Abstract Submitted for the DAMOP20 Meeting of The American Physical Society

Ionic Emission from Atomic Clusters in Intense Laser Pulses¹ ABRAHAM CAMACHO GARIBAY, HYUNWOOK PARK, ZHOU WANG, PIERRE AGOSTINI, LOUIS DIMAURO, The Ohio State University — For several years now, clusters have proved to be fascinating objects to explore and study intense light-matter interaction over a wide range of wavelengths. Their finite and controllable size allows to study the transition from molecules to the solid states, being able to efficiently absorb laser radiation and displaying a variety of interesting phenomena. When subjected to intense IR pulses, clusters emit fast electrons, highly charged and energetic ions, short wavelength photons and even neutrons. In this talk, I will focus on the well-known yet vexing phenomenon that is the anisotropy displayed in ionic emission, which has been experimentally observed to take place over a wide range of laser wavelengths and intensities. Through a combination of careful experiments and MD simulations, it will be possible to clearly understand the roles that Coulomb explosion, hydrodynamic expansion, atomic polarizability, wavelength and pulse length, jointly play to explain ionic emission.

¹AirForce Office of Scientific Research under MURI award number FA9550-16-1-0013 and Ohio Supercomputer Center under Project PAS0207

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Date submitted: 08 Jan 2020 Electronic form version 1.4