A 24: Atomic collisions and ultracold plasmas

Time: Wednesday 16:15–18:15 Location: S Fobau Physik

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Progress towards an "Intense Pulsed Positron Source" (IPPS) — Matrin Singer[2], •Stephan König[1], Uwe Hergenhahn[2], Gerrit Marx[1], Thomas Sunn Pedersen[2], and Lutz Schweikhard[1] — [1]Institut of physics, University of Greifswald, Felix-Hausdorff-Str.6, 17489 Greifswald — [2]Max Planck Institute for Plasma Physics,Wendelsteinstr. 1, 17491 Greifswald

The development of an Intense Pulsed Positron Source (IPPS) is part of the APEX (A Positron Electron eXperiment) and PAX (Positron Accumulation eXperiment) project [1] with the goal to produce and confine the world's first matter-antimatter pair plasma. The world's brightest positron source, located at FRM2 at Nepomuc (NEutron inducted Positron source MUniCh) in Garching, provides about 10^9 positrons per second. The IPPS project aims at the accumulation and confinement of up to 10^{12} positrons.

In this contribution we present the layout of IPPS and preliminary experimental results. In a first step a Penning-Malmberg trap is built and tested at Greifswald to accumulate, store and control the radial motion of about 10^{10} electrons. In a second step the electrons will be guided into multiple Penning- Malmberg traps on axis and radially spread behind the first trap [2]. After the successful test of the multiple traps, the setup will be moved to NEPOMUC.

[1] T. Sunn Pedersen et al., New J. Phys. 14, 035010 (2011)
[2] J. R. Danielson et al., Phys. Plasmas 13, 123502 (2006)