IN BRIEF

This volume of the LLE Review, covering the period July–September 1986, contains reports on GDL and OMEGA laser activities; generation of timing fiducials on x-ray streak cameras on OMEGA; new theoretical results on the thermodynamic properties of high-density plasmas; experimental results and analysis of target implosions on OMEGA; calculation of thermal self-focusing with multiple laser beams; and test results of multiple x-ray diffraction in crystals. Two reports describe developments in advanced technology: subpicosecond signal propagation on superconducting transmission lines, and progress in two-dimensional image processing capabilities. Finally, the National Laser Users Facility activities for this period are summarized.

The following are some of the highlights of the research reports contained in this issue:

- Timing fiducials on OMEGA now make it possible to relate in time the measured laser pulse and streaked x-ray spectra.
- The convergence history of OMEGA-imploded shell targets closely follows the theoretical predictions. Deviations from predictions of the core emission of x rays and thermonuclear reaction products are clearly attributed to imperfect uniformity of laser irradiation.
- Two-dimensional monochromatic imaging with spatial resolution of about 10 μm has been demonstrated, using double diffraction of x rays in crystals.

• An electro-optic sampling system was used to study pulse propagation on superconducting transmission lines, where a rise time of 360 fs was measured. Dispersion broadened this time to only 2 ps after 3 mm of propagation.

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Optical alignment of the femtosecond cryogenic sampling system is fine tuned by Douglas Dykaar, a graduate student in electrical engineering and a member of the Ultrafast Optical Electronics Center. The system is used to study ultrafast cryogenic electronics.