

Abstract Submitted
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Experimental study of preformed plasmas using the Titan laser at LLNL¹ JAEBUM PARK, HUI CHEN, JACKSON WILLIAMS, HECTOR BALDIS, ANDY HAZI, Lawrence Livermore National Laboratory, SHAUN KERR, University of Alberta, ED MARLEY, RONNIE SHEPHERD, Lawrence Livermore National Laboratory — In ultra-high intensity ($>10^{19}$ W/cm²) ultra-short (\sim picosecond scale) pulsed laser plasma experiments, the main irradiating pulses are usually preceded by nanosecond scale of pre-pulses, due to amplified stimulus emission (ASE). The ASE generates pre-plasma, which is often characterized by its scale-length, the spatial decay length of the plasma density. These preformed plasmas are believed to play an important role in laser-plasma interactions and in accelerating charged particles, such as electrons. To better understand their role in producing charged particle beams in laser-solid target interactions, we have investigated, using optical interferometry, pre-plasmas produced by a controlled nanosecond-long pulse laser and also ones created by the ASE of the short-pulse Titan laser at Lawrence Livermore National Laboratory. I will present the optical interferometry data and compare the characteristics of pre-plasmas from both the LP and ASE cases.

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