Hydrogen reactor for Rydberg Matter and Ultra Dense Hydrogen, a replication of Leif Holmlid

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Ultra Dense Hydrogen has until now never been detected outside the research group of Gotenborg University lead by Professor Leif Holmlid. We hereby present a reactor setup that converts Hydrogen to Rydberg matter, dense and ultra dense state of Hydrogen to be used in energy systems. Ultra Dense Hydrogen is releasing particles which can be one of the experimentally possibilities to explain LENR.

Ordinary Rydberg matter H(1) is a condensed phase of interacting Rydberg species of atoms and molecules, which can condense to form dense and ultra dense states of Hydrogen D(0) with bond distance of 2,3+/-0,1pm in a reactor setup. The current experimental reactor builds on the research reactor on Ultra Dense Deuterium used by Prof Leif Holmlid at the University Of Goteborg. Ultra dense hydrogen is of extreme importance for fundamental reasons but also as fuel with the highest energy content of any combustion fuel, target material for laser initiated inertial confinement fusion and for the production of high energy particles. Several experimental setups has been successfully demonstrated to produce Rydberg Matter (Badiei & Holmlid, 2006) and ultra dense states of Hydrogen (Olofson & Holmlid, 2012) at the University Of Gøteborg by the research group of Professor Leif Holmlid but this is the first highly successful reactor design outside the University. Here we describe an efficient emitter holder, system and reactor design for applied physical purposes to produce Rydberg Matter and ultimately ultra dense states of hydrogen. A emitter holder is produced with the flexibility of being implemented into any reactor design for future research and development into ultra dense hydrogen. We show how the system operates and is used to monitor Rydberg matter and condensed hydrogen states.

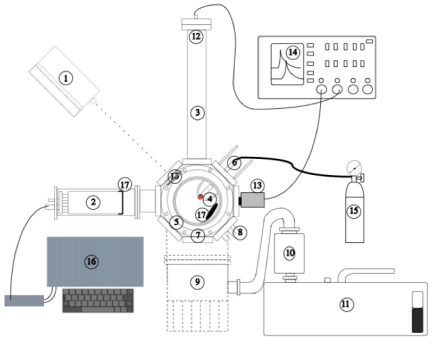

Figure 1. Experimental reactor for Rydberg and Ultra Dense Hydrogen showing YAG laser (1), (2) Photonelectron multiplier, (3) time-of-flight tube TOF, (4) Emitter, (5) vacuum chamber, (6) gas and electrical feedthrough, (7) adjustable substrate stage, (8) temperature probes, (12) TOF detector

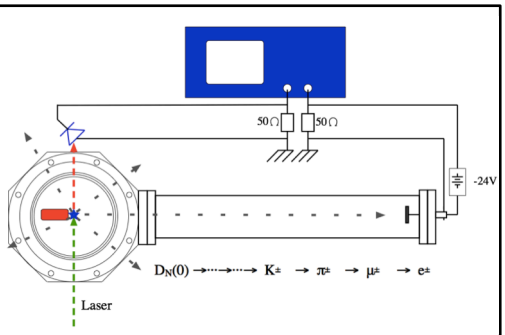

Figure 2. Time Of Flight setup for the detection of charged particles emitted from Ultra Dense Hydrogen.

[1] Badiei, S., & Holmlid, L. (2006). Experimental studies of fast fragments of H Rydberg matter. Journal of Physics B: Atomic, Molecular and Optical Physics, 39(20), 4191–4212. https://doi.org/10.1088/0953-4075/39/20/017

[2] Olofson, F., & Holmlid, L. (2012). Detection of MeV particles from ultra-dense protium p(−1): Laser-initiated self-compression from p(1). Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms, 278, 34–41. https://doi.org/10.1016/j.nimb.2012.01.036