

About the Cover:

Holographic transmission gratings, like those shown on the front cover, have been used to control and diagnose the effective coherence of solid-state lasers at LLE for over a decade. Terrance Kessler, senior research engineer and group leader of Optics and Imaging Sciences at LLE, is shown demonstrating the spectral dispersion of one of the many holographic diffraction gratings used on the OMEGA laser system.



The holographic interferometer, shown in the photograph, is situated within a room only slightly larger than the 8-ft \times 16-ft \times 2-ft optical table on which it is located. The holographic recording plane, positioned at the center of the photo (cross on white disk), intercepts the two beams of the holographic interferometer and exposes the photosensitive polymers coated over a glass plate that has a diameter between 10 and 20 cm. Submicron grooves that are shaped are then formed over these glass plates. A smaller interferometer, positioned to the left in the photograph, is used for environmental sensing to establish the time periods over which gratings can be made to have spatially uniform diffraction efficiencies approaching unity.

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The work described in this volume includes current research at the Laboratory for Laser Energetics, which is supported by New York State Energy Research and Development Authority, the University of Rochester, the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC03-92SF19460, and other agencies.

Printed in the United States of America
Available from
National Technical Information Services
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161

Price codes: Printed Copy A04
Microfiche A01

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