
LLE's Summer High School Research Program

During the summer of 2008, 15 students from Rochester-area high schools participated in the Laboratory for Laser Energetics' Summer High School Research Program. The goal of this program is to excite a group of high school students about careers in the areas of science and technology by exposing them to research in a state-of-the-art environment. Too often, students are exposed to "research" only through classroom laboratories, which have prescribed procedures and predictable results. In LLE's summer program, the students experience many of the trials, tribulations, and rewards of scientific research. By participating in research in a real environment, the students often become more excited about careers in science and technology. In addition, LLE gains from the contributions of the many highly talented students who are attracted to the program.

The students spent most of their time working on their individual research projects with members of LLE's technical staff. The projects were related to current research activities at LLE and covered a broad range of areas of interest including experimental diagnostic development and analysis, computational modeling of implosion hydrodynamics and radiation physics, database development, materials science, cryogenic target characterization, target vibration analysis, and engineering device development (see Table 116.II).

The students attended weekly seminars on technical topics associated with LLE's research. Topics this year included laser physics, fusion, holography, fiber optics, optical manufacturing, the physics of music, and electronic paper. The students also received safety training, learned how to give scientific presentations, and were introduced to LLE's resources, especially the computational facilities.

The program culminated on 27 August with the "High School Student Summer Research Symposium," at which the students presented the results of their research to an audience including parents, teachers, and LLE staff. The students' written reports will be made available on the LLE Web site and bound into a permanent record of their work that can be cited in scientific publications.

Two hundred and thirty three high school students have now participated in the program since it began in 1989. This year's students were selected from approximately 50 applicants.

At the symposium LLE presented its 12th annual William D. Ryan Inspirational Teacher Award to Ms. Jane Bowdler, a mathematics teacher at Brockport High School. This award is presented to a teacher who motivated one of the participants in LLE's Summer High School Research Program to study science, mathematics, or technology and includes a \$1000 cash prize. Teachers are nominated by alumni of the summer program. Ms. Bowdler was nominated by Priya Rajasethupathy, a participant in the 2000 Summer Program. Priya recognized Ms. Bowdler as an exceptional teacher who inspired and nurtured her intellectual curiosities: "She is able to bring structure into a classroom and make a difficult subject more manageable... She understands her students and their needs and is able to provide individualized attention... She goes beyond the call of duty by leading the math club and constantly innovating ways to recruit students and sustain their interest in math... Her unbounded patience toward students is one of her unique qualities." Mr. Glen Levandowski, principal of Brockport High School, added: "Her knowledge of math is outstanding and she has the ability to make it interesting and fun to all students, even those who may not generally favor the subject. Overall, Jane is an outstanding educator and serves as a wonderful role model for her students."

Table 116.II: High School Students and Projects—Summer 2008.

Name	High School	Supervisor	Project Title
Jay Amin	Rush-Henrietta	C. Dorrer	Development of an Optical Pulse Characterization Device Based on Spectral Shearing Interferometry
Chris Baldwin	Honeyoye Falls-Lima	R. W. Kidder	Exploring Metadata for Laser Diagnostics and Control Systems
Husain Bawany	Brighton	R. Janezic	Development of the Cryogenic Target Information System
Krysta Boccuzzi	Mercy	E. Kowaluk	Investigation of the Causes of and Possible Remedies for Damage to Sensors Used on the OMEGA Laser System
David Brummond	Honeyoye Falls-Lima	C. Stoeckl	Controlling a PC-Based Data Acquisition System with Java
Nicholas Hensel	Fairport	D. Jacobs-Perkins	High-Speed Measurements of Target-Support Vibrations Using Linescan Cameras
Rachel Kurchin	Harley	R. S. Craxton, M. D. Wittman	Characterization of a Cryogenic Target in a Transparent Cylindrical Hohlraum
Alexis Kurmis	Greece Arcadia	T. C. Sangster, T. Duffy	Counting System for the Carbon Activation Diagnostic
Mangala Patil	Pittsford Mendon	K. L. Marshall	Contamination-Resistant Sol-Gel AR Coatings by Vapor-Phase Silylation
Angela Ryck	Fairport	R. S. Craxton	Optimization of Cone-in-Shell Implosions
Collin Sowinski	Penfield	W. T. Shmayda	Minimization of the Tritium Contamination of Surfaces
Jack Stokes	Fairport	S. Ingraham, D. J. Lonobile	Investigation of Brushless dc Motor Commutation Techniques
James Tsay	Phillips	R. Epstein	K-Shell Emission-Line Backlighter Source Optimization
Brian Wang	Webster Thomas	J. F. Myatt, P. Jaanimagi	The Effects of Space Charge on Electron Pulse Broadening in Streak Cameras
Bradley Wideman	Fairport	F. J. Marshall	Automated Determination of Crystal Reflectivity in the X-Ray Laboratory