
National Laser Users' Facility News

FY98 Experiments

During FY98 progress was made in several NLUF programs: EUV and XUV measurements of early-time plasmas (Hans Griem and Ray Elton, University of Maryland); x-ray spectroscopy of high-density plasmas (Charles Hooper *et al.*, University of Florida); spectral measurements of fusion-reaction charged particles (Richard Petrasso, Massachusetts Institute of Technology); neutron detector calibration (Stephen Padalino, State University of New York at Geneseo); high-resolution imaging of laser targets (John Seely *et al.*, Naval Research Laboratory); and radiation ablation measurements of hohlraum targets (David Cohen, University of Wisconsin).

Figure 76.48 shows a photograph of the installation of a charged-particle spectrometer (CPS 2) developed under LLE funding and now operating on the OMEGA system. CPS 2 is the second of two charged-particle spectrometers fielded by the MIT group on OMEGA. During FY98 the MIT group with funding from NLUF and in collaboration with LLE and LLNL scientists used these spectrometers to measure fusion-product charged particles and high-energy ablator ions. In one series of experiments, fuel temperature and capsule areal density were measured simultaneously by these spectrometers.

In addition to NLUF-supported programs, several indirect-drive target programs, also coordinated through the NLUF Manager, were carried out on OMEGA by groups from LANL and LLNL. These experiments included campaigns on hohlraum symmetry, tetrahedral hohlraums, double-shell capsules, opacity, and point-backlighter tests. Finally, a direct-drive cylinder experiment was fielded by LANL in collaboration with LLE.

FY99 Proposals

Fifteen proposals were submitted to NLUF for FY99. This represents a new record in submissions as well as requested funding (funding requests were more than two-and-a-half times the amount of available funding from DOE—\$700,000).

A DOE technical evaluation panel chaired by the NLUF Manager and including Dr. Michael Cable (LLNL), Dr. Allan Hauer (LANL), Prof. Tudor Johnston (INRS), and Dr. Ramon Leeper (SNL) reviewed the proposals at a meeting held on 24 April 1998 and recommended approval of nine proposals for funding (see Table 76.V). Twelve graduate students and seven undergraduates will participate in the NLUF programs approved for funding in FY99.



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Figure 76.48
Photograph taken during the installation of the second of two charged-particle spectrometers on OMEGA.

Table 76.V: Approved FY99 NLUF Proposals.

Principal Investigator	Affiliation	Proposal Title
D. Cohen	University of Wisconsin, Madison	Development of X-Ray Tracer Diagnostics for Radiatively Driven Copper-Doped Beryllium Ablators
H. Baldis	University of California at Davis	Supernova Hydrodynamics on the OMEGA Laser
H. Baldis	University of California at Davis	Studies of Dynamic Properties of Shock Compressed Solids by <i>in-situ</i> Transient X-Ray Diffraction
R. Petrasso	Massachusetts Institute of Technology	Charged-Particle Spectroscopy on OMEGA: First Results, Next Steps
H. Griem	University of Maryland	Soft X-Ray Spectroscopy Measurements of Plasma Conditions at Early Times in ICF Experiments on OMEGA
S. Padalino	SUNY Geneseo	Charged-Particle Spectroscopy on OMEGA: First Results, Next Steps (a joint program with R. Petrasso)
S. Padalino	SUNY Geneseo	Neutron Yield Measurements via Aluminum Activation
C. Hooper	University of Florida	Absorption Spectroscopy, Broadband Emission Survey and the Radiator-Plasma State
B. Afeyan	Polymath Associates	Optical Mixing Controlled Stimulated Scattering Instabilities on OMEGA