
LLE's Summer High School Research Program

During the summer of 2001, 13 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 optics modeling, laser characterization, cryogenic materials properties, liquid crystal chemistry, laser damage, electro-optic sampling, and the development, modeling, and control of laser fusion diagnostics (see Table 88.IX).

The students attended weekly seminars on technical topics associated with LLE's research. Topics this year included lasers, fusion, holography, the OMEGA Cryogenic Target System, laboratory astrophysics, experimental error analysis, and scientific ethics. 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 29 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 bound into a permanent record of their work that can be cited in scientific publications. These reports are available by contacting LLE.

One hundred and thirty high school students have now participated in the program since it began in 1989. The students this year were selected from approximately 50 applicants.

In 1997, LLE added a new component to its high school outreach activities: an annual award to an Inspirational Science Teacher. This award honors teachers who have inspired High School Program participants in the areas of science, mathematics, and technology and includes a \$1000 cash prize. Teachers are nominated by alumni of the High School Program. Mr. David Dussault, a mathematics and computer science teacher at Livonia High School, was the recipient of LLE's 2001 William D. Ryan Inspirational Teacher Award. Mr. Michael Harvey, a participant in the 1999 Summer Program who nominated Mr. Dussault, writes of his former teacher, "His approach to teaching is unique. He challenges students to work at their own pace and learn on their own. Even more impressive to me than his wisdom in preparing me for college is his love for pure education. Mr. Dussault finds the way to get his message across to every type of student." Mr. Scott Bischooping, principal of Livonia High School, also had many words of praise for Mr. Dussault. He said he has been continually impressed with Mr. Dussault's contributions to both the Math and Computer Science Departments. Two accomplishments that stood out in his mind were the success of a curriculum Mr. Dussault developed, which allows students to earn college math credits, and his dedicated leadership to the school's math team in state and local competitions.

Table 88.IX: High School Students and Projects—Summer 2001.

Name	High School	Supervisor	Brief Project Title
David Bowen	Greece Arcadia	C. Stoeckl	Controlling Scientific Instruments with JAVA
Matthew Fiedler	Brighton	W. Donaldson	Modeling Streak Camera Sweep Speeds
Melisa Gao	Brighton	J. Marozas	Two-Dimensional Phase Unwrapping for the Design of Distributed Phase Plates
Brian Ha	Gates Chili	R. Sobolewski	Optical Characterization of GaAs with MSM Structures
Gabrielle Inglis	Honeoye Falls-Lima	R. Boni	Building and Characterizing 14-GHz InGaAs Fiber-Coupled Photodiodes
Jennifer Jung	Victor	K. Marshall	Guest-Host Dye Systems for Liquid Crystal Electro-Optical Device Application
Joshua Keegan	Aquinas Institute	M. Guardalben	Numerical Modeling of Optical Parametric Chirped Pulse Amplification
Kevin Monajati	Pittsford-Sutherland	K. Marshall	Computational Modeling of Physical Properties in Liquid Crystalline Polymer Systems
Christopher Piro	Honeoye Falls-Lima	R. S. Craxton	Modeling the LCPDI with Refraction and Diffraction
Abigail Rhode	Brockport	J. Taniguchi	Experimental Simulation of Damage in Spatial Filter Lenses
Uyen Tran	Wilson Magnet	S. Regan	Experimental Investigation of the Far Field on OMEGA with an Apertured Near Field
James Wang	McQuaid Jesuit	D. Harding	Cyrogenic Permeability of Polyimide Shells
Jeffrey Wilbur	Victor	J. Lambropoulos	Inclusion Models of Laser Damage