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Soft x-ray laser interferometry of colliding plasmas MIKE PURVIS, JONATHAN GRAVA, JORGE FILEVICH, MARIO C. MARCONI, JORGE ROCCA, NSF ERC for Extreme Ultraviolet Science and Technology, Colorado State University, Fort Collins, Colorado 80523, JAMES DUNN, STEPHEN J. MOON, RAYMOND F. SMITH, JOE NILSEN, Lawrence Livermore National Laboratory, Livermore, California 94550, V.N. SHLYAPTSEV, Department of Applied Science, University of California Davis-Livermore, — We report results of an experiment designed to study the evolution of dense colliding plasmas created by irradiating a semi-cylindrical target geometry. The measurements were conducted using a 46.9 nm wavelength capillary discharge laser probe and a robust high throughput Mach-Zehnder interferometer based on diffraction gratings. The colliding plasmas were created irradiating a Cu target with a 800 nm wavelength laser pulse of 120 ps duration and $\sim$ 1J energy. The plasmas are seen to expand off the target surface and collide in a focal region creating a concentrated plasma with densities reaching 1 x 10^{20} cm^{-3}. Plasmas with various degrees of collisionality can be studied by tailoring the irradiation conditions and selecting the target material. Results obtained using an Al target are compared with those of the Cu plasmas and model simulations. Work sponsored by the NNSA-SSAA program through DOE Grant # DE-FG03-02NA00062 and U.S. DOE by the U. of California LLNL through the ILSA, contract No. W-7405-Eng-48.

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