

Single and multiple ionization of ions by electron and photon impact

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The Giessen Atomic and Molecular Physics group (<http://www.uni-giessen.de/amp>) has long-standing expertise in electron-ion and photon-ion collisions employing crossed-beam and merged-beams experimental methods. In recent years, we have measured *absolute* cross sections for electron impact single and multiple ionization of fusion relevant ions such as tungsten [1,2] and xenon [3] ions, and have developed a new high-current electron gun [4] facilitating electron-ion crossed beams experiments at electron energies of up to 3.5 keV (previously, the electron energy had been limited to 1 keV). In addition, we carry out experiments on photoionization of ions [5,6], which, although not being directly relevant to fusion plasmas, nevertheless provide important benchmarks for the further development of the theoretical methods. In particular, we have performed joint experimental and theoretical studies of valence shell ionization of tungsten ions as well as of inner-shell ionization of, e.g., negatively charged oxygen ions [8] and singly charged iron ions [9]. In my talk, I will present selected examples from our recent work, which illustrate our capabilities to challenge state-of-the-art atomic collision theory in various aspects.

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