

Abstract Submitted  
for the DAMOP13 Meeting of  
The American Physical Society

**Mechanism of delayed double ionization in a strong laser field**

TURGAY UZER, Georgia Institute of Technology, FRANCOIS MAUGER, Université de Sherbrooke, ADAM KAMOR, Georgia Institute of Technology, CRISTEL CHANDRE, Centre de Physique Theorique — Nonsequential Double Ionization (NSDI), for linearly polarized strong laser fields, has been successfully explained with the recollision model. In this model, an electron, after being ionized by a strong linearly polarized laser field is hurled back and collides with its parent ion and triggers the ionization of a second electron. The picture for NSDI usually yields little delay between the recollision and the subsequent ionization. Experimental and theoretical results have revealed an alternative route in which there is a substantial delay between the recollision and the subsequent ionization. This mechanism has been coined as Recollision Excitation with Subsequent Ionization (RESI). The recollision model usually attributes a passive role to the secondly ionized (inner) electron. In my talk, I will show that the inner electron's role is very far from being a passive one, waiting for a recollision to ionize [1]. I will show that delayed double ionization stems from the inner electron being promoted to a sticky region. I will identify the mechanism that traps and releases the electron from this region and will show a signature of it as oscillations in relative RESI yields.

[1] Phys. Rev. Lett. - **108**, 063001 (2012); Phys. Rev. A - **85**, 066205 (2012)

Francois Mauger  
Université de Sherbrooke

Date submitted: 24 Jan 2013

Electronic form version 1.4