Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

Collective Autoionization of Helium Nanodroplets Induced by Intense VUV Light Pulses AARON LAFORGE, University of Freiburg, LDM JOINT RESEARCH COLLABORATION[1] — Ionization dynamics of helium nanodroplets was studied by the seeded VUV free electron laser (FEL), FERMI@Elettra. Using the unique tunability of the seed laser along with the high intensity of the FEL, it is possible to resonantly excite the nanodroplets such that multiple atoms within the droplet are simultaneously excited. In this state, neighboring excited atoms can decay via energy transfer similar to a doubly excited state decaying by autoionization. As a result of multiple atoms being ionized, the droplet is coulomb exploded. This effect leads to an enhancement in the abundance of ions compared to nonresonant two photon ionization. To observe the effects, one compares the power dependencies on the ion yield for various excited states to those of non-resonant ionization and direct ionization.

[1]Collaborative effort for the low density matter endstation at FERMI@Elletra

Aaron LaForge
University of Freiburg

Date submitted: 29 Jan 2013 Electronic form version 1.4