Nano structures and Devices to Study Quantum Fluids and Solids

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In the recent years there have been a lot of interests in the application of nano structures and devices to study properties of quantum fluids and solids. In the field of electrons on liquid He the theoretical proposal by Dykman and Platzman[1], initiated a break of developing nano devices towards single electron manipulation and detection[2,3]. Micrometer thick liquid helium is prepared by capillary action in a geometrically defined channel as a substrate to support electrons. Together with a nano-gapped electrode assembly, versatile devices are developed to study a quasi-one-dimensional electron transport on liquid He. Curious dynamical properties of the Wigner solid is one of the most prominent outcomes[4]. In this talk, the use of nano structures and devices is reviewed to discuss possibilities of further interesting applications.

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