

# Nathan Whittington

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## EDUCATION

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- **University of Tennessee, Knoxville** Knoxville, TN  
*B.S. Physics and Mathematics – GPA: 4.0* Aug. 2024 - Present
- **Roane State Community College** Harriman, TN  
*A.S. General Science – GPA: 4.0, President's List* Aug. 2022 - May 2024

## EXPERIENCE

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- **Undergraduate Research – Mirror Matter Search** Knoxville, TN  
*University of Tennessee* Aug. 2024 - Present
  - Experimental analysis of a hidden-sector dark matter search investigating neutron-mirror neutron oscillations at Oak Ridge National Lab.
  - Investigating potential mass degeneracy and a neutron-mirror neutron transition magnetic moment.
- **SULI Summer Intern** Upton, NY  
*Brookhaven National Laboratory* Jun. 2025 - Aug. 2025
  - Implemented realistic material reflectivity modeling and material maps in the *Synchrotron Radiation Workshop (SRW)* simulation package.
  - Integrated *XrayDB* for optical constants and reflectivity calculations; contributed upstream support for multilayer and coated mirrors.
- **Next-Gen Pathways to Computing Intern** Oak Ridge, TN  
*Oak Ridge National Laboratory* Jun. 2024 - July 2024
  - Developed a Particle Swarm Optimization algorithm to determine crystal unit cell orientation from Laue diffraction patterns.

## AWARDS

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- **Outstanding First-Year Student, University of Tennessee** May 2025
- **Calculus-Based Physics Award, Roane State Community College** May 2024
- **Best Student Poster Presentation, ORNL Joint Users Meeting** Aug. 2025
- **OLCF Hands-On HPC Crash Course Certificate** July 2024
  - MPI, OpenMP, GPU programming, and ML (Oak Ridge Leadership Computing Facility)

## PRESENTATIONS & PUBLICATIONS

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- **On the Neutron Transition Magnetic Moment**
- **Analysis of Dark Mirror Neutron Search Experiment**
  - AsURoS UTK (oral), EuReCa UTK (poster), ORNL Joint Users Meeting (poster)
- **XrayDB**
  - Upstream contributions - [github.com/xraydb](https://github.com/xraydb)
- **Automating Crystallography Data Collection** - Poster

## ACTIVITIES

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- **Society of Physics Students** - Secretary Aug. 2024 - Present
- **UTK Trombone Studio** Aug. 2024 - Present
- **UTK Academic Quiz Bowl** Aug. 2024 - Present
- **RoaneNET** - Computer Refurbishment Volunteer Jun. 2022 – Aug. 2022

## SKILLS

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- **Computing:** Python, C++, ROOT, Java, L<sup>A</sup>T<sub>E</sub>X, Linux, Git, High Performance Computing
- **Other:** KiCad / PCB Design, SOLIDWORKS, Fusion 360, Cura, SMD Soldering, Computer Hardware