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**Electron and Photon Impact Ionization: Extracting Fundamental Quantities From Experiment<sup>1</sup>**

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Electron impact ionization and photoionization have a lot in common for high incident electron energy and low photon energy. In both cases the atomic ionization process can be expressed in terms of a very truncated multipole expansion. The two ionization processes will be compared and experiments for both will be described that enable the measurement of the relative magnitudes and phases of the multipole amplitudes. The key to the technique is the use of autoionizing levels to introduce a known energy dependent magnitude and phase modulation.

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