AMOP Seminar

Plateau Structure in Resonant Laser-Assisted Electron-Atom Scattering

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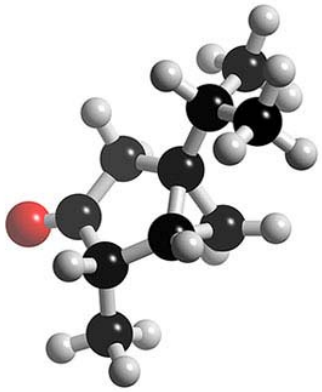
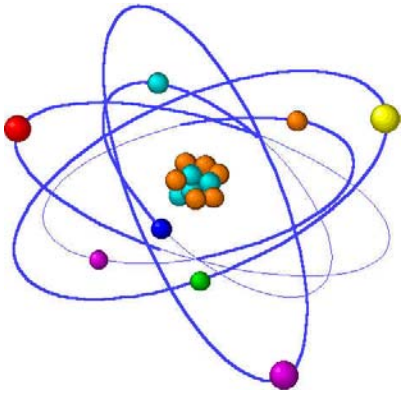


In intense laser interactions with atoms or molecules, cross sections and/or rates often show a large range in the number of laser photons absorbed over which the cross sections or rates are fairly constant. This key feature is thus called a "plateau" in the spectrum. The existence of the plateau implies the ability to transfer the energy in large numbers of laser photons to ionized electrons or to high-order harmonics Unfortunately, the cross sections or rates in the plateau region are quite small. Thus ways to increase the magnitudes of plateaus are of great interest.

In this talk we show that when the incident electron energy is an integer multiple of laser photons above the ground state energy of the negative ion (in which the electron is captured by stimulated emission), then two remarkable things occur: (1) The magnitude of the scattering cross section in the plateau region (and elsewhere) increases by orders of magnitude, and (2) the structure of the plateau becomes identical with that corresponding to multiphoton detachment of the negative ion.



Wednesday, 5 November 2008

Brace Lab 202, 3:30pm