Analysis of ionization with intense laser radiation[1] BAHMAN
HAFIZI, DANIEL GORDON, Naval Research Laboratory, JOHN PALASTRO,
Icarus Research Inc, MICHAEL HELLE, Naval Research Laboratory — Laser-
plasma experiments routinely rely on field ionization for plasma formation. While
several analyses of non-relativistic ionization have been carried out [1], they often
fail to reproduce experimental observations [2]. Moreover for large laser intensities
or for high-Z atoms relativistic effects become important. We have undertaken a nu-
merical study of ionization processes employing three-dimensional, time dependent,
deBroglie/Compton wavelength-resolved, parallel algorithms for the Schrödinger and
Klein-Gordon equations [3]. Along with the numerical analysis we have performed
analytic modeling, employing the Schrödinger, Klein-Gordon and Dirac equations.
Results of the analysis and numerical studies will be presented. In particular we dis-
cuss ionization of hydrogen-like Xe, the momentum distribution of ejected electrons
and the related Bohmian trajectories.

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Bahman Hafizi
Naval Research Laboratory

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