

PHOTOIONIZATION OF FREE AND CONFINED ATOMS

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Owing to the *relative* simplicity of atoms and atomic ions, investigation of their response to ionizing electromagnetic radiation provides a “laboratory” for the study of photoionizing interactions. In addition, since atoms are the building blocks, the “elementary particles”, of molecules, clusters, surfaces and condensed matter generally, the photoabsorption properties of the individual atoms are often reflected by the more complex aggregate. Given these motivations, along with advances in experimental and calculational technology in recent years, the study of the photoionization of atoms and atomic ions has seen a resurgence [1], which has added much new phenomenology as well as fundamentally new physics to our understanding of the photoionization process. In this talk, some examples of these new findings will be presented, including low-energy breakdown of the dipole approximation [2,3], high-energy breakdown of the independent particle approximation [4,5], photodetachment of inner shells of negative ions [6-8], and photoionization of confined atoms [9].

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