atoms

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Special Issue Reprint

Photoionization of Atoms

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Photoionization is a process of ionization by photons. It is one of the most important processes for studying astronomical objects. This Special Issue will provide an overview of photoionization, characteristic features, data availability, and the methodologies used to study these topics both experimentally and theoretically.

Photoionization proceeds directly, exhibiting a smooth background, through a two-step process when an autoionizing state forms before ionization, introducing resonances. Only one theoretical approach, close coupling approximation, reproduces resonances along with the background. Theoretical studies have the advantage of covering a wide energy range and many excited states. Hence, much more theoretical research has been carried out in comparison to experiments, which are limited by the number of sophisticated set-ups required.

Experimentation is challenging. The now-surpassed third-generation synchrotron facilities gave access to high photon flux. However, founding agencies often prefer to support applied research because of the relatively immediate and abundant number of publications associated with the lack of a profound understanding. This Special Issue hopes to change this attitude.

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