Derek **Fujimoto**

Postdoctoral Researcher in Physics

About me

Hello! I am a postdoctoral researcher working in the field of particle physics. My role is to characterize and understand the magnetic shielding, coils, and sensors used in our efforts to determine the neutron electric dipole moment. To this end, I've been managing a small team of students within our collaboration in addition to my own projects.

The topic of my PhD was quite different: I was in two condensed matter groups studying the molecular motion of glass-forming polymers. One group was experimental, we used beta-detected nuclear magnetic resonance to infer molecular dynamics. The other was computational, in which I wrote large simulations to directly calculate these dynamics. As a result of this split-topic thesis, I've become quite good at communicating complex topics between experimental- and theory-based groups.

Throughout both of these experiences, I've developed very broad background and skill set, and have become effective both in the lab and analyzing data. I've also developed an interest in the development of devices and techniques. During my PhD, I wrote the data analysis software for our group, as well as the beam tuning software, and I implemented an upgrade to our cryogenic spectrometer.

Languages

English • French

Python • Cython • Julia • C++
MATLAB • BASH • ROOT
LaTeX

LinkedIn

Github

Scholar

At a Glance

- Ph.D. in Physics
- 3 years as a Postdoctoral Researcher, supervising 8 undergraduate students
- 10 years research experience on a wide array of topics
- 30 academic publications
- Strong programming, data analysis, experiment, and interpersonal skills

Recent Experience

2021– **Postdoctoral Researcher in Particle Physics** — TRIUMF
TRIUMF
Magnetic field characterization, measurement, and shielding for the ultra-cold neutron group. Hired and supervised students, designed and conducted experiments in a multinational collaboration. Oversaw commissioning of a $2.5M magnetically shielded room.

2015–2021 **Graduate Research Assistant in Soft Matter** — Stewart Blusson Quantum Matter Institute
University of British Columbia
Designed and conducted beta-detected NMR experiments in ionic liquids and polymer glasses using a radioactive ion beam at TRIUMF. Wrote molecular dynamics simulations of polymer thin films on large high-performance computing clusters.

Education

2021 **Physics** — The University of British Columbia
PH.D. · University of British Columbia

2015 **Physics** — The University of British Columbia
M.Sc. · University of British Columbia

2013 **Physics** — McGill
B.Sc. · McGill University

Academic Publications

Full academic CV here.

- 21 peer reviewed publications
- 9 conference proceedings
- 9 presentations and 5 posters at international conferences and workshops

Awards

2017 Killam Graduate Teaching Assistant Award

2015 Stuart Blussom Quantum Matter Institute QuEST Fellowship

Complementary Education

2023 Crane Operator Training
2022 Advanced Radiation Protection Training
2018 Instructional Skills Workshop
2014 Laser Safety
2014 Radioactive Calibration Sources

Software Development

bfit General-purpose β-NMR analysis GUI and python API, now the definitive analysis program
bccd β-NMR beamspot analysis GUI and python API
mudpy TRIUMF μSR file reader
QZFM Unofficial QuSpin Python API: serial communication over USB

Additional Skills

Science	Magnetic shielding, UHV systems, clean room procedures, cryogenics, ion beams, Monte Carlo, signal processing, DAQ, technical writing, and general lab skills.
Engineering	Solidworks, 3D printing.
Programming	numpy, scipy, pandas, matplotlib, linux.
Leadership	Team management, performance assessment, project supervision.
Other Software	Git, Gaussian, LAMMPS, MS Word, MS Excel, VSCode, GIMP, Inkscape

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