

LLE's Summer High School Research Program

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During the summer of 2021, eight students from Rochester-area high schools participated in the Laboratory for Laser Energetics' Summer High School Research Program. This was the 32nd year of the program, which started in 1989. The 2020 program was unfortunately canceled because of the Covid pandemic. In 2021, LLE held a fully virtual program for students who had applied and been interviewed for the 2020 program. The program started earlier than usual (in the middle of June rather than after July 4) and finished earlier (in the middle of August) to meet the schedules of the graduating seniors. The program comprised nine weeks rather than the usual eight.

The goal of LLE's program is to excite a group of highly motivated 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, computer modeling of implosion physics, experimental design, plasma-physics simulations, physical chemistry, future laser system design, and scientific data management (see Table I).

The students attended weekly seminars on technical topics associated with LLE's research. Topics this year included laser physics, fusion, nonlinear optics, nuclear physics, pulsed power, fiber optics, and LLE's cryogenic target program. The students also learned how to give scientific presentations and were introduced to LLE's computational resources.

The program culminated on 11 August with the virtual "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 Website and bound into a permanent record of their work that can be cited in scientific publications.

Three hundred and ninety-nine high school students have now participated in the program. This year's students were selected from nearly 70 applicants to the canceled 2020 program. LLE is planning a normal, in-person program for 2022.

This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0003856, the University of Rochester, and the New York State Energy Research and Development Authority.

Table I: High School Students and Projects—Virtual Program, Summer 2021.

Name	High School	Supervisor	Project Title
Semma Alfatlawi	Victor	C. J. Forrest	Inferring a Neutron Yield from Nuclear Activation Techniques
Felix Huang	Webster Schroeder	H. G. Rinderknecht	Uniformity of X-Ray Prepulses for Imprint Mitigation in Directly Driven Implosions
Audrey Kohlman	Churchville-Chili	R. S. Craxton	Polar-Direct-Drive Designs for the Laser Megajoule
Meghan Marangola	Brighton	R. S. Craxton	Optimization of Direct-Drive Designs for a Proposed Dual Direct-/Indirect-Drive Laser
Tyler Petrillo	Webster Schroeder	R. S. Craxton	Development of a Polar-Direct-Drive Design for a Large-Diameter Beryllium Target on the National Ignition Facility
Leo Sciortino	School of the Arts	R. W. Kidder	Data Services to Improve Access to Scientific Image Data
Aditya Srinivasan	Pittsford Sutherland	A. B. Sefkow and M. Lavell	Exploration of Collision Models for Hybrid Fluid-Kinetic Simulations
Andrew Wu	Pittsford Mendon	K. L. Marshall	Computational Modeling of the Polarizability of Liquid Crystals