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First Results of Ion Trapping in the Dresden EBIT II

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Abstract. With the Dresden EBIT it is possible to produce highly charged ions in a compact, economical and long-term stable ion source working at room temperature. The operation principle is based on electron impact ionization of primarily neutral atoms in a high-density electron beam in combination with electrical potentials for axial trapping. Radial trapping is realized by the negative space charge of the electron beam itself. After build-up the first Dresden EBIT in 1999 first results from a second EBIT device, the so-called Dresden EBIT II are presented. By means of X-ray spectroscopy we analyze the influence of different source parameters as ion trapping time, height of wall potentials and pressure on the production and storage of highly charged xenon ions.

Key words: highly charged ions, ion trap, xenon ions, EBIT.