Conductivity of Rydberg matter

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Conductivity of Hydrogen Rydberg Matter Phases on Top of Pt thin film surface

The Rydberg matter state of atoms (RM) was predicted by Manykin et. al. around 1980 and experimentally confirmed a few years later by Leif Holmlid's work. LH published a review article about RM in 2012 [1]. In his later work, LH has suggested that one form of RM of Hydrogen could be a superconductor and superfluid and has experimental results supporting formation of such phase [2]. The aim of the poster is to report from current state of experiments to measure electrical properties of Hydrogen Rydberg matter and transformed phases that LH has observed and he refers to as the ultra-dense state. There are no published reports by LH or anyone found in the scientific literature were this has been studied. A custom-built experimental setup has been constructed, programmed and tested at the Science Institute, University of Iceland since 2014. Here are reported measurements with deuterium Rydberg matter that have shown very promising indications of electrical conductivity of such phases.

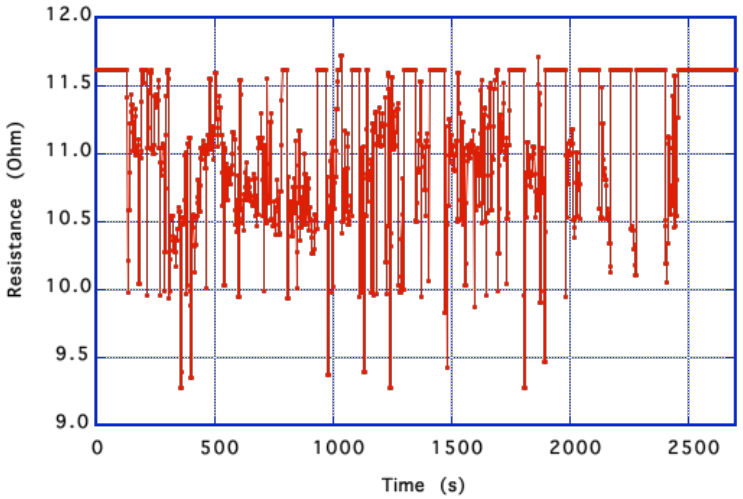

Figure 1. Resistance variations of Platinum film where 2-D Rydberg matter (D_2) layer is possibly formed on top of the Platinum film grown on top of MgO (100) single crystal surface.

[1] Experimental Studies and Observations of Clusters of Rydberg Matter and Its Extreme Forms Leif Holmlid. J. Clust Sci (2012) 23:5–34 Holmlid, L. & Fuelling, S. J Clust Sci (2015)

[2] Holmlid, L. & Fuelling, S. J Clust Sci (2015) 26: 1153