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# Turbulent jets?

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Over the last few years we have fielded numerous supersonic jet experiments on the NOVA and OMEGA lasers and Sandia's pulsed-power Z-machine in collaboration between Los Alamos National Laboratory, the Atomic Weapons Establishment, Lawrence Livermore National Laboratory, and Sandia National Laboratory. These experiments are being conducted to help validate our radiation-hydrodynamic codes, especially the newly developing ASC codes. One of the outstanding questions is whether these types of jets should turn turbulent given their high Reynolds number. Recently we have modified our experiments to have more Kelvin-Helmholtz shear, run much later in time and therefore have a better chance of going turbulent. In order to diagnose these large (several mm) jets at very late times (~1000 ns) we are developing point-projection imaging on both OMEGA and at NIF. We are also developing large field-of-view imaging on Z using a monochromatic-curved-crystal imager at 6.15 keV. Since these jets have similar Euler numbers to jets theorized to be produced in supernovae explosions, we are also collaborating with the astrophysics community to help in the validation of their new codes. This talk will present a review of the laser and pulsed-power experiments and a comparison of the data to simulations by the codes from the various laboratories. We will show results of simulations wherein these jets turn highly 3-dimensional and show characteristics of turbulence. With the new data, we hope to be able to validate the sub-grid-scale turbulent mix models (e. g. BHR) that are being incorporated into our codes.

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