

Tristan Britt, PhD

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Office Address

Vancouver, BC

Canada

Education

McGill University - Montréal, QC

Doctor of Philosophy (PhD) in Physics, with distinction

Thesis: A systematic study of phonon dynamics at the 2D limit and beyond: an *ab-initio* view of ultrafast diffuse scattering

Indiana University - Bloomington, Indiana

Bachelor of Science in Physics

Thesis: Magnetic Design and Simulation of LEReC Bending Magnet for Relativistic Heavy Ion Collider (RHIC) (See Publications)

Indiana University - Bloomington, Indiana

Bachelor of Science in Applied Mathematics

Skills

- **Languages:** English, French (Conversational), Dutch (Conversational)
- **Programming Languages (Proficient):** C/C++, Python, Golang, Rust, TSX (Prisma, PostGreSql), Fortran/F90, Matlab, Mathematica, Bash, GUI Development (QT, PyQt)
- **Computational infrastructures:** Unix (Ubuntu, CentOS, MacOS), Windows, HPC cluster programming, ZFS, OpenMP threading, MPI protocol, CUDA-acceleration, PyTorch, Sklearn, TensorFlow, Embedded Programming
- **Software:** Quantum Espresso, COMSOL, CST, OPERA, ANSYS, AutoCAD Suite, LabView, ROXIE, ROOT, Adobe Creative Suite, Microsoft Office Suite, \LaTeX
- **Academic reviewer:** Invited peer reviewer for American Physical Society (APS), American Chemical Society (ACS), *Nature Physics*, *Nature Materials*, *Nature Communications*

Industry Experience

Warlock Labs - Remote

June 2024 - Present

Senior Research Engineer

- **Blockchain Research:** Discovering and developing new techniques for cryptography and blockchain technologies
- **OEV:** Developing new techniques to realise OEV and MEV in atomic and statistical transaction schema

flojoy.ai - Montréal, QC

Jan 2023 - June 2024

Senior product developer

- **Product development:** Providing industry and research perspective on best practices and features for realistic customer use as a replacement of LabVIEW
- **Application development:** Creating custom applications for customers to seamlessly integrate existing and train new highly performant ML models, instrumentation, etc, into the new interface and product

Brookhaven National Laboratory (BNL) - Upton, New York

May 2018 - May 2019

SULI Student Collaborator

- **LEReC 180° Bending Dipole Magnet:** Dipole magnet designed for use in the Low Energy RHIC electron Cooling Beamline upgrade to the Relativistic Heavy Ion Collider
 - * Designed with OPERA and tested with COMSOL, with data analysis performed with C and Python
- **QXF Beam Magnet:** Magnet for use in the High Luminosity Upgrade to the Large Hadron Collider (HL-LHC) at CERN
 - * Optimised with ROXIE with data analysis performed with Python

Korea Advanced Institute of Science and Technology (KAIST) - Daejeon, South Korea

June 2017 - August 2017

Student Researcher

- **Cryogenic Frustrum Cavity:** A high Q-factor RF cavity for cryogenic use in the Axion Dark Matter eXperiment (ADMX)
- **COMSOL:** A simulation software used to design and test the RF cavity
 - * Used to simulate superconductive properties of cryogenic sputtered Niobium Titanium

Publications

- **A momentum-resolved view of polaron formation in materials:** In review at npj *Computational Materials* ([preprint available](#))
- **UEDS as a Tool for Studying Phonon Transport: Phonon Hydrodynamics and Second Sound Oscillations :** Accepted to Structural Dynamics ([preprint available](#))
- **Unraveling Excimer Formation in Zinc-phthalocyanine using Ultrafast Electron Diffraction:** Submitted to Angewandte Chemie
- **On the origin of ultrafast dynamics in thermoelectric SnSe:** In progress
- **Ultrafast phonon-diffuse scattering as a tool for observing chiral phonons in monolayer hexagonal lattices:** *Phys. Rev. B* **107**, 214306
- **Ultrafast phonon dynamics in atomically thin MoS₂:** *Nano Lett.* **2022**, *22*, 12, 4718-4724
- **Extreme Lightwave Electron Field Emission from a Nanotip:** *Phys. Rev. Research* **3**, 013137
- **High-precision magnetic field measurement and mapping of the LEReC 180° bending magnet using very low field NMR with Hall combined probe (140-350 G):** *Meas. Sci. Technol.* **31** 075104