Ian Q. Snider

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EDUCATION

Washington University in St. Louis, *St. Louis, MO* — *May 2025*
B.S. Mechanical Engineering — GPA: 4.00/4.00

Truman State University, *Kirksville, MO* — *Conferred: Dec 2024*
B.A. Physics, Mathematics minor — GPA: 3.89/4.00

- Enrolled in: Physics/Engineering Dual-Degree Program with Washington University in St. Louis

EXPERIENCE

Brookhaven National Laboratory - *Nuclear Science Intern*, *Upton, NY* — *2022 - 2024*
Faculty mentor: Gustavo Nobre - *National Nuclear Data Center, Brookhaven National Laboratory*

Supplemental Undergraduate Research Program (SURP) - Summer 2024

- Applied perturbation schemes to the thermal $1/v$ region of neutron interaction cross sections. Designed a sensitivity analysis for testing thermal cross sections in nuclear data relevant to reactors. Modeled neutron transport using Monte Carlo simulation software. Tested gadolinium isotope perturbations on plutonium nitrate PU-SOL-THERM-034 critical benchmarks with OpenMC

Supplemental Undergraduate Research Program (SURP) - Summer 2023

- Developed Python machine learning methods for training an algorithm to reclassify Pb-206 cross section resonances. Employed random matrix theory to describe statistical properties of slow-neutron resonances in heavy nuclei. Sampled capture widths from a Porter-Thomas distribution to create more realistic synthetic training data for the Bayesian Resonance Reclassifier

Science Undergraduate Laboratory Internship (SULI) - Summer 2022

- Applied machine learning to train an algorithm for correcting the resonance region of experimental cross section evaluations. Used random matrix theory and statistical properties of resonances to develop a machine learning feature set for classifying neutron resonances in heavy nuclei. Developed an iterative learning method for incrementally improving the success of a trained algorithm

Truman State University - *Student Researcher* — *2021 - 2022*
Faculty mentor: Vayujeet Gokhale - *Dept. of Physics, Truman State University*

Interface for Starlink Satellite Observations

- Calculated trajectories of Starlink satellites to optimize telescope viewing plans. Researched long-exposure luminosity data corruption due to Starlink satellite interference. Developed a GUI for Truman astronomy students. Wrote and submitted a proposal for the TruScholars grant

SKILLS

- Coding Languages/Software: Python, C, C++, Shell, LaTeX, Octave, Mathematica, MATLAB, Simulink, SolidWorks, Linux (Ubuntu, Red Hat), Computer clusters, Git, OpenMC, NJOY2016, Microsoft Office, Vim, Arduino, Scikit-learn, PyTorch, ROS
- Technical/Laboratory: Technical Writing, Machining, Basic Analog & Digital Electronics, Robotics, Embedded Electronics
- Advanced physics/engineering coursework/lab experience in Electricity & Magnetism, Electronics, Classical Mechanics, Quantum Physics, Mathematical Physics, Vibrations, Nuclear Physics, Thermodynamics, Fluid Mechanics, Solid Mechanics, Heat Transfer, Acoustics, Materials Science, Thermal Systems, Aerospace Propulsion, Turbojets, Ramjets, Autonomous Aerial Vehicle Control, State Estimation, and Kalman Filtering
- Advanced mathematics coursework in Linear Algebra, Ordinary Differential Equations, Computing Structures, Control Systems, Machine Learning, and Optimizations

ACTIVITIES

MARINER Robotics Project - *Project Lead* — *2024 - 2025*

- Collaborated with other students to develop an advanced autonomous underwater vehicle (AUV)
- Researched and developed hydrodynamic dive control
- Built a chassis and buoyancy engine
- Researched translational acoustic-RF communications (TARF) for data transmission at the water-to-air interface

WashU Climbing - *Member* *2024 - 2025*
- Indoor & outdoor bouldering, top roping, and lead climbing

MATE ROV Competition - *Mechanical Team Lead* *2023 - 2025*
- Mechanical sub-team lead on the MATE ROV underwater robotics team
- Designed and built a vertical profiling buoyancy engine
- Designed grabbers and manipulators for the main ROV chassis

Society of Physics Students - *Demo Chair* *2020 - 2023*
- Organize, develop, and perform physics demos
- Inform/encourage students to engage in research activities
- Weekly commitment to volunteer physics tutoring
- Wrote and proctored exams for 2022 & 2023 Science Olympiads ("Crave the Wave" and "Remote Sensing")

Dark Sky TSU *2021 - 2022*
- Group at Truman State University dedicated to light pollution education and outreach

Competitive Math *December 2022*
- Participated in the 2022 Putnam competition

HONORS

Kenneth L. Jerina Prize for Outstanding Dual-Degree in Mechanical Engineering *April 2025*
- Honored for academic achievements and engineering community contributions.

Conference Experience for Undergraduates 2023 *September 2023*
- Competitive research abstract award
- Invitation to present a research poster at the APS DNP Fall 2023 conference on The Big Island, HI

Conference Experience for Undergraduates 2022 *August 2022*
- Competitive research abstract award
- Invitation to the poster presentation at the APS DNP Fall 2022 meeting in New Orleans, LA

Sigma Pi Sigma Honor Society *May 2022*
- Recognized for service and academic scholarship in physics

PUBLICATIONS

- G. Nobre, I. Snider, E. Sun, D. Brown, A. Cuadra, W. Haeck, and C. Lu, "Annual Report on NCSP Technical Support task in BNL during FY24," Technical Report BNL-226264-2024-INRE (2024).
- I. Snider, G. Nobre, and D. Brown, "Resonance capture widths for the bayesian resonance reclassifier," in APS Meeting Abstracts (2023) pp. DB03–074.
- I. Snider, G. Nobre, D. Brown, and W. Fritsch, "Accuracy correlation in neutron resonance reclassification," in APS Meeting Abstracts (2022) pp. HA-023.

CONFERENCE PRESENTATIONS

- Brookhaven National Laboratory Student Research Conference. Brookhaven National Lab Bldg. 488, Upton, NY, August 9th, 2024.
- American Physical Society - Division of Nuclear Physics and Japan Physical Society joint fall meeting. Hilton Waikoloa Village, The Big Island, HI, Nov 27-Dec 1, 2023.
- Brookhaven National Laboratory Student Research Conference. Brookhaven National Lab Bldg. 488, Upton, NY, August 10th, 2023.
- Truman State University Student Research Conference. Truman State University, Kirksville, MO, April 21st, 2023.
- American Physical Society - Division of Nuclear Physics fall meeting. Hyatt Regency Hotel, New Orleans, LA, October 29-31, 2022.
- Brookhaven National Laboratory Student Research Conference. Brookhaven National Lab Bldg. 488, Upton, NY, August 11th, 2022.