Abstract Submitted
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Theoretical study of femtosecond XUV transparency induced by coherent coupling of helium doubly excited states[1] MICHAL TARANA, JILA, University of Colorado, Boulder, CO 80309, USA, CHRIS H. GREENE, Department of Physics and JILA, University of Colorado, Boulder, CO 80309, USA — Presently there is great interest in the application of light in the X-ray regime, produced by high-order harmonics, to investigate novel coherent X-ray optical phenomena. Loh et al. [1] report the observation of EIT-like behavior in the extreme ultraviolet (XUV) by coherent coupling of 2s2p and 2p2 doubly excited states in He, probing with laser-produced high-order harmonics. The EIT-like phenomenon observed in their work is characterized by an increase in transmission over the entire unperturbed lineshape. It is the aim of our work to extend the phenomenological theoretical treatment of this effect included in [1]. We present calculations based on numerical solution of the time-dependent Schrödinger equation in an LS-coupling configuration interaction basis set. The calculations utilize a complex absorbing potential at long range and and permit an analysis of the resulting ionization yield. This approach has the potential to give a more detailed understanding of the underlying physics than the phenomonological treatment adopted in [1].

[1] Z.H. Loh, C.H. Greene and S.R. Leone, Chem. Phys. 350, 7 (2008).

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