

Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Ultrafast plasma dynamics in rare gas clusters JAN MICHAEL ROST, IONUT GEORGESC, ALEXEY MIKABERIDZE, ULF SAALMANN — We study two cases of ultrafast electron plasmas in rare gas clusters. In the first one a pump-probe scenario with two 250 attosecond pulses (40 eV photon energy) is used [1] to generate and probe a plasma of a few electrons in a small Ar_{13} cluster. We discuss the properties of this minimal plasma. In the second case we subject a rare gas cluster to a regular strong laser pulse (800 nm wavelength). A plasma of cigar shape is ignited in the cluster by some seed atoms with lower ionization potential than those of the cluster. Linear or elliptic polarization of the laser can be applied, only changing the shape of the plasma, which is non-spherical in both cases. This is important to ignite the plasma in the first place, which is an ultrafast process since it does not require nuclear motion [2].

[1] Ulf Saalmann, Ionut Georgescu and Jan M. Rost, New J. Phys. 10, 025014 (2008).

[2] Alexey Mikaberidze, Ulf Saalmann, Jan M. Rost, submitted (2009).

Jan Michael Rost

Date submitted: 23 Jan 2009

Electronic form version 1.4