

## **Excitation and ionization of C<sub>60</sub> by intense, elliptically polarized short laser pulses**

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Multiphoton processes in complex molecules and clusters are of great scientific interest. The aim of such research is to understand the excitation process and the subsequent relaxation processes. The C<sub>60</sub> fullerene is an ideal model system for such studies. It is, on one hand, a quite complex system having 60 delocalized  $\pi$  electrons and more than 100 vibrational modes, but on the other hand, C<sub>60</sub> is highly symmetric making it attractive for theoretical studies. In this presentation recent results on the effect of the laser radiation ellipticity on the ionization and fragmentation of C<sub>60</sub> will be shown [1]. Information about the photo induced processes can be extracted from these experiments such as the properties of the intermediate states and whether or not the recolliding electron transfers additional energy into the excited C<sub>60</sub>. A qualitative theory description of such polarization studies has been derived [2]. It turns out, that polarization dependence can very sensitively distinguish single (SAE) and multi-electron dynamics (MAE).

[1] I.V. Hertel, I. Shchatsinin, T. Laarmann, N. Zhavoronkov, H.-H. Ritze, and C.P. Schulz, Phys. Rev. Lett. **102**, 023003 (2009).

[2] I. Shchatsinin, H.-H. Ritze, C.P. Schulz, and I.V. Hertel, Physical Review A **79**, 053414 (2009).