

Abstract Submitted
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Ultrafast electron dynamics in rare gas clusters under X-FEL light JAN MICHAEL ROST, CHRISTIAN GNODTKE, ULF SAALMANN — Time resolved imaging with Angstrom resolution is one of the prime goals to use XFEL light for. Here we investigate in detail the dynamics of electrons and ions of a cluster exposed to a realistic X-FEL pulse. We focus on electron migration phenomena and investigate their role under the aspect of harm and benefit for imaging the cluster structure. Field ionization processes turn out to play an important role where the electric field is generated by quickly formed ions [1]. We also propose an experiment with double pulse of 1 fs duration each, separated by 10-100 fs which can be realized at LCLS in Stanford. With this pump-probe scenario, the dynamics of Auger processes in rare gas clusters (here Ne) can be studied which promises to be interesting since it differs from the isolated atom due to the neighboring ions/atoms [2].

[1] Ch. Gnodtke, U. Saalman, Jan M. Rost, submitted (2009).

[2] Ulf Saalman and Jan M. Rost, Phys. Rev. Lett. 89, 143401 (2002).

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