

Kenneth R. Roffo Jr.

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Education

B.S., Physics, Mathematics and Computer Science anticipated 2017
SUNY Oswego - GPA 3.64

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 importantly find defects in the products of their software.

Mentor: **Mark Johnston** Summer 2015

Research Experience

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 Necessary Set of Turns to Solve a Rubik's Cube.

MAA Seaway Conference, 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.

Rochester 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

President's List - SUNY Oswego	Fall 2012 - Fall 2013
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 - <i>Treasurer</i>	2013-Present
SUNY Oswego Math Club - <i>President</i>	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 - <i>President</i>	2010-2012
Boy Scouts of America - <i>Quartermaster, Assistant Senior Patrol Leader</i>	1999-2012

Skills

Mac and Linux Proficient

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

L^AT_EX 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: February 14, 2016