William Kay Bidle

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EDUCATION

Rutgers University – School of Arts and Sciences Honors Program
GPA: 3.84; B.S. in Physics, Minor in Mathematics

Academic Achievements:

- Richard J. Plano Summer Research Award (2020)
- SAS Excellence Award, Class of 1925 Scholarship (2018, 2019, 2020)
- Dean's List (2017 – Present)
- School of Arts and Sciences Honors Program (2017 – Present)

PROFESSIONAL EXPERIENCE

Rutgers Center for Quantitative Biology **New Brunswick, NJ**
Undergraduate Researcher *10/2020 – Present*

- Discovery of free-form natural laws and equations from experimentally gathered data
- Collect time series data on several mechanical systems (simple pendulum, double pendulum, spring and mass, etc.)
- Data acquisition performed with motion tracking cameras and software (Camera SDK)
- Data analysis in Python
- PI: Dr. Alexandre Morozov

SRI International **Princeton, NJ**
Applied Physics Research Intern *7/2020 – Present*

- Atomic, Molecular, and Optical (AMO) physics research and development in the Advanced Technology and Systems Division
- Atom-based radio frequency (RF) electric field sensing using Rubidium vapor cells
- Perform precision-based measurements using optical equipment and semiconductor devices (e.g. diode lasers, half/quarter wave-plates, polarizing beam splitters, optical isolators, fiber optics)
- Analysis of atomic spectroscopy and quantum interference phenomena such electromagnetically induced transparency and Autler-Townes splitting
- Construct programs in LabVIEW to help control/monitor RF equipment
- Data analysis in Python and MATLAB
- PIs: Drs. Alan Braun and Kaitlin Moore

Rutgers High Energy Experiment Research Group **New Brunswick, NJ**
Undergraduate Researcher *3/2019 – Present*

- Analysis of Compact Muon Solenoid (CMS) data from the Large Hadron Collider (LHC)
- Used a deep sets neural network architecture to discriminate the outcomes of high energy proton-proton collision as either quark or gluon jets
- Accurate Quark-Gluon Likelihood (QGL) from limited amount of jet constituent information
- Use of permutation invariant machine learning methods
- Data generation (C++) and data analysis (Python)
- PI: Dr. Amitabh Lath

Rutgers Physics Lecture Hall **New Brunswick, NJ**
Lab Assistant *9/2018 – 5/2020*

- Set up, build, fix, and design physics demonstrations for public and university lectures
- Broad understanding of physics related topics and demos (Mechanics, Electricity and Magnetism, Waves and Oscillations, Optics, Modern Physics, Astrophysics and Cosmology)
- Manage and take inventory of supplies
- Delegate tasks and facilitate office workflow
- Interact with professors and administration at the university

Department of Mathematics **New Brunswick, NJ**
Grader *6/2019 – 8/2019*

- Grader for a Summer section of Math 251: Multivariable Calculus under Ghassan Nazi
- Required understanding of Maple software to grade student work and provide help if needed

Rutgers Physical Oceanography Research Group **New Brunswick, NJ**
Undergraduate Researcher *6/2018 – 8/2018*

- Modeled the evolutionary behavior of large particle systems in the ocean using MATLAB
- Performed lab experiments to model the effect of sheering stress on cell growth
- Random walk theory, turbulent and laminar flow, statistical analysis
- PIs: Drs. Robert Chant and Heidi Fuchs

RELEVANT COURSEWORK

Physics:

- Computer Based Experimentation (lab), Electricity & Magnetism I & II, Experimental Modern Physics (lab), Geology of the Moons & Planets, Introduction to Cosmology, Introduction to Quantum Computing, Mathematical Physics, Mechanics I & II, Modern Instrumentation (lab), Modern Optics, Modern Physics, Nuclei and Particles, Philosophy of Cosmology, Principles of Astrophysics, Quantum and Atomic Physics, Thermal Physics

Mathematics and Computer Science:

- Calculus I-V (Honors), Introduction to Artificial Intelligence, Introduction to Computer Science, Introduction to Linear Algebra, Introduction to Mathematical Reasoning, Introduction to Real Analysis (Honors), Mathematical Physics

OTHER

Technical Skills:

- Machine shop certified (Rutgers University): Mill, Lathe, Bandsaw, and other equipment
- Wiring, soldering, and experience with circuitry
- Mechanical experience building and fixing lab equipment/electronics

Programming Experience:

- Fluent in Python, familiar with MATLAB, Java, C++, and LabVIEW
- Public Projects: Quantum Teleportation, Maze Runner, Minesweeper, Picture Recoloration
- GitHub: https://github.com/WilliamBidle

Rutgers University Organizations and Activities:

- Outreach Coordinator, Rutgers Society of Physics Students (Fall 2018 – Present)
- Member, Rutgers Astronomical Society (Fall 2019 – Present)
- Member, Rutgers Men's Soccer Club Team (Fall 2017 – Present)