1974

Glass Laser Amplifier

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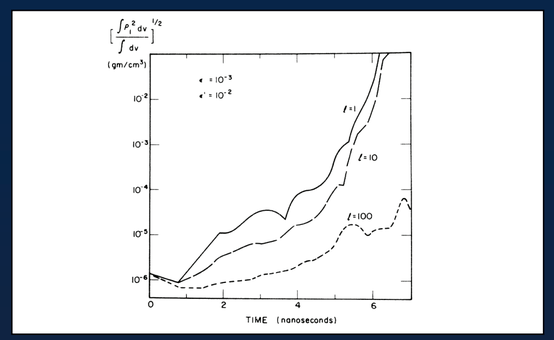
Steve Kumpan working on a laser amplifier

Several laser–amplifier concepts were investigated in the 1970s at LLE, including this 90-mm diam Nd:glass amplifier using phosphate glass. The basic design of this amplifier is being used in today's OMEGA Laser System.

Hydrodynamic Instabilities in Laser-Driven Fusion



rms density perturbations

"Linear Stability Analysis of Laser-driven Spherical Implosions," published in *Physical Review Letters* by J. N. Shiau, E. B. Goldman, and C. I. Weng of LLE, is one of the first studies on hydrodynamic instabilities in laser-driven fusion.

J. N. Shiau, E. B. Goldman, and C. I. Weng, "Linear Stability Analysis of Laser-Driven Spherical Implosions," Phys. Rev. Lett. ***32*** *(7), 352–355 (1974).*

1975

Construction of 24-Beam OMEGA to be Used in Support of the LFFP

24-Beam OMEGA groundbreaking

On 11 July 1975, the New York State Legislature passed a supplemental appropriation that contained a $7.5 million interest-free loan to the University of Rochester to support the construction of a building to be used for the Laser Fusion Feasibility Project (LFFP). Construction began on the initial 24-beam OMEGA Facility as a National Laser Users Facility.

First Detailed Measurements Using X-Ray Line Emission

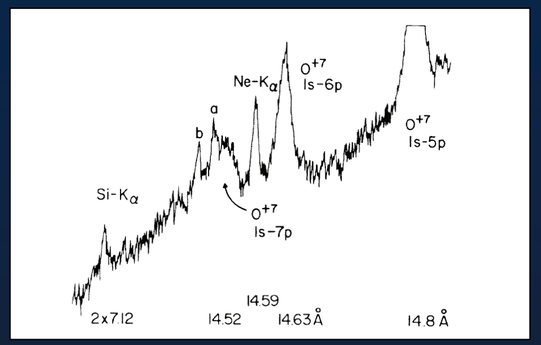
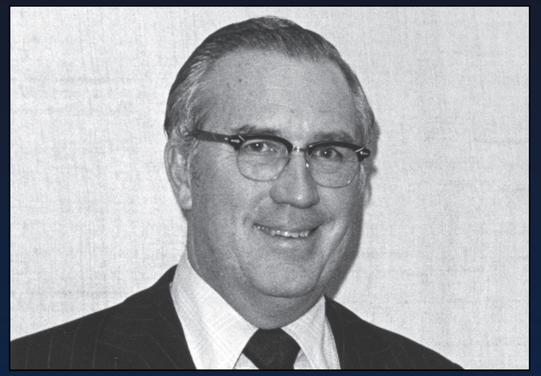


Fig 2, Yaakobi et al. *Phys. Rev. Lett.* ***37*** *(13), 836–839 (1976).*

LLE made the first detailed measurements of ablation and preheat using x-ray line emission.

B. Yaakobi, I. Pelah, and J. Hoose, "Preheat by Fast Electrons in Laser-Fusion Experiments," Phys. Rev. Lett. ***37*** *(13), 836–839 (1976).*

Congressman Frank J. Horton Spotlights LLE



Congressman Frank J. Horton

Congressman Frank J. Horton's weekly column issued on 25 March 1975 highlighted "...one of the most exciting and significant energy research centers in the nation..." The present LLE facility and graduate student fellowships are named in his honor in recognition of his important support. Additionally, his efforts are recognized with a plaque near the main LLE entrance.

Special Atomic Energy Commission

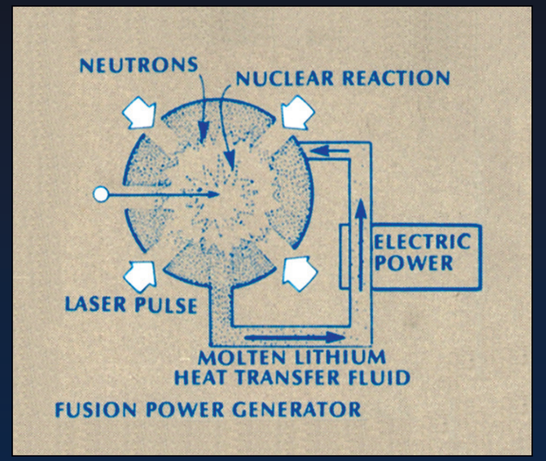
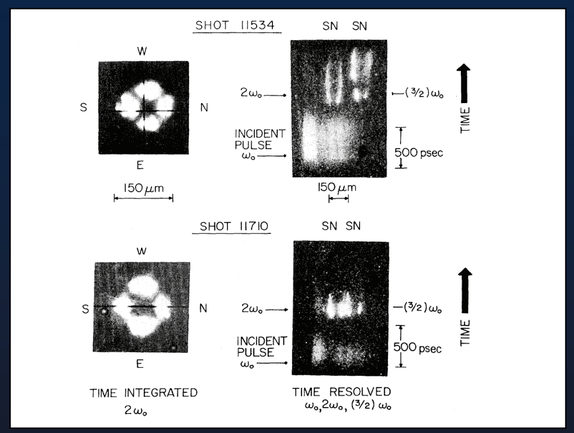


Diagram of laser fusion from a 1972 LLE brochure promoting the Laser Fusion Feasibility Project: the first joint industry–university–government project dedicated to developing inertial fusion energy

The U.S. Atomic Energy Commission Special Laser-Fusion Advisory Panel issued its final report. The panel found that laser fusion was a promising approach to power generation that also offered a wide range of other applications and deserved broader support, including participation by industry, universities, and utilities.

First-Harmonic and Subharmonic Emission Measurements



◀ *Fig. 3, Jackel* et al., *Phys. Rev. Lett.* ***37*** *(2), 95–98 (1976).*

The first comprehensive measurements of harmonic and subharmonic emission from spherical targets were conducted.

S. Jackel, B. Perry, and M. Lubin "Dynamics of Laser-Produced Plasmas Through Time-Resolved Observations of the $2\omega_0$ and $3/2\omega_0$ Harmonic Light Emission," Phys. Rev. Lett. ***37*** *(2), 95–98 (1976).*