University of Rochester
Summer 2015 undergraduate research in Physics, Optics, and Astronomy

Regina Battista, class of '16 at University of South Florida, worked with Prof. Jack Mottley on the origin of the flue pipe's timbre. She plans on applying to graduate school in acoustics.

Andrew Boyce, Class of '16 at Boston College, worked with Prof. Todd Krauss studying the photoluminescence properties of single-walled carbon nanotubes. He plans to apply to graduate school in physics.

Samantha Burtwistle, class of '16 at University of Nebraska-Lincoln, worked with Prof. John Howell, using ultrasensitive phase measurements to detect the gravitational attraction of a pendulum by a test mass. She plans to apply to graduate school in physics.

David Chavera, class of '17 at the University of Rochester, studied with Prof. Judy Pipher and the Infrared Astronomy Detection group this past summer. He worked on running simulations of high-energy protons interacting with the materials the detection group has developed for the NEOCam space mission. He intends to study observational cosmology in graduate school.

Alexander de la Vega, class of '16 at Johns Hopkins, studied bulk vertical streaming motions in the Milky Way as a result of epicyclic phase wrapping after a dwarf galaxy perturbation with Prof. Alice Quillen using test particle simulations. He plans on applying to graduate school in astrophysics.

Sara Denbo, class of '17 at Michigan State University, worked with Dr. Eric Mamajek and his graduate student Fred Moolekamp on a DECam survey for brown dwarfs in the Scorpius-Centaurus Association. She plans to attend graduate school to pursue a career in science policy.

Amy Filkins, class of '16 at State University of New York at Geneseo, characterized electron showers in test beam detector for the MINERvA collaboration at Fermilab under the direction of Prof. Kevin McFarland. She plans to attend graduate school for physics.

Sabine Fontaine, class of '17 at Harvey Mudd College, worked with Prof. Segev Benzvi on simulating the effect of adding outrigger tanks to HAWC to increase its sensitivity to high energy events. She plans on attending graduate school in physics.

Tyler Godat, class of '16 at Rochester Institute of Technology, worked on quantum key distribution and the propagation of mutually unbiased bases through free space links with Prof. Robert Boyd. He plans to apply to graduate school for optics.

Spencer Griswold, class of '17 at Clarkson University, work with Prof. Kevin McFarland on an analysis on the transverse profile and energy deposition of electron showers in the MINERvA test beam at Fermilab. He plans on applying to graduate school in physics.

Mariah Heinzerling, class of '17, and Emma Shockley, class of '16 at the University of Rochester, organized and taught a three and a half week summer program, Pre-College Experience in Physics (PREP), designed for local high school girls to encourage them to pursue STEM studies and careers. Under the direction of Prof. Steven Manly, they created original lesson plans, labs, and demonstrations that were informative, interactive, and engaging.

Alec Kirkley, class of '17 at the University of Rochester, worked with Prof. Pierre Gourdain on the mathematical development and computational implementation of a Discontinuous Galerkin Cell-Vertex Scheme (DG-CVS) in C++ to solve the Magnetohydrodynamics equations for plasma simulations. He plans on applying to graduate school in physics.

Alexis Klimasewski, class of '18 at the University of Rochester, worked with Prof. Eric Mamajek on studying the relationship between rotation and activity in Sun-like stars in order to better understand what drives stellar dynamos.

Joshua Knill, class of '18 at University of Michigan, worked with Prof. Nick Vamivakas to confirm the ability to mechanically translate an optically trapped nanoparticle for future projects. He plans on applying to graduate school in physics.

Ching Li, class of '17at Haverford College, worked with Prof. Gao on the synthesis and characterization of spin-coated perovskite that will eventually be used for solar cells. He plans to apply to graduate school for physics.

Eric Mestiza, class of '17 at University of Rochester, worked with Prof. Nicholas Bigelow on a multi-photon transition setup to create Rydberg atoms. He plans to apply to graduate school for astrophysics.

Joshua Rosser, Class '18 at the University of Rochester, worked with Prof. Judith Pipher, Prof. William Forrest, and Craig McMurtry on further developing the drive electronics, electronics, and Closed-Cycle Refrigeration Dewar for NEOCam's 10 micron detector array, 15 micron detector array, and Generation III THz (188 GHz-7 THz) detector array.

Ryan Rubenzahl, class of '18 at the University of Rochester, worked with Prof. Segev BenZvi on designing and optimizing new water-Cherenkov detectors for the HAWC Gamma Ray Observatory in Mexico. He plans on applying to graduate school for astrophysics.

Lucas Shadler, class of '17 at Rochester Institute of Technology, worked with Prof. Kevin McFarland's group on analysis and optimization of the MINERvA neutrino experiment proton selection algorithms. He plans to apply to graduate school.

Alexander Strang class of '16 at Case Western Reserve University, worked with Dr. Zeljko Ignjatovic on the fundamental resolution limit of coherent ultrasound imaging. He plans to apply to graduate school for physics or applied math.

Stephen Weikel, class of '16 at Lawrence University, worked with Prof. Jannick Rolland studying the aberrations induced by a freeform Zernike plate in a Schmidt telescope.

Keith Wiley, class of '17, at the University of Rochester, studied the production of pions in muon neutrino interactions with carbon, iron, and lead targets in the MINERvA detector at a Fermilab with Prof. Kevin McFarland. He plans to apply for graduate school in physics.

Cedric Wilson, class of '16 at the University of Utah, worked with Prof. Nick Bigelow on modeling a hybrid atomic trap in Python. He plans to apply to graduate school in AMO physics.

Emily Windes, class of '17 at the University of Rochester, worked with Dr. Bob Boni on mathematical models of electrostatic lenses at the Laboratory for Laser Energetics. She plans on applying to graduate school in theoretical physics, or math.