

## IN BRIEF

This volume of the LLE Review, covering the period January–March 1989, contains the first part of a two-part series of articles dealing with the OMEGA Upgrade. The two articles in this issue discuss the theoretical and laser design work performed to characterize the basic requirements for the upgrade. In addition, the advanced technology section contains articles discussing a new computer code developed to model x-ray refraction in line-focus geometry and experiments involving the use of time-resolved spectroscopy to diagnose high density in argon implosions. Finally, the activities of the National Laser Users Facility and the GDL and OMEGA laser facilities are summarized.

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

- A direct-drive, ignition-scaling implosion facility is necessary to address many key physics issues relevant to the future of inertial confinement fusion (ICF). These key issues are introduced and the requirements (for an upgrade to the present OMEGA system) needed to address them are identified.
- A laser system capable of uniformly targeting 30 kJ of ultraviolet light within a shaped pulse presents several difficult challenges to laser designers. The laser requirements of the OMEGA Upgrade and how they are to be incorporated into existing hardware and space is discussed.

- CASER (combine amplified spontaneous emission with refraction), a new code to model radiation transport in three dimensions through a line-focus plasma, is introduced. Applications to x-ray laser experiments at LLNL and LLE are presented.
- A series of experiments supported by the NLUF, in collaboration with laboratory investigators, studied the implosion of Ar-filled plastic microballoons. The spectroscopic data is presented and the presence of high density is discussed.

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Sam Letzring, Diagnostic Development Group Leader, is shown adjusting the holographic transmission grating used to temporally shear the laser beam before it passes through the electro-optic phase modulator in the smoothing by spectral dispersion (SSD) scheme, which was recently implemented on the OMEGA laser system.