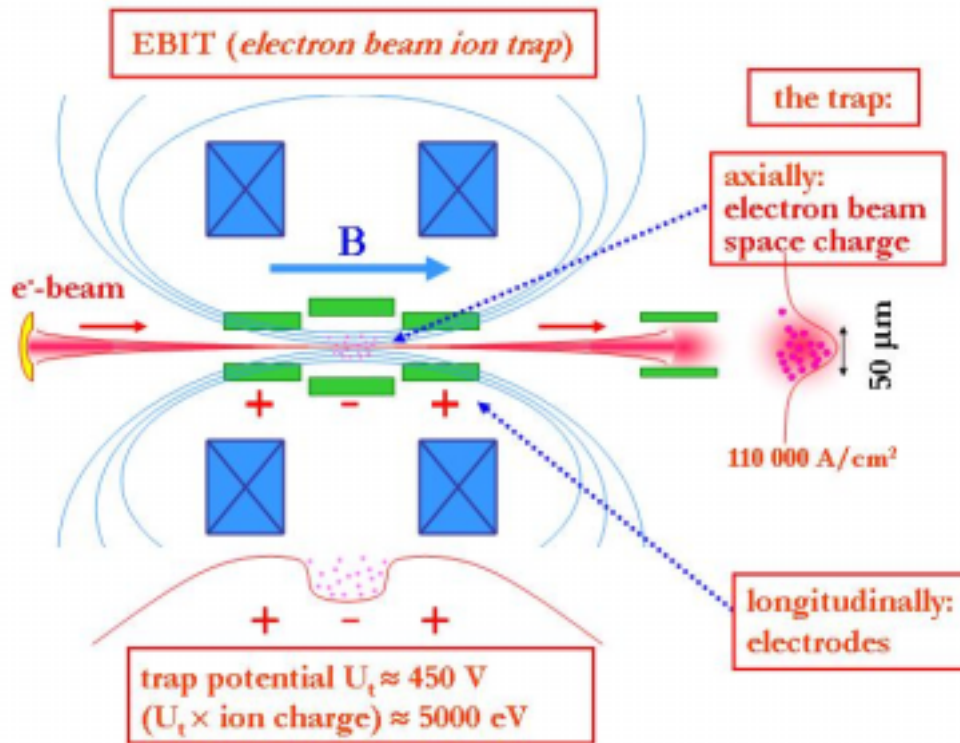


The Electron Beam Ion Trap (EBIT)

The EBIT device uses the combination of electrostatic and magnetic fields to confine particles in 3-D. A magnetic field is applied so as to trap particles in 2-D, by virtue of their cyclotron motion, and then electrostatic electrodes are used in order to trap in the third dimension.



Once trapped an intense electron beam is fired upon the ions. This beam strips electrons from the ions and hence their charge state rises. A higher charge state is required to reduce statistical uncertainty in the mass measurements taken in the penning trap.

Recommended Further Reading:

Text Book

H.F. Beyer, H.-J. Kluge and V.P. Shevelko X-Ray Radiation of Highly Charged Ions

Recent Publications

R.E. Marrs et al., PRL 72(1992)4082, Production and Trapping of Hydrogen-like and bare Uranium Ions in an Electron Beam Ion Trap

R.E. Marrs and D.R. Slaughter, UCRL-JC-131602(1998), A High Intensity Electron Beam Ion Trap for Charge Boosting of Radioactive Ion Beams

On the web

NIST Electron Beam Ion Trap Facility

<http://physics.nist.gov/MajResFac/EBIT/ebit.html>