudoboson composed of two electrons, has been detected at 38.3 eV in the photoionization of benzene. We have suggested that the six most loosely bound benzene electrons form three identical s-state ($l=0, s=0$) CP's. Three identical bosons may exhibit the Efimov effect which happens when the scattering length is large compared with the resonant two-body interactions. The overall result is an infinite number of states which is what a photon of high energy will encounter, hence the unexpected 38.3 eV result. This poster will outline two theoretical proofs of the effect and recent experimental ultracold atom studies which explicitly verify this effect. Cases where the Efimov effect might exist and be computationally accessible are suggested.