IN BRIEF

This volume of the LLE Review contains articles on the fully UV-converted OMEGA laser system, mass-ablation rate experiments, reactor-size target designs, plasma processes in the target corona, degradation in optical performance of dielectric thin films, and the National Laser Users Facility activities for April–June 1985.

The following are some highlights of the work described in this issue:

- All 24 beams of the OMEGA laser system have been converted from IR (1054 nm) to UV (351 nm). Previous 6- and 12-beam UV experiments on heat transport, implosion, and x-ray physics are being re-examined at the higher level of uniformity possible with 24 beams, and with an increased number of diagnostic instruments. The system has operated with up to 40 shots per week, and up to 2.4 kJ on target. During system checkout, a record neutron yield of 2×10^{11} was obtained.
- Work is nearly complete for using GDL as a 25th beam of OMEGA to create an x-ray backlighting source for OMEGA experiments.
- The UV beam quality of OMEGA is being quantitatively analyzed to bring the on-target irradiation uniformity to the level required for high-density experiments. Some sources of beam imperfections have been identified and a program for beam improvement is being implemented.

- Previous UV experiments on time-resolved heat transport using 6 and 12 beams have been analyzed. Some discrepancies between theoretical modeling and experiment have been found, but they were consistent with the poor irradiation uniformity inherent in the 6- and 12-beam geometry. These experiments are being repeated with 24 beams.
- The effects of irradiation nonuniformity on direct-drive, reactor-size targets have been examined using two-dimensional hydrodynamic simulations. The degradation in target gain with increased nonuniformity has been calculated for long-wavelength nonuniformities (spherical harmonic modes $\ell \leq 8$).
- A new model for examining stimulated Raman scattering (SRS) in the plasma atmosphere has been developed, and a steady-state analytic solution of the process is obtained.
- Thin films, which might be used in excimer lasers, can be surface damaged by exposure to electrons and ions in the laser medium of the laser. A sensitive technique (photothermal displacement spectroscopy) is used for measuring the degradation in optical performance of the thin film.

CONTENTS

Patrick W. McKenty, a scientist in the Theory and Computation Group, is examining results from hydrodynamic simulations of high-compression, laser-driven implosions.