

Abstract Submitted
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Resonant propagation of strong x-ray fields¹ KAI LI, The University of Chicago, PHAY HO, LINDA YOUNG, Argonne National Laboratory — Modification of strong x-ray fields propagating through a resonant medium of neon-gas is studied. The simulation is based on solution of a one-dimensional Maxwell-Bloch equation, with the incident x-ray photon energy near resonance with 1s-3p transition. We solved for the evolution of the total fields, pump, simulated emission and absorption, as a function of input pulse properties. The pulse compression and spectral modulation revealed in the simulation is potentially applicable to control x-ray free-electron laser (XFEL) pulse properties in experiments. The nonlinear propagation of strong XFEL pulses is also of interest for x-ray optics and spectroscopy.

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