Abstract Submitted
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Electromagnetically induced transparency for x-rays[1] CHRISTIAN BUTH, ROBIN SANTRA, LINDA YOUNG, Argonne National Laboratory, Argonne, Illinois 60439, USA — We discuss electromagnetically induced transparency (EIT) for x-rays in laser-dressed neon. We use a newly devised *ab initio* theory to calculate the x-ray photoabsorption cross section and the x-ray polarizability of a neon atom dressed by an optical laser (800 nm, $10^{13}\,\frac{\mathrm{W}}{\mathrm{cm}^2}$) with a photon energy close to the $1s^{-1}\,3s \rightarrow 1s^{-1}\,3p$ transition. The results are investigated further in terms of an exactly solvable Λ-type three-level model where we point out the need for an intense dressing laser due to the femtosecond lifetime of core-excited neon. Practical experimental realization of EIT for x-rays is discussed and potential applications are outlined. This work opens new opportunities for research with ultrafast x-ray sources.

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