Christian Bunker

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Education

Ph.D. in Physics, University of Florida 08/2020−Present

Honors: Graduate Student Fellowship. Relevant courses: Solid State 1 & 2, Machine Learning.

B.S. in Physics, University of Notre Dame 08/2016−01/2020

Honors: magna cum laude, Outstanding Undergraduate Research Award. Relevant courses: Intro to Solid State Physics, Intro to Circuitry and Electronics.

Skills

Technical communication: Experienced in reviewing scientific and patent literature, discussing it with technical audiences, and interpreting it for business audiences.

Programming: Excellent grasp of Python, especially using Numpy. Basic knowledge of C++.

Experience

Patent and Tech Marketing Intern, UF Innovate, Gainesville, FL 08/2023−Present

Conducted prior art searches to evaluate non-obviousness of potential technologies with respect to existing patents. Wrote non-confidential summaries to market technologies to industry partners.

Research Assistant, University of Florida, Gainesville, FL 05/2021−Present

Constructed models to investigate all-electrical quantum operations on molecular spin qubits. Developed Python code to simulate current-driven spin-flip and entanglement in molecules.

Teaching Assistant, University of Florida, Gainesville, FL 08/2020−04/2021

Instructed Physics 2 students in key concepts, reinforcing scientific communication abilities. Reviewed and provided feedback on lab reports for Physics 2 students.

Research Assistant, University of Notre Dame, Notre Dame, IN 01/2020−05/2020

Developed Python code to calculate the bound state energies of quantum well heterostructures, contributing to a paper on the design of topological insulators. Conducted low temperature magnetotransport experiments on α-Sn thin films to investigate potential superconductivity.

Physics Tutor, University of Notre Dame, Notre Dame, IN 08/2019−12/2019

Individually tutored Engineering Physics students, refining scientific communication abilities.

Research Assistant, CERN, Geneva, Switzerland 01/2019−06/2019

Developed Python code to efficiently analyze Monte Carlo simulated W boson decay events.

Research Assistant, University of North Florida, Jacksonville, FL 05/2018−08/2018

Utilized circuit design software to investigate the electrical properties of superconducting nanowires in order to design improved single photon detectors.

Publications & Presentations

C. Bunker, S. Hoffman, S. Liu et al. "Computational study of all-electrical quantum operations on molecular spin qubits." Contributed talk, Magnetism in North America Conference (2023).

C. Bunker, S. Hoffman, J.-X. Yu, et al. "Scattering solution of an interacting Hamiltonian for the electronic control of molecular spin qubits" Phys. Rev. A **107**, 042423 (2023).

L. Riney, **C. Bunker**, S.-K. Bac et al. "Introduction of Sr into Bi_2Se_3 thin films by molecular beam epitaxy." J. Appl. Phys. **129**, 085107 (2021).

J. Wang, X. Liu, **C. Bunker** et al. "Weak antilocalization beyond the fully diffusive regime in $Pb_{1-x}Sn_xSe$ topological quantum wells." Phys. Rev. B **102**, 155307 (2020).