

# HILITE - High-Intensity Laser Ion-Trap Experiment

*Tuesday 31 January 2017 10:00 (20 minutes)*

We are currently setting up a Penning-trap experiment to investigate laser-ion interaction in high-intensity photon fields and study non-linear processes like multi-photon and tunnel ionization of trapped ions. The setup is designed to be transported to different high-intensity laser facilities, like FLASH at DESY, or JETI/POLARIS in Jena. The trap is designed as an open-endcap Penning trap, which allows free access from both sides for particle loading and the laser beam. Beside the two endcap electrodes, it consists of a split-ring electrode for excitation and detection in the center and two conical-shaped capture electrodes for dynamic capture of ions from external sources. A non-destructive detection technique of the ion motion, as well as a selection of specific ion species of interest will be implemented. The complete setup is located at the center of a superconducting magnet with a field strength of up to 6 T. A pulse-tube cooler is used for cooling the trap and the electronics to 4 K. Initially, a Ti:sapphire laser system with 10 mJ pulse energy and a pulse duration of 30 fs will be used.

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**Session Classification:** Scientific Talks 4: The different topics PhD students are working on within Matter and Technology