DAMOP11-2011-000935

Abstract for an Invited Paper
for the DAMOP11 Meeting of
the American Physical Society

Theory of attosecond transient absorption[1]

KENNETH SCHAFER[2], Department of Physics and Astronomy, Louisiana State University

Attosecond transient absorption spectroscopy is potentially a powerful tool for studying electron dynamics on an ultrafast time scale. We present a theoretical study of transient absorption and reshaping of extreme ultraviolet (xuv) pulses by atoms dressed with a moderately strong infrared (ir) laser field. We formulate the atomic response using a time-frequency approach based on the time-dependent dipole induced by the light fields. We study attosecond transient absorption in a macroscopic gas by incorporating the time-frequency approach into a solution of the coupled Maxwell-Schroedinger equations.

[1]In collaboration with Mette Gaarde, Department of Physics and Astronomy, Louisiana State University.

[2]Work supported by National Science Foundation grants number PHY-0701372 and PHY-1019071