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X-Ray Laser Driven Gold Planar Targets[1] TZVETELINA PETROVA, Naval Research Laboratory, KENNETH WHITNEY, Berkeley Research Associates, JACK DAVIS, GEORGE PETROV, Naval Research Laboratory
— A non-equilibrium ionization model is assembled to investigate the subpicosecond ionization dynamics of the hole states, that are created and destroyed when an incident coherent high intensity x-ray laser pulse impinges on planar gold targets. There are two aspects to this modeling. One is the construction of simplified atomic models of gold and of its adjacent ions. Second is the study of the nonlinear optical dynamics and absorption physics of an x-ray pulse interacting with a gold target as a function of the x-ray wavelength, pulsewidth, and intensity. The ionization levels and excited state populations reached during an interaction provide important diagnostics of the x-ray pulse. Of interest are the ~ 4.45 keV x-ray pulse generated in previous KrF experiments[2] and extensively modeled[3,4,5] as well as the x-ray pulses generated at SLAC.

[1]DOE/NNSA under contract # 0000168 and by the NRL under 6.1 Base Program.
[2]Borisov *et. al.* J. Phys B **41** 105602 (2008).
[3]Petrova *et. al.* J. Phys B **43** 025602 (2010), **44** 125601 (2011); HEDP **8** 209 (2012).
[4]Davis *et. al.* HEDP **8** 238 (2012).
[5]Whitney *et. al.*, PRA 003400 (2012).

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