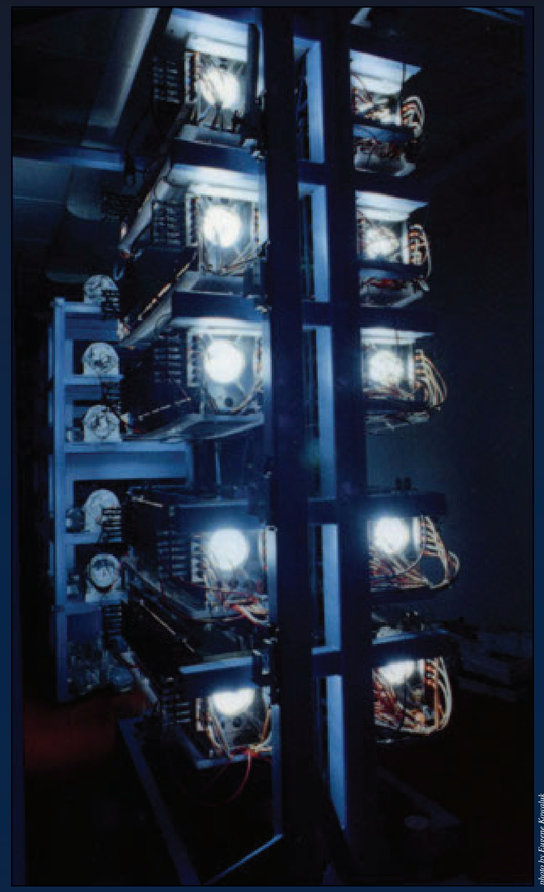
1994

OMEGA 60 Upgrade Continues



Cluster of 15-cm disk amplifiers undergoing test firing

In January 1994, the control room began operations, and in April 1994, the entire driver was fired. The first full OMEGA beamline was completed in December 1994 and produced 800 J in the infrared and 606 J in the ultraviolet.

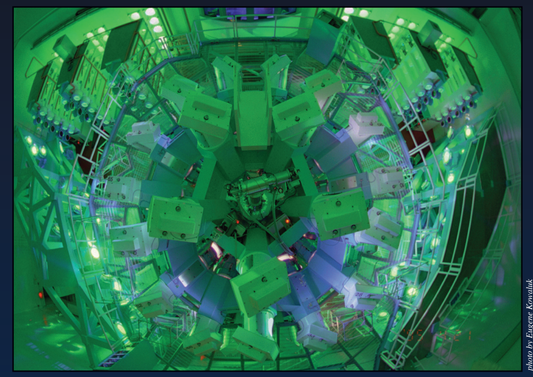
1995

60-beam OMEGA Completed

First firing of the 60-beam OMEGA Laser System

LLE completed construction of the current 60-beam OMEGA Laser System in 1995, on time and on budget. This upgraded system is a 30-kJ, ultraviolet (351-nm), pulse-shaped, direct-drive laser system with on-target irradiation nonuniformities approaching the 1% to 2% level. Currently, OMEGA is used to explore target physics at near-ignition conditions, investigate the hydrodynamics of energy-scaled, high-performance targets, and perform laser–plasma interaction experiments using large-scale-length plasmas and laser intensities relevant to high-performance, direct-drive target implosions.

First Shots on 60-beam OMEGA



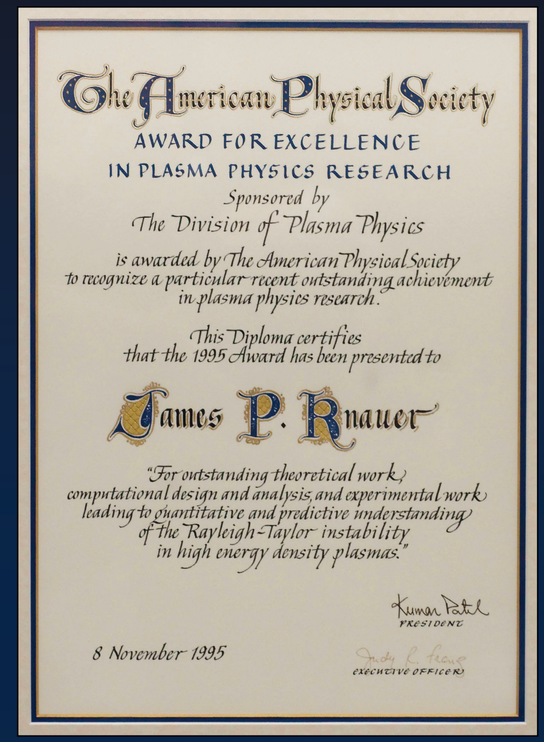
View from above OMEGA 60-beam Laser System during a target shot

On 19 April 1995, the first 60-beam target test shot was taken on OMEGA. This shot initiated a two-week period during which the formal performance verification tests of the 60-beam OMEGA were conducted. The performance requirements included 60-beam energy on target of up to 30 kJ for a five-shot series taken at a repetition rate of one shot per hour. During these performance tests, OMEGA exceeded all its specifications, delivering in excess of 32 kJ per shot on target for a series of five sequential shots taken at a rate of one shot per hour.

On 1 May 1995, OMEGA placed 37.3 kJ on target.

Record electron temperature (~4 keV) and record x-ray line energy (~16 keV) from laser-imploded targets were obtained on the upgraded OMEGA.

Award for Excellence in Plasma Physics Research


The American Physical Society

AWARD FOR EXCELLENCE IN PLASMA PHYSICS RESEARCH

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This Diploma certifies that the 1995 Award has been presented to

James P. Knauer

"For outstanding theoretical work, computational design and analysis, and experimental work leading to quantitative and predictive understanding of the Rayleigh-Taylor instability in high energy density plasmas."

Kumar Patel
PRESIDENT

8 November 1995

Judy K. Franz
EXECUTIVE OFFICER

American Physical Society Award

In recognition of their "outstanding theoretical work, computational analysis, and experimental work leading to a quantitative and predictive understanding of the Rayleigh–Taylor instability in high-energy-density plasmas," the American Physical Society awarded the 1995 Award for Excellence in Plasma Physics Research to Charles P. Verdon and James P. Knauer.