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TU Wien, Institut für Angewandte Physik, E134
1040 Wien, Wiedner Hauptstraße 8-10
Yellow Tower „B“, 5th floor, SEM.R. DB gelb 05 B



Novel method and devices for production of highly charged ions

It is proposed a new method for efficient production of highly charged ions. The ions are produced and confined in local potential traps formed by the rippled electron beam in a focusing magnetic field. The electron current density can reach extremely high values of the order of 10 kA/cm^2 on a short length of the ion trap. Based on this method, a family of hand-size ion sources and traps with electron beam energy ranging from a few tens of eV up to a few tens of keV has been developed. The devices operate at room temperature due to the use of permanent magnets and standard vacuum techniques. The extraction of ions from the ion source can be realized in both axial and radial directions. The devices are named MaMFIS/T (main magnetic focus ion sources and traps). The novel ion sources offer many applications in atomic physics, plasma physics, solid-state physics, single ion implantation, ion lithography and elsewhere.

Andrei Nefiodov graduated from Leningrad State University (Faculty of Physics, Department of Quantum Mechanics) in 1988. In 1991 Andrei got PhD in Theoretical and Mathematical Physics from St. Petersburg State University. Since 1992 Andrei has been working in Petersburg Nuclear Physics Institute, Department of Theoretical Physics, currently in the position of Leading Research Fellow. In 1997-1998 Dr. Nefiodov was a Honorary Research Fellow by The Royal Society at the University College London in the UK. In 2001-2002 he was Alexander von Humboldt Fellow in the Institute for Theoretical Physics at Dresden University of Technology in Germany. In 2004 Dr. Nefiodov habilitated in Theoretical and Mathematical Physics.

All interested colleagues are welcome to this seminar lecture (45 min. presentation followed by discussion).

Friedrich Aumayr
(LVA-Leiter)

Richard Wilhelm
(Seminar Chair)