Daniel A. Polin

Contact
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1 Education

University of California Davis *Davis, CA*
Degree: Ph.D. in Physics (In Progress)
Dates: September 2017 - Present

New York University *New York, NY*
Degree: B.A. in Physics, Minors: Astronomy and Mathematics
Dates: Fall 2013 - May 2017

2 Honors and Awards

Ray and Constance Chandler Fellowship, 2017

NYU Dean's Undergraduate Research Fund, Conference Grant Recipient 2016

Sigma Pi Sigma, National Physics Honor Society, Inducted 2015

Dean's List for the Academic Year: 2013-14, 2014-15, 2016-17

3 Publications and Proceedings

Publications:
Density Functional Theory, Ab-Initio Study of Electronic Properties of Sodium Oxide (Na_2O),
Daniel Polin, Joshua Ziegler, Yuriy Malozovsky, and Diola Bagayoko.
(Ready for Submission)

Ab-initio Calculations of Opticoelectronic and Structural Properties of Lithium Oxide (Li_2O),
Joshua Ziegler, Daniel Polin, Yuriy Malozovsky, and Diola Bagayoko.
(Ready for Submission)

Presentations:
Ab-initio Density Functional Theory (DFT) Studies of Electronic, Transport, and Bulk Properties of Sodium Oxide (Na_2O)
Oral Technical Presentation
2016 APS March Meeting, Baltimore, MD

Density Functional Theory, Self-Consistent Prediction of Electronic Properties of Sodium Oxide (Na_2O)
Poster Presentation
2015 LA-SiGMA RII Symposium, Baton Rouge, LA

4 Research

University of California Davis Davis, CA
Adviser: Prof. Tony Tyson
Department: Cosmology and Astrophysics
June 2017 - Present

Instrumentation development for Tyson Group and the Large Synoptic Survey Telescope (LSST).

New York University New York, NY
February 2016 - May 2017

Mathematical study in the Kolmogorov complexity and information density of the representation of integers in the unary numerical system under the hyperoperations.

LA-SiGMA at Southern University, NSF REU Baton Rouge, LA
Adviser: Prof. Diola Bagayoko
Department: Theoretical Solid State Physics
Summer 2015

Implementation and development of density functional theory and the BZW-EF Method for the theoretical study of the properties of alkali metal oxides.

- Helped to further develop and validate the Bagayoko, Zhao, and Williams method as enhanced by Ekuma and Franklin to accurately predict the electronic and structural properties of semiconductors, especially focusing on electronic band gaps. This was done through the computational study of alkali metal oxides. Computation was done with Fortran and C, through a Linux interface.

New York University New York, NY
Adviser: Prof. Allen Mincer
Department: High Energy Particle Physics
February 2014 - May 2015

Developed inter-systems communications for prototype silicone diode particle detection system with the goal of its use in the Large Hadron Collider. (September 2014-May 2015)

Developed computational techniques for the calibration of amplifiers for use in a laser detection system for the ATLAS Experiment. (February-September 2014)

- Created and programmed an interactive interface for controlling and measuring electrical pulses through an amplifier apparatus. Data at varying voltages was processed to determine amplifier amplification. Adequate adjustments were then able to be made to the amplifiers. Programming was done mostly in LabView and C++, through Windows and Linux interfaces.

5 Computer Proficiency

Programming:
Python, Labview, MATLAB, Mathmatica, C++, C, Fortran
Platforms:
Linux, Windows, Mac
Typesetting:
LaTeX
Other:
Adobe Photoshop, Audacity, Microsoft Excel

6 Teaching

University of California Davis:
Graduate Teaching Assistant

- *Physics 7C: Waves, Optics, and Electricity*
  Fall 2017

New York University:
Adjunct Recitation Instructor

- *General Physics 1: Mechanics*
  Fall 2014, Fall 2015, Fall 2016
- *General Physics 2: Electricity and Magnetism*
  Spring 2015, Spring 2016

Freelance Tutor:

- Physics
- Mathematics
- Latin

7 Language Experience:

- Spanish (Limited working proficiency)
- Latin (Professional working proficiency)

8 Other Skills:

- Soldering
- Circuit building
- Woodworking