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Session ZO05: Fundamental: Plasma Production and Diagnostic Techniques

9:30 AM–12:18 PM, Friday, November 12, 2021

Room: Rooms 306-307

Chair: Steven Shannon, North Carolina State

Abstract: ZO05.00008 : Single-shot spatio-temporal visualization of plasma and optical nonlinearity via single-shot frequency-domain holography*

10:54 AM–11:06 AM

← Abstract →

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We observe the ultrafast dynamics of solids and gases under intense femtosecond light in a single shot using Frequency Domain Holography (FDH) [1-3]. FDH is a time-resolved visualization technique that utilizes a pump pulse and two chirped laser pulses (reference and probe) for ultrafast phase measurements. Single-shot visualization of laser-matter interactions will allow for increased understanding of nonlinear optical phenomena such as Raman-induced extreme spectral broadening [4], filamentation [5], and plasma generation and recombination [3].

[1] S. P. Le Blanc et al., Opt. Lett. 56, 764-766 (2000). [2] K. Y. Kim et al., APL, 88 4124-4126 (2002). [3] D. Dempsey et al. Opt. Lett. 45, 1252-1255 (2020) [4] J. Beetar et al., Science Advances 6, eabb5375 (2020) [5] A. Couairon et al., Phys. Rep. 441, 47 (2007).

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