

## Time-resolved investigation of ionization processes in the Dresden Electron Beam Ion Source

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The emission of characteristic x-ray lines of iron and krypton ions was measured in dependence on the confinement time in an Electron Beam Ion Source, the DRESDEN EBIS. Primarily the measurement was focused on x-ray lines from dielectronic recombination (DR) processes. Due to the sharp resonant character of DR processes the formation of individual ion charge states can be observed at different electron energies (resonance energies) with time-resolved energy-dispersive x-ray spectroscopy. In the case of iron ions, experimentally observed resonance energies are compared to resonance energies calculated with the Flexible Atomic Code (FAC). Further, on outer-shell  $K_{\alpha}$  x-ray satellites of krypton ions are time-resolve analyzed to construct the evolution of the ionization of krypton ions in the electron beam. © 2006 American Institute of Physics.

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