Cover Photos

Upper Left: *Cryogenic Target Characterization*. Thirty-one cryogenic targets were produced, characterized, and shot on OMEGA in 2003. The characterization is based on shadowgraphy. Software tools were created at LLE to analyze the data and determine the capsule surface and ice-thickness variations. The two color-coded images shown in this figure are three-dimensional views of the ice-layer variations of a cryogenic capsule. These images were obtained by analyzing as many as 30 shadowgrams taken from different directions.

Middle Left: *OMEGA EP Construction*. An aerial view of the construction of the addition to the LLE building. The OMEGA EP (Extended Performance) project began in 2003.

Lower Left: *Direct-Drive Symmetry Control*. The OMEGA laser is designed to achieve a high degree of uniformity and flexibility in target irradiation. The ability to impose a controlled (nonsymmetric) on-target irradiation pattern is useful for benchmarking multidimensional hydrodynamic simulations and simulating direct-drive irradiation patterns that may be attained on the NIF. The image depicts an Aitoff projection showing the measured intensity pattern on a spherical target in an experiment in which the polar intensity on target was intentionally reduced from the average intensity by 15% to 30%.

Upper Right: *Wetted-Foam Targets*. Direct-drive capsule designs with "wetted-foam" ablators offer the potential of a substantial target gain on the NIF. The image shows the density profile of a shock moving through a DT-wetted foam layer as calculated using adaptive-mesh-refinement simulations carried out by scientists from LLE and the University of Rochester's Department of Physics.

Middle Right: *Fast Ignition Research*. Time-integrated photograph of an imploding direct-drive cone target used to test elements of the "fast-ignition" approach to ICF on OMEGA.

Lower Right: *OMEGA EP Amplifier*. Photograph of the prototype OMEGA EP amplifier module undergoing a pulsed-ionization lamp check. The amplifier is shown through the end of a single-disk module.

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