University of Rochester
Summer 2014 undergraduate research in Physics, Optics, and Astronomy

Paul Angland, class of ’14 at University of Rochester, worked with Dan Haberberger on constructing an iterative program that would assign plasma density profiles to angular filter refractometry (AFR) images. He plans on applying to graduate school in physics.

Josh Berenson, class of '15 at the University of Rochester, worked with Prof. Eric Mamajek and Dr. Martin Pepe on developing a radio telescope setup to be used for solar observations.

Amber Betzold, class of ’15 at Lawrence University, worked with Prof. Miguel Alonso and Prof. Thomas Brown on the automation and simplification of a novel method of measuring spatial coherence. She plans to apply to graduate school in optics.

Grantley Bynum-Bain, class of '15 at The University of Rochester, worked with Professor Mark Bocko and Professor Ming-Lun Lee to develop electronic music physical interface devices. He plans to pursue a career in the field of audio engineering.

Kate Ciampa, class of '15 at the University of Oklahoma, worked with Dr. Kevin McFarland's group on charged-current neutrino scattering in MINERvA. She compared event rate to flux prediction ratios for medium and low energy data, and studied zero horn current and low beam intensity data. She plans to apply for graduate school and specialize in particle physics or lightning physics.

Joseph Y. Cordero Mercado, class of '15 in the University of Puerto Rico, worked on the engineering of a $|\Psi\rangle = HH\rangle + e^{i\theta}|VV\rangle$ polarization entangled state for later use (by graduate students) for a direct measurement of the quantum state and also as a heralded source for a quantum data locking demonstration.

Jonathan Curtis, class of '16 at the University of Rochester, worked with Kevin McFarland on comparing simulations of neutrino-nucleus interactions with data collected from the MINERvA experiment at Fermilab. He plans to apply to graduate school in physics.

Luke Cybulski, class of '16 at the University of Rochester, worked with Professor Arie Bodek on examining the medium modification effects in deep inelastic scattering experiments. He plans on applying to graduate school in mathematics.

Stephen Drury, of class '16 at the University of Rochester, worked with Prof. Segev BenZvi on modeling atmospheric conditions using South Pole LIDAR data to determine the practicality of an air shower detector in the South Pole region. He plans to apply to graduate school for physics.

Stephanie Guzman, class of '16 at University of Arizona, worked with Prof. Robert Boyd on achieving image rotation of an elliptical laser beam propagating through a rotating alexandrite crystal at room temperature. She plans to apply to graduate school in optics.

Christian Hayes, class of 2015 at Indiana University, worked with William Forrest on mineralogy of dust disks surrounding T Tauri stars in NGC 1333 using spectra taken from the Infrared Spectrograph on the Spitzer Space Telescope. He plans on applying to graduate school in astronomy.

Chelsea Jean, class of '15 at University of Rochester, worked with senior research engineer Craig McMurtry and Professor Judith Pipher on numerical calculations and analysis of read noise in infrared detector arrays that have been funded by NASA as technology development for NEOCam, a proposed infrared space mission designed to detect and characterize a majority of the potentially hazardous asteroids that orbit the Earth. She plans on applying to graduate school for astrophysics and astrobiology.

Md. Tanveer Karim, class of '16 at the University of Rochester, worked with Prof. Eric Mamajek to revise the Galactic Coordinate System and calculate a new estimate of the Galactic North Pole. He plans on applying to graduate school in astrophysics.

Anna Kline, class of '16 at Iowa State University, worked with Prof. Nick Vamivakas to analyze the polarization of a full Poincare beam by using a CCD camera to image the beam; the images were inputted into a Matlab program that used Stokes Parameters to generate a polarization plot of the beam. She plans on applying to graduate school in either optical physics or applied mathematics.

Ingrid Koch, class of '14 Take Five Scholar, worked with Prof. Dan Watson on spectral decomposition of protoplanetary disks in the Orion Star Forming Region using IRS Spitzer data. She plans to apply to graduate school for astrophysics after her fifth year.

Travis Kohler, class of '15 at University of Rochester, worked with Prof. Nicholas Bigelow on defining the surface structure of the daguerreotype. He plans on applying to graduate school in physics.

Samuel N. Mellon, class of '15 at Westminster College, worked with Prof. Eric E. Mamajek on a survey of SuperWASP data searching for eclipsing circumsecondary disks, eclipsing binaries, and stellar rotation periods in the Scorpius-Centaurus OB Association. He plans on applying to graduate school in physics and/or astronomy.

Julia Morris, class of '15 at the University of Rochester, organized and taught a summer program for young women under the direction of Prof. Steven Manly. PREP is a program designed for local high school girls to encourage them to pursue a future in physics-related fields.

Sean Pavlak, class of '15 at Kent State University, worked with Professor Oleg Prezhdo on the size dependance of mutiexciton generation in quantum dots. He plans on applying to graduate school in physics.

Neil Ryan, class of '17 at Carnegie Mellon University, worked with Prof. Mark Bocko on constructing an acoustic camera. He plans to apply to graduate school for electrical and computer engineering.

Rachel Sampson, class of '16 at Stony Brook University, worked with Prof. Robert Boyd on using projective measurements to sort Laguerre-Gaussian radial modes. She plans on applying to graduate school in optics.

Peter Stoeckl, class of '16 at the University of Rochester, worked with Prof. Esther Conwell investigating proton transfer in G-C DNA base pairs with the inclusion of the first hydration layer.

Ivory Stokes, class of '15 at the University of Rochester, worked with Professor Mark Bocko on discovering and comparing the modes and quality factors of the top plates of several different acoustic guitars using a laser doppler vibrometer. She plans to apply to graduate school for acoustics.

Daniel Van Hoesen, class of '15 at the University of Missouri, worked with Prof. Stephen Teitel on simulations of shear driven steady state flow of spherocylindrical grains in two dimensions. He plans on applying to graduate school for condensed matter physics.

Lisa Veras, class of '15 at Barnard College, studied imaging systems for Bose-Einstein condensates with Professor Bigelow's Cooling and Trapping (CAT) Group.

Courtney Wagner, class of '15 at the University of Rochester, worked with Prof. John Tarduno on magnetotactic bacteria (MTB) morphotypes from isolated water bodies. She plans to apply to graduate school.