UNIVERSITY OF ROCHESTER
LABORATORY FOR LASER ENERGETICS

Volume 72
July–September 1997
DOE/SF/19460-199

LLE Review

Quarterly Report

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Contents

In Brief

This volume of the LLE Review, covering the period July–September 1997, begins with a general introduction to LLE's experimental physics program and a report on recent results. This article includes a useful summary of the system's operational capabilities and system parameters. Other highlights of the wide variety of research presented in this issue are

- A promising method to directly observe the cold compressed shell of an imploding target. The shell is normally observed by backlighting. The proposal described here is to use a high-Z dopant that fluoresces under radiation from the hot core in the $K\alpha$ line.

- A study of the instabilities associated with near-forward stimulated Brillouin scattering. It includes a calculation of the saturation times and steady-state gain exponent.

- A successful program of pulse shaping for the OMEGA laser system. Examples of a variety of pulse shapes that can be programmed are presented.

- A description of the angular-scattering characteristics of ferroelectric liquid crystal electro-optical devices operating in transient and extended scattering modes. The possibility of applying these devices as modulators in practical IR imaging systems is evaluated.

- A faster method of shaping and finishing IR materials by the use of magnetorheological fluids. Detailed specifications and test results are included.

- An integrated circuit tester based on interferometric imaging. This technique holds promise of ultrafast noninvasive testing of the voltage states of sections of microchips.

- Continued success of the Laboratory's High School Summer Research Program. The program, which started in 1989, has brought several dozen young people into intimate contact with modern science and technology.

The volume concludes with a Laser Facility Report and the National Laser Users' Facility News.

Robert S. Knox
Editor