

Chirped-Pulse Amplification



A paper published in Optics Communications by Donna Strickland and Gérard Mourou of LLE describes the chirped-pulse amplification (CPA), a technique used to amplify ultrashort laser pulses to the petawatt level (10^{15} W) and beyond. This approach, developed and demonstrated at LLE, is the basis of modern ultrahigh-power lasers.

D. Strickland and G. Mourou, "Compression of Amplified Chirped Optical Pulses," Opt. Commun. 56 (3), 219–221 (1985).



Donna Strickland, Ph.D. 1988

OMEGA Frequency Conversion Completed



Laboratory for Laser Energetics

a unique national resource

Gérard Mourou

24-beam OMEGA firing, showing UV beams

Full conversion of the 24-beam OMEGA laser to 351-nm operation was completed on time and within budget in 1985.

Spherical-Target Compression



Fig. 14, LLE Review 28

Spherical-target compression experiments demonstrated high neutron yield and high fuel density with 351-nm irradiation between 1985 and 1988.

(a) Composite of an x-ray micrograph (around $E \sim 4 \text{ keV}$) of a high-yield target implosion and an alpha zone-plate image indicating the spatial distribution of the alpha particle products of thermonuclear burning. (b) Averaged radial profiles of the images in (a), together with LILAC postprocessor predictions of the same.

"Laser-Fusion-Target Implosion Studies with OMEGA," LLE Review Quarterly Report 28, 155-163, Laboratory for Laser Energetics, University of Rochester, Rochester, NY, LLE Document No. DOE/ DP/40200-26, NTIS Order No. DE87005867 (1986). (Copies may be obtained from the National Technical Information Service, Springfield, VA 22161).



