

# Matthew J. Frost PhD

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## Education

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**The University of Tennessee, Knoxville** **Knoxville, TN, USA**  
*Doctor of Philosophy in Physics and Astronomy* *December 2019*

**Advisor:** Yuri Kamyshkov

**Dissertation Title:** *Searching for Baryon Number Violation at Cold Neutron Sources.*

**The University of Wisconsin-Madison** **Madison, WI, USA**  
*Master of Science in Nuclear Engineering and Engineering Physics* *May 2007*

**Advisor:** Raymond J. Fonck

**Kent State University** **Kent, OH, USA**  
*Bachelor of Science in Physics* *May 2005*

**Advisor:** D. Mark Manley

## Scientific Experience

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**Oak Ridge National Laboratory** **Oak Ridge, TN, USA**  
*Research Scientist, Neutron Technologies Division* *2020-Present*

- Refined beam guide designs for proposed neutron scattering instrumentation at the High Flux Isotope Reactor and the Spallation Neutron Source.
- Performed scattering experiments towards the development of novel neutron instrumentation techniques and technologies.
- Utilized a virtualized, scalable computing cluster to perform complex Monte Carlo neutron ray-tracing simulations.

*Scientific Associate, Neutron Sciences Directorate* *2007-2020*

- Lead science support activities at the VULCAN Engineering Materials Diffractometer
- Developed and implemented thermal-neutron scattering instrument improvements
- Developed and installed novel instrumentation for beam characterization
- Contributed to the design and development of two world-class neutron scattering instruments

**The University of Tennessee-Knoxville** **Knoxville, TN, USA**  
*Graduate Research Assistant, Department of Physics and Astronomy* *2013-2018*

- Developed neutron transport simulations towards the development of a large-scale particle physics experiment
- Analyzed simulation results to guide future development and optimization of neutron sources, neutron optics, and annihilation targets for fundamental neutron physics experiments
- Collaborated in the development, simulation, and feasibility of new experiment concepts at neutron sources that can provide insight into Beyond Standard Model theoretical physics concepts of mirror-matter
- Developed computer simulations describing the multiple small-angle scattering of neutrons off of surfaces made of a nanoparticle composite

**The University of Wisconsin-Madison** **Madison, WI, USA**  
*Graduate Research Assistant, Department of Engineering Physics* *2005-2007*

- Analyzed spectroscopy and emissivity data pertinent to plasma stability and control
- Assisted in daily operations of a university-level experiment while gaining valuable experience in instrumentation circuit design and repair and data analysis

*A detailed publication history can be found at <http://orcid.org/0000-0001-6821-170X>*