

Abstract Submitted  
for the DAMOP08 Meeting of  
The American Physical Society

**Characterization of laser-induced recolliding wave packet. Application to non-sequential double ionization.**<sup>1</sup> SAMUEL MICHEAU, ZHANGJIN CHEN, ANH-THU LE, CHII-DONG LIN, Kansas State University — The concept of electronic recollision in intense laser-atom interaction is of particular interest since it lies at the core of many strong field phenomena such as above-threshold ionization electrons, high-harmonic generation, or non-sequential double ionization. Underlying this concept is the generation of an electron wave packet which is driven back to its parent ion by the oscillating laser field, inducing further rescattering processes. However, this recolliding wave packet (RWP) can not be directly measured since it evolves in the presence of the laser field. We will show at the Conference how we retrieve properties of the RWP from the 2D photoelectron momentum distribution. Then, to demonstrate the physical reality of the extracted electronic wave packet, we will show that the non-sequential double ionization of atoms by a laser pulse can be interpreted as the impact ionization of the ionic core by this recolliding wave packet.

<sup>1</sup>Supported by the U.S. DOE.

Samuel Micheau  
Kansas State University

Date submitted: 31 Jan 2008

Electronic form version 1.4