Abstract Submitted
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Numerical Studies of Relativistic 4-Photon Upconversion[1] ALEC GRIFFITH, KENAN QU, NATHANIEL FISCH, Princeton University — Four-photon scattering at relativistic intensities has been proposed for efficient amplification of high frequency seed photons [1]. The amplification of the high frequency seed may be disrupted by the detuning of the resonance caused by self and cross phase modulation of all four waves. If the disrupting effects from detuning can be overcome, it may be possible to achieve greater energy transfer and higher contrast in the output pulse. Balancing the self and cross phase modulation effects, as well as structuring the seed and pump envelopes, may help to overcome the detuning. [1] Malkin, V. M., and N. J. Fisch. "Towards megajoule x-ray lasers via relativistic four-photon cascade in plasma." Physical Review E 101.2 (2020): 023211.

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