

Abstract Submitted
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Simultaneous measurements of plasma densities and electron collision times in plasma via time-resolved interferometry¹ GARIMA NAGAR, DENNIS DEMPSEY, BONGGU SHIM, Binghamton University — We present time-resolved interferometry to simultaneously measure plasma densities and electron collision times for strong field laser-matter interactions. First, an intense femtosecond pump pulse generates plasma in a solid and second, a weak 800-nm femtosecond probe traverses the pump-induced plasma and is sent to an interferometer with controlled time delay between pump and probe. By analyzing the interferograms using Fourier methods, we can extract plasma densities and electron collision times in plasma simultaneously with micrometer spatial and femtosecond temporal resolutions. Using the technique, we study the plasma dynamics when a wavelength-varied ($\lambda = 1.2\text{-}2.3 \mu\text{m}$) pump pulse undergoes laser filamentation in solid materials [1]. [1] G. Nagar et al., submitted.

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