



Special NUSTAR Seminar

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Tuesday, May 14, 2019 at 13:00 p.m.

Seminar Room Theory, SB3 3.170a

Planckstraße 1, 64291 Darmstadt

Main Magnetic Focus Ion Source: Device with High Electron Current Density

The Main Magnetic Focus Ion Source (MaMFIS) is a room-temperature hand-size device. The technology is based on the use of the local ion traps, which appear in crossovers of rippled electron beam propagating in a drift tube. The current density of the electron beam focused by a thick magnetic lens can reach extremely high values, which significantly exceed the Brillouin limit for laminar flow of electrons. Thus far a whole family of pilot devices has been developed and tested. The most recent studies are performed in Veksler and Baldin Laboratory of High Energy Physics at JINR in Dubna. In these experiments, the control over behavior of ions in local ion traps is carried out by varying the potentials on different sections of the drift tube. It is shown that Ar^{16+} ions are produced in about 1 ms, while the ionization time for Ce^{40+} ions is about 10 ms. This is consistent with the electron current density on the order of 20 kA/cm^2 . A possibility of using the MaMFIS for charge breeding is discussed.