

Abstract Submitted
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Latest Results from the LTX High-Speed Digital Holography System¹ C.E. (TOMMY) THOMAS JR., TDT LLC, E.M. GRANSTEDT², C.M. JACOBSON, R. MAJESKI, R. KAITA, PPPL, L.R. BAYLOR, S.K. COMBS, S.J. MEITNER, D.A. RASMUSSEN, ORNL — During the last year research efforts for the LTX Digital Holography system have been concentrated on reducing noise and diagnosing the flow pattern of the LTX Supersonic Gas Injector. A high-speed CO₂ laser digital holography system (500 frames per second (FPS) at 256 x 256 pixels, 1500 FPS at 128 x 128 pixels, etc., to a maximum of 43,000 FPS at 64 x 4 pixels) has been built for high-resolution imaging of electron density on the Lithium Tokamak Experiment (LTX). The laser operates at 9.1 microns by using an Oxygen-18 isotope, and has a power output up to 20 W. A FLIR SC4000 IR camera is used to capture the digital holograms. An acousto-optic modulator (AOM) is used to “shutter” the laser so that effective camera integration times down to less than one microsecond are possible. The system will be used for imaging measurements on LTX during molecular cluster injection (MCI), supersonic gas injection (SGI), and injection from edge gas puffers. Results of noise reduction efforts along with ultra low noise flow-pattern images from the SGI will be presented.

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