Undergraduate Research in Physics and Astronomy at the University of Rochester -- Summer 2000

Laura A. Allaire, (REU) class of '02 at the University of Rochester, worked under Professor Robert S. Knox, testing a new anisotropy theory that has been developed by Professor Knox and his associate Demet Gulen. The theory was tested using crystallographic data from C-Phycocyanin chromophores. She entered the graduate program at the Institute of Optics at the University of Rochester in Fall 2002.

Erika Artukovic, (REU) class of '01 at DartmouthCollege, worked with Professor Kevin McFarland at Fermilab National Accelerator Laboratory. She conducted a Monte Carlo analysis to determine the feasibility for detecting a fermiophobic Higgs particle in specific decay channels. She graduated degree in Physics and Philosophy and plans to attend graduate school in physics.

Awista Ayub (REU) class of '01 at the University of Rochester, worked with Dr. Priscilla Auchincloss on physics education projects, including the development of summer physics laboratory/enrichment programs for highs school women. She was awarded the Suzan B. Anthony Prize from the University of Rochester in 2001 and has taken 5th year to study women in science (under the UR special Take 5 program for undergraduates). In Fall 2002 she joined the Teach for America Program.

Dave Baranson, (REU) class of '02 at the University of Rochester worked with Prof. David Douglass on analysis of satellite data pertaining to global warming and El Nino events. The analysis was used to create a model for predicting sea surface temperature. After graduation, he took a position with Edmund Ind. Optics in Massachusetss.

Dan Berdine, (REU) class of '03 at the University of Rochester, tested the photoluminscent properties of thin PTDA films on graphite under Prof. Yongli Gao at the University of Rochester. He plans to apply to graduate school for Fall 03.

Andrew Blackman, (REU) class of '01 at the Universityof Rochester, worked with Professor Lynne Orr and her group in Particle Physics Phenomenology. Specifically, he was considering top quark production and decay in electron-positron collisions, to see how spin information is transferred to the decay products. This study will ultimately be used as the topic for a senior thesis. He is now a graduate student at JohnHopkinsUniversity in particle physics.

Brian Clader, (REU) class of '02 at SUNY Geneseo, worked with Prof. David Douglass on analysis of satellite data pertaining to global warming and El Nino events. The analysis was used to create a model for predicting sea surface temperature. He entered the PhD program in Physics at the University of Rochester in Fall 02.

Jennifer Dawson, (REU) class of '02 at KentStateUniversity, calculated the transition dipole moments of a light-harvesting complex, perdinin-chlorophyll-a-proteinunder Prof. Robert S. Knox in the biological physics group. She graduated from KentState with a BS in 2002 (and won the Distinguished Student Leader Award from the College of Arts and Sciences, and the 2002 Addison-Wesley Award at Kent State in 2002).. She enterd the PhD program at Cornell in Fall 2002. Conference presentations: Jennifer Dawson, Eighteenth Eastern Regional Photosynthesis Conference 2001 (presented a poster based on research done with Prof. Robert S. Knox).

Mika Edmondson, (REU) class of '01 at HamptonUniversity, worked on simulating the Fast Spectral Scanning technique for possible use on the Space Infrared Telescope Facility (SIRTF). This simulation was done in MathCAD 2000 under Dr. Dan Watson. He entered graduate school astrophysics at the University of Rochester in Fall of 2001. He plans to go to Colgate divinity school for the Ministry in Fall of 2002.

Jennifer Ellsworth, REU) class of '02 in a combined engineering program with Columbia University and Wells College, worked with Prof. Steve Manly to write code for a strangeness discriminator for the PHOBOS collaboration. She enteredIndiana graduate school in Physics in Fall 2002. .

Joe Gester, (REU) class of '04 at the University of Rochester, worked on testing the properties of Si:Sb and Si:As BIB infra-red detectors for NASA's Space Infrared Telescope Facility under Prof. Dan Watson in the Far-Infrared Astrophysics Laboratory. He plans to apply to graduate school in computer science for Fall 04.

Sean Hartnoll, (REU), class of '01 at Cambridge University, worked with Professor Eric Blackman at the University of Rochester. He worked on calculations of fluorescent Iron line profiles from geometrically thick accretion engines in active galactic nuclei. He graduated with a degree in mathematics, and finished as the top ranked applied mathematics student in the prestigious Part III tripos exam at Cambridge. He has stayed on at Cambridge to pursue his PhD in theoretical physics. His work at Rochester has resulted in two publications in refereed journals (one in 2001 and one in 2002).

Lisa Marshall, (REU) class of '01 at the University of Rochester spent an interesting summer at Fermilab with Prof. P. Tipton's group. She was involved with preventing the CDF experiment's engineering run silicon detector from blowing up by testing and installing temperature probes, pressure transducers, flow sensors, and other monitoring devices. During the summer of '99 she did research in the theoretical biophysics group under the direction of Prof. Robert Knox studying the possibility of excited triplet states in chlorophyll a by using a calculated effective temperature as an indication of the extent of thermo equilibrium during fluorescence. She took a position with Teach for America in Fall 02 and is teaching science at a Navaho reservation. She plans to apply to graduate school (probably Chemicstry) a year later.

Darrick McNeill, (REU) class of '01 at HamptonUniversity in Virginia, worked in the Radiology Department of Strong Hospital with Prof. Thomas Foster. He participated in the UV-A irradiation of non-photosensitized multi cell tumor spheroids. He is the coauthor of one publication in a refereeed journal based on his REU work. He is now in the Medical Physics graduate program at Michigan.

Cory Pryzybla, (REU) class of '01 at the University of Rochester, worked with Prof. Y. Shapir on the maximal scaling in kinetic growth for aggregate solids. He plans to graduate with a BS in physics and math and minor in optics. After graduation, he entered the work force and plans to go back to school a couple of years later.

Zachary Smith, (REU) class of '02 at the University of Rochester, worked on assembling and testing a Nd:Glass laser system which will accelerate electrons through the use of an open, iris-loaded waveguide, under the supervision of Prof. Adrian Melissinos in the High Energy Physics department. He entered the graduate program in Optica at Rochester in Fall 02.

Elizabeth Strychalski, (REU) class of '02 at the University of Rochester, joined the University of Rochester group led by Paul Tipton at CDF at Fermilab. She assisted with building, installation, and testing of components of the Silicon Vertex Detector II and its cooling system. She completed with degrees in physics and religious studies. She will travel for a year (Fall 02-Spring 03) and apply to graduate school for Fall 03.

Michael Thomas, (REU) class of '03 at the University of Rochester, worked on testing the properties of Si:Sb and Si:As BIB infra-red detectors for NASA's Space Infrared Telescope Facility under Prof. Dan Watson in the Far-Infrared Astrophysics Laboratory. He is considering working with a civil engeineering firm in fall of 03.

Brock Tweedie (REU) class of '01 at the University of Rochester, continued development of CDF data analysis software with Kevin McFarland. He graduated with physics and math degrees, and entered graduate school in Physics at Berkeley in Fall of 2001..

Albert Wang, (REU) class of '01 at University of Rochester, worked on the transport simulations of vortex lattices under Prof. S. Teitel. More specifically, the behavior of the Josephon junction array under transverse magnetic field with the influence of electric field. In the summer of '99he worked with Prof. W. Wu on measuring low frequency resistance fluctuations in inhomogeneous materials and organic light emitting diodes, tris-8-hydroxyquinolinealuminum (Alq3). Wang received an APS Apker Finalist Award in 2001. After graduation in Spring of 2001, he he spent a year at the New England Conservatory of Music graduate program, and is is now a the Graduate Program in Physics at MIT.

Kellena Wilson, (REU) class of '03 at the University of Rochester, worked on a temperature sensing circuit to be used as a safety devise in Prof. Nick Bigelow's Laser Cooling and Trapping Lab. She planned to graduate with a physics degree and a minor in math (but has recently swithced to major in the humanities).

Brian Winey, (REU) class of '02 at HoughtonCollege, took part in research on the CLEO detector at the Wilson Synchrotron at CornellUniversity. He participated in data analysis of measurement of the electron identification code, hoping of increasing efficiency. He graduated with majors in physics and philosophy with a minor in math and entered the University of Rochester graduate program in Physics in Fall 02.

Jennifer Witkowsky, (REU) class of '01 at the University of Rochester, worked last summer in the cooling and trapping group under Prof. Nicholas Bigelow. In summer '00 she worked with Dr. Priscilla Auchincloss on physics education projects, including the development of summer physics laboratory/enrichment programs for high school women. She also led tours of the Mees Observatory for the general public. After graduation, she took a position at the Naval Research Laboratory.

Wells Wulsin, (REU), class of '01 at Harvard, under the guidance of Prof. Kevin McFarland, used a Monte Carlo generator to study what effects CP violation would have on top quark decay products. He joined the Teach for America program in Fall of 2001. He plans to teach high school physics in an inner city school before pursuing a graduate degree later on.

Han Yoo, class of '02 at the University of Rochester, is involved in research with CDF at Fermilab on computer programs that retrieve pseudo-data from the CDF detector and select from the data ones that are interesting, under the supervision of Professors Kevin McFarland and Paul Tipton. He entered the graduate program in Physics at the University of Rochester in Fall of 2002.

SUMMER RESEARCH IN PHYSICS AND ASTRONOMY
STUDENT PRESENTATIONS
August 8, 2000

10:30 Session I Chair: Arie Bodek

Jennifer Ellsworth; advisor, S. Manly
Global strangeness discriminator for PHOBOS

Andrew Blechman; advisor, L. Orr
Phenomenology and the top quark

Cory Przybyla; advisor, Y. Shapir
Scaling of maximal height in kinetic growth

Zachary Smith; advisor, A. Melissinos
Laser acceleration of electrons

Dan Berdine; advisor, Y. Gao
Photoluminescence of thin films of PTCDA on graphite

11:25 Break
11:30 Session II Chair: P. S. Auchincloss

Albert Wang; advisor, S. Teitel
Transport simulations of vortex lattices

Mike Thomas and Joe Gester; advisor, D. Watson
The mid-infrared focal plane detectors for SIRTF

Mika Edmonson; advisor, D. Watson
Simulation of fast spectral scanning with SIRTF-IRS

Darrick McNeill; advisor, T. Foster
The effects of UV irradiation on non-photosensitized multicell tumor spheroids

Josh Oleksyn and Sam Hathaway; advisor, A. Frank
Astroflow: the cosmic events simulator

12:30 Lunch for program participants and faculty
1:15 pm Session III Chair, R. S. Knox

Laura Allaire, advisor, R.S. Knox
Fluorescence anisotropy in a photosynthetic antenna heterodimer

Jennifer Dawson, advisor, R.S. Knox
Interaction of chlorophylls in a protein complex

Wells Wulsin; advisor, K. McFarland
CP violation in top quark decays

Brock Tweedie; advisor, K. McFarland
W polarization in top decay

Kellena Wilson; advisor, N. Bigelow
Protecting the lasers from self-destruction- a temperature sensing circuit

Dave Clader and Dave Baranson; advisor, D. Douglass
Coherent events in sea surface temperature data