Daniel A. Polin

Contact
Physics Department
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Education:

New York University *New York, NY*
Degree: BA in Physics
Dates: Fall 2013 - May 2017 (Expected)

Honors and Awards:

NYU Dean's Undergraduate Research Fund, Conference Grant Recipient 2016
Dean's List for the Academic Year: 2013-14, 2014-15
Sigma Pi Sigma, National Physics Honor Society, Inducted 2015

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

Research:

New York University New York, NY
February 2016 - Present

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
May 2015 - March 2016

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 - March 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.

Computer Proficiency:

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

Teaching:

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

Language Experience:

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

Other Skills:

- Soldering
- Circuit building
- Woodworking

Physics and Mathematics Coursework:

Term	Course	Course Text(s)
Fall 2016	(Graduate) General Relativity	Landau and Lifshitz, The Classical Theory of Fields; Misner,Thorne, and Wheeler, Gravitation
	(Graduate) Biophysics	Alberts B. et al., Molecular Biology of The Cell; Phillips R. et al.,Physical Biology of The Cell
	Astrophysics	Keeton, Principles of Astrophysics
	Advanced Experimental Physics	N/A
Spring 2016	General Relativity	Hartle, Gravity, and Introduction to General Relativity
	Thermal and Statistical Physics	Schroeder, An Introduction to Thermal Physics
	Introduction to Fluid Dynamics	Kundu et al., Fluid Mechanics
	Functions of a Complex Variable (Complex Analysis)	Bak and Newman, Complex Analysis
Fall 2015	Quantum Mechanics	Griffiths, Introduction to Quantum Mechanics
	Dynamics	Kleppner and Kolenkow, An Introduction to Mechanics
	Electricity and Magnetism	Griffiths, Introduction to Electrodynamics
	Algebra	Herstein, Topics in Algebra