Abstract Submitted
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Light-induced Fano structures and tunable transparency in the Argon continuum[1] NATHAN HARKEMA, University of Arizona, COLEMAN CARIKER, University of Central Florida, SERGIO YANEZ-PAGANS, University of Arizona, LUCA ARGENTI, University of Central Florida, ARVINDER SANDHU, University of Arizona — Several studies in Helium [1,2] have shown the existence of Lorentzian-like light-induced structures which appear as a result of two-photon (XUV + IR) transitions to the bound excited states. Here we investigate light-induced structures that appear in the Argon continuum as a result of two-photon transitions to autoionizing $3s^{-1}3d$ and $3s^{-1}5s$ states. These structures are Fano-like which implies an interference between bound and continuum pathways for the two-photon transitions. Additionally, the structures include windows of induced transparency which can be tuned in energy by adjusting the wavelength of the IR pulse. This control of absorption and transparency can be applied to XUV pulse shaping and ultrafast signal processing. We compare our experimental results with ab initio calculations to quantify the coupling parameters that determine the details of the absorption lineshapes and light-induced structures. [1] S. Chen et al., Phys. Rev. A 86, 063408 (2012). [2] M. Chini et al., Sci Rep 3, 1105 (2013)

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