Thanh Nguyen

CONTACT Phone: **(617) 902-8546** Email: **ngutt@mit.edu** Website: https://www.mit.edu/∼ngutt/

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA, USA

Ph.D., Nuclear Science and Engineering (GPA: 4.9/5.0) **Sep 2018 – expected Spring 2024**

McGill University, Montréal, QC, Canada

B.Sc., Physics (GPA: 3.97/4.00) **Sep 2015 – May 2018**

First Class Honours and Dean's Honour List

SKILLS

Experiment: Single crystal growth (flux, chemical vapor transport, Czochralski); Electrical, thermal, and magnetic characterization of materials (Physical Property Measurement System (PPMS), SQUID magnetometry); Imaging and spectroscopy of materials (scanning electron microscopy (SEM), x-ray diffraction (XRD), energy-dispersive spectroscopy (EDS), x-ray and neutron scattering at national laboratories, Raman scattering); Fabrication of mesoscopic and nanoscale devices for characterization (photolithography, electron-beam lithography, deposition of metal contacts by evaporation, focused ion beam (FIB) micro-structuring)
Programming: Python, LabVIEW, MATLAB, HTML
Software: SolidWorks, Adobe Creative Suite, Mathematica
Languages: English, French, German, Russian, Vietnamese, Chinese, Arabic

RESEARCH EXPERIENCE

Quantum Measurement Group, Massachusetts Institute of Technology, Cambridge, MA

Graduate research assistant (supervised by Dr. Mingda Li) **May 2018 – present**

- Investigating exotic electric/thermal properties and probing for electronic, magnetic and lattice excitations in topological quantum materials by performing quantum transport measurements as well as x-ray and neutron spectroscopy measurements at national laboratories.
- Fabricating devices from topological materials using lithography and focused-ion beam microstructuring to characterize topology-induced phenomena in the mesoscopic and nanoscale.
- Developing a LabVIEW-controlled measurement setup with lock-in amplifiers, nano-voltmeters, and AC/DC current sources to measure electric transport across longitudinal and transverse directions in higher harmonic frequencies with low signal-to-noise in conjunction with the PPMS.

Brunner Neutrino Lab, McGill University, Montréal, QC

Undergraduate research assistant (supervised by Dr. Thomas Brunner) **May 2017 – Aug 2018**

- Designed and assembled an electroluminescent light source with gas-handling system for detailed characterization of next-generation silicon photomultipliers for application in the future nEXO experiment probing for neutrinoless double beta decay in liquid ^{136}Xe.

AWARDS

2023-2024	MIT School of Engineering Distinguished Energy Efficiency Fellowship
2021-2023	2 x MathWorks Engineering Fellowship
2021	MIT NSE Manson Benedict Award
2019	Sow-Hsin Chen Fellowship in Neutron Science
2018	School of Engineering SMA Graduate Fellowship
2018	Robert E. Bell Prize in Physics
2015-2018	Bourses Hydro-Quebec Science
2016-2018	4 x Tomlinson Engagement Award for Mentoring (TEAM)
2015-2018	3 x Dean's Honour List for Science
2017	Canadian Institute of Nuclear Physics (CINP) Travel Grant
2017	Member of the Golden Key International Honour Society
2017	Anne Molson Scholarship
2017	Women Associates of McGill Scholarship
2017	NSERC USRA Science Award
2016	E. R. Pounder Prize in Physics

Publications

1. N. C. Drucker†, T. Nguyen†, P. Siriviboon†, F. Han†, X. Luo†, N. Andrejevic, Z. Zhu, G. Bednik, Q. T. Nguyen, Z. Chen, L. K. Nguyen, T. Liu, T. J. Williams, M. B. Stone, A. I. Kolesnikov, S. Chi, J. Fernandez-Baca, C. Nelson, A. Alatas, T. Hogan, A. A. Puretzky, S. Huang, Y. Yue, M. Li, *Topology stabilized fluctuations in a magnetic nodal semimetal*, **Nat. Commun. 14, 5182 (2023)**.
2. M. Mandal†, N. C. Drucker†, P. Siriviboon†, T. Nguyen, A. Boonkird, T. N. Lamichhane, R. Okabe, A. Chotrattanapituk, M. Li, *Topological superconductors from a materials perspective*, **Chem. Mater. 35, 6184 (2023)**.
3. Z. Chen†, X. Shen†, N. Andrejevic, T. Liu, D. Luo, T. Nguyen, N. C. Drucker, M. Kozina, Q. Song, C. Hua, G. Chen, X. Wang, J. Kong, M. Li, *Panoramic Mapping of Phonon Transport from Ultrafast Electron Diffraction and Scientific Machine Learning*, **Adv. Mater. 35, 2206997 (2023)**.
4. N. Andrejevic†, J. Andrejevic†, B. A. Bernevig, N. Regnault, F. Han, G. Fabbris, T. Nguyen, N. C. Drucker, C. H. Rycroft, M. Li, *Machine-Learning Spectral Indicators of Topology* **Adv. Mater. 34, 2204113 (2022)**.
5. J. Shin†, G. A. Gamage†, Z. Ding†, K. Chen, F. Tian, X. Qian, J. Zhou, H. Lee, J. Zhou, L. Shi, T. Nguyen, F. Han, M. Li, D. Broido, A. Schmidt, Z. Ren, G. Chen, *High ambipolar mobility in cubic boron arsenide*, **Science 377, 437–440 (2022)**.
6. S. Wang†, H. Jiang, Y. Dong, D. Clarkson, H. Zhu, C. M. Settens, Y. Ren, T. Nguyen, F. Han, W. Fan, S. Y. Kim, J. Zhang, W. Xue, S. K. Sandstrom, G. Xu, E. Tekoglu, M. Li, S. Deng, Q. Liu, S. G. Greenbaum, X. Ji, T. Gao, J. Li, *Acid-in-Clay Electrolyte for Wide-Temperature-Range and Long-Cycle Proton Batteries*, **Adv. Mater. 34, 2202063 (2022)**.
7. N. Andrejevic†, Z. Chen†, T. Nguyen, L. Fan, H. Heiberger, L. J. Zhou, Y. F. Zhao, C. Z. Chang, A. Grutter, M. Li, *Elucidating proximity magnetism through polarized neutron reflectometry and machine learning*, **Appl. Phys. Rev. 9, 011421 (2022)**.
8. T. Nguyen†, M. Li, *Electronic properties of correlated kagomé metals AV_3Sb_5 (A = K, Rb, Cs): A perspective*, **J. Appl. Phys. 131, 060901 (2022)**.
9. T. Nguyen†, Y. Tsurimaki†, R. Pablo-Pedro†, G. Bednik†, T. Liu, A. Apte, N. Andrejevic, M. Li, *Topological signatures in nodal semimetals through neutron scattering*, **New J. Phys. 24, 013016 (2022)**.
10. T. Nguyen†, N. Andrejevic, H. C. Po, Q. Song, Y. Tsurimaki, N. C. Drucker, A. Alatas, E. E. Alp, B. M. Leu, A. Cunsolo, Y. Cai, L. Wu, J. A. Garlow, Y. Zhu, A. C. Gossard, A. A. Puretsky, D. B. Geohegan, S. Huang, M. Li, *Signature of Many-Body Localization of Phonons in Strongly Disordered Superlattices*, **Nano Lett. 21, 7419–7425 (2021)**.
11. Z. Chen†, N. Andrejevic†, N. C. Drucker, T. Nguyen, R. P. Xian, T. Smidt, Y. Wang, R. Ernstorfer, D. A. Tennant, M. Chan, M. Li, *Machine learning on neutron and x-ray scattering and spectroscopies*, **Chem. Phys. Rev. 2, 031301 (2021)**.
12. F. Han†, N. Andrejevic†, T. Nguyen†, V. Kozii†, Q. T. Nguyen, T. Hogan, Z. Ding, R. Pablo-Pedro, S. Parjan, B. Skinner, A. Alatas, E. E. Alp, S. Chi, J. Fernandez-Baca, S. Huang, L. Fu, M. Li, *Quantized thermoelectric Hall effect induces giant power factor in a topological semimetal*, **Nat. Commun. 11, 6167 (2020)**.
13. T. Nguyen†, F. Han†, N. Andrejevic†, R. Pablo-Pedro†, A. Apte, Y. Tsurimaki, Z. Ding, K. Zhang, A. Alatas, E. E. Alp, S. Chi, J. Fernandez-Baca, M. Matsuda, D. A. Tennant, Y. Zhao, Z. Xu, J. W. Lynn, S. Huang, M. Li, *Topological Singularity Induced Chiral Kohn Anomaly in a Weyl Semimetal*, **Phys. Rev. Lett. 124, 236401 (2020)**.

Preprints

1. Y. Zhou†, R. Ciarla, A. Boonkird, T. Nguyen, J. Zhou, Z. Jiang, X. Zuo, J. Ranasinghe, W. Hu, B. Scott, S. Huang, M. Li, Y. Xu, *Defects Vibrations Engineering for Enhancing Interfacial Thermal Transport in Polymer Composites*, (2023). [in review in *Advanced Materials*]
2. S. N. Kajale†, T. Nguyen, M. Li, D. Sarkar, *Deterministic and non-volatile switching of all-van der Waals spin-orbit torque system above room temperature without external magnetic fields*, **arXiv:2309.04930 (2023)**.
3. S. N. Kajale†, T. Nguyen†, C. A. Chao, D. C. Bono, A. Boonkird, M. Li, D. Sarkar, *Current-induced deterministic switching of van der Waals ferromagnet at room temperature*, **arXiv:2306.14355 (2023)**.
4. C. T. Chou†, B. C. McGoldrick, T. Nguyen, S. Ghosh, K. A. Mkhoyan, M. Li, L. Liu. *Ultra-High Magnetic Field Resilience of Tunneling Magnetoresistance in an Antiferromagnetic Tunnel Junction*, (2023). [in review in *Physical Review Letters*]
5. R. Okabe†, A. Chotrattanapituk†, A. Boonkird, N. Andrejevic, X. Fu, T. S. Jaakkola, Q. Song, T. Nguyen, N. C. Drucker, S. Mu, B. Liao, Y. Cheng, M. Li, *Virtual Node Graph Neural Network for Full Phonon Prediction*, **arXiv:2301.02197 (2023)**.
6. N. Andrejevic†, F. Han†, T. Nguyen, A. A. Puretzky, Q. Meng, Y. F. Zhao, W. Zhao, L. Wu, D. Geohegan, C. Z. Chang, Y. Zhu, S. Huang, M. Li, *Spectroscopic Signatures of Nonlocal Interfacial Coupling in Superconducting FeSe/$SrTiO_3$ Heterostructures*, **arXiv:1908.05648 (2019)**.
7. nEXO Collaboration, *nEXO Pre-Conceptual Design Report*, **arXiv:1805.11142 (2018)**.