Tristan Britt

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Education

McGill University - *Montréal, QC* — Expected May 2023
Doctor of Philisophy (PhD) in Physics (Experimental Condensed Matter) — *GPA: 3.85/4.00*
Thesis: *Ab initio* comparison of Exotic Quantum Effects in 2D Materials

Indiana University - *Bloomington, Indiana* — May 2019
Bachelor of Science in Physics — *GPA: 3.973/4.0*
Thesis: Magnetic Design and Simulation of LEReC Bending Magnet for Relativistic Heavy Ion Collider (RHIC) (See Publications)

Indiana University - *Bloomington, Indiana* — May 2019
Bachelor of Science in Applied Mathematics — *GPA: 3.798/4.0*

Skills

- **Languages**: English, French (Conversational), Dutch (Conversational), Latin, Attic Greek
- **Software**: Quantum Espresso, COMSOL, CST, OPERA, ANYSYS, AutoCAD Suite, LabView, ROXIE, ROOT, Adobe Creative Suite, Microsoft Office Suite
- **Programming Languages (Proficient)**: Python, C/C++, Fortran/F90, Matlab, Mathematica, LaTeX
- **Coding Experience**: Density Functional Theory, Perturbative Density Functional Theory, Object-oriented C++ computational electromagnetics simulations, Finite Element Method, Integral Equation Method, Finite Differnce Time Domain (FDTD), High Frequency Methods, RF Design and Analysis, OpenMP, CUDA-accelerated implementations

Industry Experience

Brookhaven National Laboratory (BNL) - *Upton, New York* — May 2018 - Present
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

- **Extreme Lightwave Electron Field Emission from a Nanotip**: available https://arxiv.org/abs/2006.12677
- **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)**: available https://iopscience.iop.org/article/10.1088/1361-6501/ab7ac1
- **An Angstrom-Scale Short-Range Yukawa-Interaction Search using Neutron Interferometry and the Neutron Fizeau Effect**: available https://doi.org/10.1142/9789813148505_0071

Additional Experience, Achievements & Personal Interests

- Large format film photographer, mainly portraiture with some landscape work
- Kukkiwon 4th Dan and Chungdokwon 4th Dan Black Belt in Taekwondo and Global Hapkido Association 1st Dan Black Belt in Hapkido
- Very much enjoys making playlists, mainly Indie Electronic and RB music
- Awarded the Dean Scholarship, Hutton Honors College Scholarship, and Residential Programs and Services Scholarship during undergraduate studies
- Loves watching theater, cinema, and both science-fiction and thriller films
- Member of the ΠΗΣ Honours Association
- Trained in classical guitar by the Royal Conservatory of Music and the Conservatory College of Music, and admission into the Jacobs School of Music for Classical Guitar Performance
- Strong passion for food, cooking, and hosting dinner parties