University of Rochester
Summer 2013 undergraduate research in Physics, Optics, and Astronomy

Benjamin Augenbraun, class of '15 at Williams College, worked with Prof. Robert W. Boyd to perform a direct measurement of photonic density matrices in the orbital angular momentum basis by exploiting the theory of weak values. He plans to pursue a PhD in physics.

Kevin Bauer, class of '14 at Indiana University, worked with Prof. Kevin McFarland on charged-current quasi-elastic scattering in MINERvA. In particular, he worked on understanding discrepancies between the data and Monte Carlo simulations. He plans on attending graduate school in physics.

Ryan Challener, class of '14 at University of Rochester, worked with Prof. Bill Forrest on modeling the mineralogical composition of protoplanetary disks of T Tauri stars in the star-forming regions of NGC 1333 and Taurus. He plans to apply for graduate school in astrophysics.

Benjamin Cohen-Stead, class '14 at Whitman College, worked with Prof. Stephen Teitel modeling the respond of two-dimensional granular systems to applied pure shear forces. He plans to apply to graduate school for physics.

Emily Conant, class of '15 at Bard College, worked with the research group of Prof. Robert Boyd on post-processing of photonic crystal cavities. She plans on applying to graduate school in physics.

Nicole Cronin, class of '14 at Muhlenberg College, worked with Prof. Nicholas Bigelow on studying the line-width of an external cavity diode laser for the purpose of using it to image the Bose-Einstein condensate. She plans to apply to graduate school for physics.

Clemente Cuevas, class of '14 at the University of Florida, worked with Prof. John Howell on applications of compressive sensing techniques to conjugate variable entanglement verification and laser radar. He plans to go to graduate school in Physics

Tony DiMino, class of '15 at the University of Rochester, worked with Prof. Nicholas Bigelow on the design, implementation, and debugging of a timing control system for a Bose-Einstein condensate experiment.

Molly Finn, class of '16 at the University of Rochester, worked with Prof. Eric Mamajek on the substructure of the Scorpius Centaurus OB Association. She plans to earn a Ph.D. in astronomy.

Julian Girard, class of '15 at Siena College, studied the effect of transient events such as cosmic ray impacts and 'snowballs' on HgCdTe infrared imaging detectors with Prof. Bill Forrest. He plans to apply for graduate school for physics or engineering.

Catherine Harmer, class of '15 at Yale University, conducted paleomagnetic experiments on Darwin impact glass to test for impact-generated magnetic fields with Prof. John Tarduno. She plans to attend graduate school.

Kevin Howard, class of '15 at Canisius College, worked with Dr. Brendan Mort and the Center for Integrated Research Computing on investigating the basis set and functional dependencies of the calculation of molecular response properties. He plans to apply to graduate school for physics.

Surendra Hazarie, class of '15 at University of Rochester. Studied the process of fiber coupling and the changes in laser diode wavelength over time under Prof. Nicholas Bigelow. He plans on attending graduate school for physics.

Peter Heuer, class of '14 at the University of Rochester, worked with Prof. Bigelow to build two frequency stabilized external cavity diode lasers to be used as part of a magneto-optical trap in an undergraduate advanced lab course. He plans on applying to graduate school in physics.

Taryn Kittel, class of '14 at Kenyon College, worked with Dr. Jannick Rolland on testing and aligning the Hilbert Memorial Telescope for the future use of studying aberration theory. She plans to apply to graduate school in physics.

Teresa Lackey, class of '14 at the University of Iowa, worked with Prof. Kevin McFarland to discriminate multi-nucleon from single nucleon final states in neutrino charged current quasielastic scattering on a carbon nucleus using data from the MINERvA experiment. She plans to apply to graduate school for neutrino physics.

Andrew Melchionna, class of '15 at the University of Rochester, worked with Prof. Doug Cline measuring the efficiency and resolution of the university's Compact Heavy Ion Counter (CHICO2), which is used in coulomb excitation experiments. He plans to apply for graduate study in physics or mathematics.

Ruka Murugan, class of '14 at University of Rochester, worked with Prof. Adam Frank on simulating the evolution of planetary nebulae using AstroBEAR, a parallelized MHD code. He plans on applying to graduate school in computational astrophysics.

Sean O'Neill, class of '14 at Stony Brook University, studied techniques to discriminate between different top anti-top process using data from the Compact Muon Solenoid at CERN, with Prof. Regina Demina. He plans on applying to graduate school for physics.

Divya Persaud, Class of '16 at University of Rochester, worked with Prof. John Tarduno on tests for impact-generated magnetic fields with Darwin impact glass from Tasmania, Australia. She would like to go to graduate school for planetary geology.

Daniel Pfeffer, class of '14 at Case Western Reserve University, worked with Prof. Eric Blackman on simulating the accretion rate of white dwarfs from disk within the envelope of AGB stars using AstroBEAR 2.0. He plans on applying to graduate schools in physics.

Andrew Roberts, class of '15 at SUNY Geneseo, worked with Prof. Eric Mamajek on a survey for massive runaway stars originating the Sco-Cen OB association. He plans on applying to graduate school in physics.

Saurav Sharma, class of '14 at the University of Rochester, worked with Prof. Esther Conwell to study the effects of electric fields on DNA. He plans on applying to graduate school for physics.

Kevin Silverstein, class of '15 at The University of Rochester, worked with Prof. Kevin McFarland on the search for the lambda particle produced by neutrino interactions using Fermilab's beam, NuMI and detector, MINERvA. He plans on applying to graduate school in physics.

Robert Sims, class of '14 at University of Rochester, worked with Prof. Arie Bodek on a method to reconstruct neutrino energy in two track quasielastic events with exiting muons and inverse muon decay in neutrino scattering data from MINERvA.

Alexander Strang, class of '16, worked with Prof. Mark Bocko on modeling and characterizing the acoustic behavior of glass panels for use as Distributed Mode Loudspeakers. He plans to apply to graduate school for physics.

Rachel Stuart, class of '14 at the University of Rochester, studied conduction of a positive hole inserted into strands of Adenine-Thymine pairs with Dr. Esther Conwell.

Mariel Tader, class of '16 at Case Western Reserve University, worked with Dr. Gabriel Perdue and Prof. Kevin McFarland to develop an analysis program that searches data for candidate dark or SUSY particle decays into opposite-sign di-muons in front of the MINERvA detector and finds the most probable decay position. She plans to apply to graduate school in physics.

Emily Thompson, class of '16 at Clemson University, worked with Dr. Bigelow on a project studying the nanostructured surface of the daguerreotype. She plans on applying to graduate school in physics.