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Plasma generation by chirped ultrashort laser pulses JEREMY GULLEY, Kennesaw State University — Current models of ultrafast-laser induced ionization in dielectric materials typically assume that the ultrashort pulse is (at least approximately) monochromatic. However, in recent years it has been demonstrated both computationally and experimentally that material damage by ultrashort laser pulses significantly depends on the chirp of the pulse in question. Here we present results from a recent study that explores this problem using simulations of laser-induced ionization in dielectrics where free-carrier generation is sensitive to the instantaneous frequency of the laser pulse. It is demonstrated that plasma generation by initially unchirped pulses is not immune from this chirp-dependence since nonlinear optical effects, such as super-continuum generation, significantly chirp the pulse as it propagates.

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