

Electron Bubbles in Liquid Helium and Quantum Mechanics

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An electron entering liquid helium forces open a cavity referred to as an electron bubble. These objects have been studied in many past experiments and appear to be well understood. However, experiments have revealed that in addition to these normal electron bubbles there are other negatively charged objects in liquid helium. Despite much effort the structure of these so-called “exotic ions” remains unknown. Our recent measurements have detected at least 18 of these ions each with a different discrete size. We have also found that there are ions with a continuous size distribution. We will discuss the possibility that these objects are bubbles in the liquid which each contain only a fraction of the electron wave function.

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