

Abstract Submitted
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Laser pulse sharpening with electromagnetically induced transparency in plasma¹ KENAN QU, NATHANIEL FISCH, Department of Astrophysical Sciences, Princeton University, Princeton, New Jersey 08544, USA — We propose a laser-controlled plasma shutter technique to generate sharp laser pulses using a process analogous to electromagnetically induced transparency in atoms. The shutter is controlled by a laser with moderately strong intensity, which induces a transparency window below the cutoff frequency, and hence enables propagation of a low frequency laser pulse. Numerical simulations demonstrate that it is possible to generate a sharp pulse wavefront (sub-ps) using two broad pulses in high density plasma. The technique can work in a regime that is not accessible by plasma mirrors when the pulse pedestals are stronger than the ionization intensity.

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