Kenneth R. Roffo Jr.

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Education

B.S., Physics, Mathematics, Computer Science — anticipated 2017
SUNY Oswego - GPA 3.67

New York State Advanced Regents Diploma with Honors — 2012
John C. Birdlebough High School - GPA 91

Internships

Software Engineer - NASA Jet Propulsion Laboratory
The Deep Space Network consists of multiple antennae on Earth which communicate with space craft beyond the moon. In order to improve this process, NASA software engineers are developing a new software to generate files read by the antennae, however they must check that the new software does not generate files with errors. My project at JPL was to develop a diff tool using node.js which would compare these files, and display differences, which the users could flag as unimportant differences, or more imporantly find defects in the products of their software.
Mentor: **Mark Johnston** — Summer 2015

Research Experience

An Asteroseismic Analysis of the Red Giant Branch Bump
As an intern the Max-Planck Institute for Solar System Research in Göttingen, Germany I studied how asterosesmic parameters were effected during the RGB bump. I used the MESA stellar evolution code to generate tracks of models of stars with varying masses, then used ADIPLS to calculate the frequencies they would output as the stars passed through the bump.
Advisors: **Saskia Hekker, Earl Bellinger, George Angelou** — Summer 2016

The Application of Abstract Algebra to Twisty Puzzles
Rubik's Cubes have fascinated mathematicians ever since they made their debut in the 1970s. Since then, many differently shaped and sized variants of the Rubik's Cube (called

twisty puzzles) have become available. In this research I apply concepts I have learned in Abstract Algebra to describe these fascinating puzzles. I am also studying a design for a puzzle which I have created, and will hopefully be creating this puzzle via 3D-printing.
Advisors: **Bonita Graham, David Vampola** Fall 2014 - Present

Fourier Decomposition Analysis of CSTAR RR Lyrae Variable Stars
I began this research through a 6 week visit to India in summer 2014. My original, and now completed, goal was to determine the metallicities of several RR Lyrae variable stars. I am now analyzing Blazhko RR Lyrae variables as there is much to be learned about them.
Advisor: **Shashi Kanbur** Summer 2014 - Present

Teaching

Math Club Tutoring 2015-Present
Organized and participated in free Math Club tutoring sessions for Calculus students.

Math and Sciences Tutor at SUNY Oswego 2014-Present
Courses Tutored: Calculus 1, 2 and 3, Discrete Math, Physics 1 and 2, CS intro level

HON 150 Seminar Leader at SUNY Oswego Fall 2014
Prepared and presented weekly lectures for an introduction-to-college course. Created and Graded weekly writing assignments.

Talks

A New Cube.
MAA Seaway Section Meeting, SUNY Geneseeo 2016

The Invention of a Cube.
Quest, SUNY Oswego 2016

A Necessary Set of Turns to Solve a Rubik's Cube.
MAA Seaway Section Meeting, Colgate University 2015

The Necessity and Sufficiency of 5 Face Turns to Solve a Rubik's Cube.
Quest, SUNY Oswego 2015

RR Lyrae Metallicities from CSTAR data.
Quest, SUNY Oswego 2015

Fourier Analysis of CSTAR RR Lyrae Variable Stars.
Rochestor Symposium for Physics Students, SUNY Oswego 2015

Metallicity determination for RR Lyraes observed from CSTAR telescopes in Antarctica.
SUNY Undergraduate Research Conference, SUNY Brockport 2015

The Line Trick to Multiplying Numbers and Polynomials.
Math Club, SUNY Oswego 2015

Honors

Honors Program - SUNY Oswego 2012-Present

Presidential Scholarship for Academic Achievement - SUNY Oswego 2012-Present

Student Involvement Award - SUNY Oswego Spring 2015

Sigma Xi and Office for Research and Sponsored Programs Award for Excellence in Research Presentation - SUNY Oswego Spring 2015

Dean's List - SUNY Oswego Fall 2014 - Spring 2015

President's List - SUNY Oswego Fall 2012 - Fall 2013, Spring 2016

Youth of the Year - John C. Birdlebough High School 2012

Presidential Community Service Award - Corporation for National and Community Service 2012

Senior Key in Mathematics - John C. Birdlebough High School 2012

Eagle Scout - Boy Scouts of America 2011

Membership

SUNY Oswego Physics Club 2014-Present

SUNY Oswego Astronomy Club - *Treasurer* 2013-Present

SUNY Oswego Math Club - *President* 2012-Present

Omicron Delta Kappa National Leadership Honor Society Inducted 2015

Phi Kappa Phi National Honor Society Inducted 2014

National Honor Society Inducted 2010

Tri-M Music National Honor Society Inducted 2010

John C. Birdlebough HS Student Council - *President* 2010-2012

Boy Scouts of America - *Quartermaster, Assistant Senior Patrol Leader* 1999-2012

Skills

Mac and Linux Proficient

Proficient in Python, Java, Fortran, Javascript, C/C++, and HTML/CSS

LaTeX Proficient

Rubik's Cube Speed Solver (23 second average)
Here's a video of a solve way back when I was a 28 second solver!

Last updated: August 30, 2016