

Abstract Submitted
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Ionization and Recombination Measurements at the Heidelberg Heavy Ion Storage Ring TSR D.W. SAVIN, M. HAHN, M. LESTINSKY, O. NOVONTY, Columbia University, D. BERNHARDT, A. MUELLER, S. SCHIPPERS, Justus-Liebig-Universitaet, C. KRANTZ, A. WOLF, Max Planck Institute for Nuclear Physics — Reliable ionization balance calculations are needed to analyze spectra from a wide range of cosmic sources including photoionized objects such as AGNs and X-ray binaries and electron ionized objects such as stars, supernovae, galaxies, and clusters of galaxies. These theoretical charge state distributions (CSD) depend in turn upon the underlying atomic data. Of particular importance are reliable rate coefficients for dielectronic recombination (DR), which is the dominant electron-ion recombination mechanism for most ions, and for electron impact ionization (EII). We are carrying out DR and EII measurements of astrophysically important ions using the heavy ion Test Storage Ring (TSR) at the Max-Planck-Institute for Nuclear Physics in Heidelberg, Germany. The storage ring measurements are largely free of the metastable contamination found in other experimental geometries. Storage ring measurements therefore result in more precise DR and EII reaction rate measurements. The measured rate coefficients can be used in modeling cosmic and laboratory plasmas as well as in the benchmarking of theoretical atomic calculations. Here we report results for selected recent DR and EII measurements.

D. W. Savin
Columbia University

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