Tristan Britt

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Education

McGill University - *Montréal, QC*
Doctor of Philisophy (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)
- **Software**: Quantum Espresso, COMSOL, CST, OPERA, ANSYS, AutoCAD Suite, LabView, ROXIE, ROOT, Adobe Creative Suite, Microsoft Office Suite, LaTeX
- **Programming Languages (Proficient)**: `Python`, `C/C++`, `Fortran/F90`, `Matlab`, `Mathematica`, `Golang`
- **Computational infrastructures**: Unix (`Ubuntu`, `CentOS`, `MacOS`), Windows, HPC cluster programming, `ZFS`, `OpenMP` threading, `MPI` protocol, `CUDA`-acceleration
- **Coding Experience**: Density Functional Theory (DFT), Object-oriented `C++` computational electromagnetics simulations, Finite Element Method, Integral Equation Method, Finite Difference Time Domain (FDTD), High Frequency Methods, RF Design and Analysis
- **Academic reviewer**: Invited peer reviewer for American Physical Society (APS), American Chemical Society (ACS), *Nature* Physics, *Nature* Materials, *Nature* Communications

Industry Experience

flojoy.ai - *Montréal, QC* Jan 2023 - Present
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 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 election Cooling Beamline upgrade to the Relativistic Heavy Ion Collider
  - Designed with OPERA and tested with COMSOL, with data anaylsis 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

Center For Exploration of Energy and Matter (CEEM) - *Bloomington, Indiana* May 2016 - May 2017
Research Assistant
- **Probing of Angstrom-scale Yukawa gravitational affects using neutron interferometry**: Neutron interferometry experiment conceived at CEEM and conducted at the National Institute for Standards and Technology (NIST) in Gaithersberg, Maryland

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 Difraction**: 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 atomcially thin MoS_2**: 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