Alex Bien

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EDUCATION

UNIVERSITY OF MARYLAND

Grad. May 2022 | College Park, MD
College of Computer, Mathematical, and Natural Sciences
B.S. — Physics

ΔΩ Chapter of BΘΠ (IFC):
- · President (2020-21)
- · VP/Treasurer (2019-20)
- · SAP and DEI Chairman (2021)
- · BΘΠ Scholar (2020)

PandemoniUM A Cappella - Tenor

LEONIA HIGH SCHOOL

Grad. June 2018| Leonia, NJ
Paul Palka Memorial Scholar

SKILLS

Software:
Python
Linux
LaTeX
MATLAB
LabVIEW
Origin
SOLIDWORKS
COMSOL Multiphysics

Languages:
English
French
Japanese

Soft Skills:
Team/Project Management
Communication and Empathy
Receptiveness to Criticism
Creativity

COURSEWORK

Linear Algebra
Vector & Complex Analysis
Calculus & Differential Equations
Classical Mechanics & Relativity
Statistical Thermodynamics
Electricity & Magnetism
Quantum Mechanics
Modern Physics
Solid State Physics
Computational Physics
Accelerator Physics
Lab/Research
Radiological/Electrical/Laser Safety

EXPERIENCE

SLAC NATIONAL ACCELERATOR LABORATORY · STANFORD · DOE

Operator - Accelerator Operations and Safety Division (AOSD)
Jul 2022 – Present | Menlo Park, CA

- Responsible for monitoring accelerator performance and tuning the electron and x-ray beams to experiment specifications, ensuring safe use of the facility, as well as diagnosing and troubleshooting hardware and control system software problems.

SULI Researcher - LINAC Coherent Light Source (LCLS-II)
Jun 2021 – Aug 2021 | Virtual

- Manufactured particle distributions in distgen and ran them at successive RF field phase shifts through the beam physics simulation software OPAL to optimize longitudinal energy spread at the end of the LCLS-II photoinjector.
- Post-processed the data in Python by fitting longitudinal energy spread to a line, quadratic, and cubic for use in quantifying energy spread uniformity
- Scrummed daily with my team, and gave a technical talk to fellow SULI researchers

LABORATORY FOR PHYSICAL SCIENCES (LPS) · NSA · DOD

Research Assistant - LPS Qubit Collaboratory (LQC)
Nov 2020 – Jun 2021, Sept 2021 – Jul 2022 | College Park, MD

- Leveraged Python, LabVIEW, and Origin Pro to analyze the charge-to-mass ratio of Au, SiC, and Graphene nanoparticles levitated in a quadrupole ion trap and to monitor sample density metrics
- Constructed trap potential and particle tracking simulations in COMSOL Multiphysics
- Used SOLIDWORKS to make engineering drawings of experiment components to be fabricated in the machine shop
- Gained hands-on experience with high vacuum systems, gas plumbing, electrical circuitry, and overall experimental design

NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGY (NIST) · DOC

PREP Researcher - Material Measurements Laboratory (MML)
Mar 2019 – Aug 2020 | Gaithersburg, MD

- Wrote a post-procesor in Python for NIST's in-house FEA program OOF for use in developing a new methodology for the calculation of diffraction elastic constants and researching ferritic steel's non-linear X-Ray Diffraction (XRD) behavior
- Partook in weekly research meetings with the NCAL Mechanical Performance Group, and gave a technical talk on resolving errors in the OOF mesh crystal boundaries

FIRST-YEAR INNOVATION AND RESEARCH EXPERIENCE (FIRE) · UMD

Undergraduate Researcher - Simulating Particle Detection (SPD)
Aug 2019 – Dec 2019 | College Park, MD

- Used ROOT in Geant4 simulations with data on UMD's Tier-3 computing cluster to simulate and quantify the decline in performance of the Large Hadron Collider's Central Muon Solenoid High Granularity Calorimeter (LHC CMS HGCAL) by calculating percentage losses in total photon energy measurements
- Met and worked with my team on a regular basis and presented our poster for UMD's Undergraduate Research Day

NATIONAL MUSEUM OF MATHEMATICS (MOMATH)

Integrator
Jul 2017 – Jan 2018 | New York, NY

- Engaged with museum patrons, explaining and expanding upon various math concepts demonstrated through the exhibits at differing levels of understanding
- Mentored by Royal Society Fellow and Princeton Professor Emeritus **John Horton Conway**, best known for inventing 'The Game of Life'