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Counter-streaming radiative shock experiments on the Orion laser[1] F. SUZUKI-VIDAL, T. CLAYSON, G.F. SWADLING, S. PATANKAR, G.C. BURDIAK, S.V. LEBEDEV, R.A. SMITH, Imperial College London, C. STEHLE, U. CHAULAGAIN, R.L. SINGH, LERMA, OBSPM, France, J. LAROUR, Ecole Polytechnique, France, M. KOZLOVA, ELI, Czech Republic, C. SPINDLOE, Scitech Precision, UK, J. FOSTER, J. SKIDMORE, E. GUMBRELL, P. GRAHAM, C. DANSON, AWE Aldermaston, UK — The formation of radiative shocks, shocks in which the structure of density and temperature is affected by radiation from the shock-heated matter, is ubiquitous in many astrophysical scenarios. Experiments were performed at the Orion laser using a new target configuration that allows studying the formation of single and counter-streaming radiative shocks in gas-filled targets (Ne, Ar, Kr, Xe), with initial pressures ˜0.1-1 bar and a driver intensity of ˜6x10ˆ14 W/cmˆ2. The shocks propagate at velocities >60 km/s and were diagnosed with optical interferometry (streaked and time-resolved) and point-projection X-ray backlighting allowing to probe simultaneously the pre-shock radiative precursor and the shock front itself. Besides varying the extent of the radiative precursor the results show that different gases seem to have an effect on the shock front as evidenced by a number of spatial features. The results are compared with radiative hydrodynamics simulations in 1-D (HELIOS) and 2-D (NYM/PETRA).

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