Kyle R. Bryenton

Curriculum Vitae: January 4, 2026

Halifax, NS, Canada
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CURRENT POSITION

Postdoctoral Research Fellow 2026–present

Dalhousie University, Halifax, NS
Department of Chemistry & Industrial Partner: Draslovka

Project Title: *Towards Sustainable Metal Extraction in Mining: Tailoring Glycine Leaching Technologies*
PI: Dr. Erin Johnson & Dr. Luc LeBlanc

My postdoctoral research role is supported by an industrial partnership between Draslovka, Dalhousie University's Department of Chemistry, and collaborators at the University of Cambridge. Building on my PhD work in density-functional theory (DFT) method development and testing, my research focuses on advancing Glycine Leaching Technology (GLT) to make mining more sustainable and economical.

EDUCATION

Doctor of Philosophy 2020–2025

Dalhousie University, Halifax, NS
Department of Physics & Atmospheric Science (Chemical Physics / Density-Functional Theory)

Thesis: *Physics-guided Solutions to Dispersion in Density-functional Theory*
Advisor: Dr. Erin Johnson

AARMS Summer School: Dynamical Systems, DEs, and Special Functions 2019

University of Prince Edward Island, Charlottetown, PE
UPEI School of Mathematical and Computational Sciences

The Mathematics and Science of Chaos
Instructor: Dr. James Yorke, University of Maryland
q-Series in Analysis, Combinatorics, and Number Theory
Instructor: Dr. Mourad Ismail, University of Central Florida

Master of Science 2016–2018

University of Guelph, Guelph, ON
Guelph-Waterloo Physics Institute (Condensed Matter Physics / Quantum Materials)

Thesis: *Optical Properties of the α-$\mathcal{T}_3$ Semi-Dirac Model*
Advisor: Dr. Elisabeth Nicol

Bachelor of Science 2011–2016

University of Prince Edward Island, Charlottetown, PE
UPEI Department of Physics: Honours in Physics with Co-operative Education
UPEI School of Mathematical and Computational Sciences: Major in Mathematics

Thesis: *Darboux-Crum Transformations, Supersymmetric Quantum Mechanics, and the Eigenvalue Problem*
Advisor: Dr. Nasser Saad, Dr. Sheldon Opps

First-Class Standing

ACADEMIC PROFESSIONAL SERVICES

- Developer, Fritz Haber Institute *ab initio* Materials Simulations (FHIaims) 2022–present
- Member, American Chemical Society 2022–present
- Member, Canadian Association of Physicists 2014–present
- Member, Canadian Mathematical Society 2014–present
- Coordinator, UPEI Mathematics Enrichment Camp 2014–2017
- Member, UPEI SMCS - Financial Mathematics Hiring Committee 2015–2016
- Physics Representative, Regional Astronomical Society 2012–2016
- External Physics Consultant, Confidential Medical Technology Company 2015
- Coordinator, UPEI SU Get Out The Vote Campaign 2015
- Coordinator, UPEI Science Undergraduate Research Conference 2015

UNIVERSITY SOCIETAL SERVICES

- Dalhousie Graduate Physics Society 2020–2025
  Treasurer 2022–2024
- UPEI Mathematics Society 2011–2016
  President 2013–2016
  Second-Year Representative 2012–2013
- UPEI Physics Society 2011–2016
  Vice President 2014–2015
  Third-Year Representative 2013–2014
  Second-Year Representative 2012–2013
- UPEI RA 2011–2016
  Administrative Assistant 2012–2013
- UPEI Computer Science Society 2011–2016

AWARDS & HONOURS

University	Program	Award Name	Value	Year
Dalhousie University	Ph.D	CSTCC 2024 Best Contributed Talk Award	$556	2024
Dalhousie University	Ph.D	Mary Margaret Werner Graduate Scholarship	$5,000	2024
Dalhousie University	Ph.D	IBM-Zerner Graduate Student Award	$674	2024
Dalhousie University	Ph.D	CCAM Physics Conference Feedback Award	$30	2022
Dalhousie University	Ph.D	Killam Predoctoral Scholarship	$90,000	2020
Dalhousie University	Ph.D	Nova Scotia Graduate Scholarship	$60,000	2020
Dalhousie University	Ph.D	Dalhousie President's Award	$12,294	2020
Dalhousie University	Ph.D	Walter C. Sumner Memorial Fellowship	$16,400	2020
Dalhousie University	Ph.D	Canadian Mathematical Society President's Award	$100	2019
University of Guelph	M.Sc	NSERC Canada Graduate Scholarship - Masters	$17,500	2017
University of Guelph	M.Sc	Ontario Graduate Scholarship (Declined)	$15,000	2017
University of Guelph	M.Sc	Ontario Graduate Fellowship	$9,000	2017
University of PEI	B.Sc	Jeff Praught Award in Mathematics	$500	2016
University of PEI	B.Sc	Physics Department Graduation Prize	$200	2016
University of PEI	B.Sc	George Coles Graduate Scholarship	$1,400	2016
University of PEI	B.Sc	UPEI Diamond Award in Educational Leadership	$500	2016
University of PEI	B.Sc	UPEI Student/Alumnus of the Month	N/A	2016
University of PEI	B.Sc	Robert Haines Memorial Science Award of Merit	N/A	2015
University of PEI	B.Sc	Dr. John H. Maloney Scholarship in Science/Business	$390	2015
University of PEI	B.Sc	MacLauchlan Prize for Effective Writing	$500	2015
University of PEI	B.Sc	Dr. Terry McCormack Award	$500	2015
University of PEI	B.Sc	UPEI Academic Excellence Award	$2,000	2015
University of PEI	B.Sc	NSERC Undergraduate Student Research Award	$4,500	2014
University of PEI	B.Sc	UPEI Academic Excellence Award	$1,000	2014
University of PEI	B.Sc	Island Student Award - Fourth Year	$600	2014
University of PEI	B.Sc	Chin-Hai Lin Memorial Award	$120	2013
University of PEI	B.Sc	Physics Co-operative Education Student of the Year	$500	2013
University of PEI	B.Sc	Physics Department Prize in Modern Physics	$200	2013
University of PEI	B.Sc	Island Student Award - Third Year	$600	2013
University of PEI	B.Sc	Austin A. Scales Scholarship	$2,000	2012
University of PEI	B.Sc	Island Student Award - Second Year	$400	2012
University of PEI	B.Sc	Inspiring Excellence Award	$1,000	2011
University of PEI	B.Sc	Access PEI: Community Service Bursary	$500	2011
University of PEI	B.Sc	George Coles Bursary	$2,000	2011

CSTCC 2024 Best Contributed Talk Award 2024
Award: $200CAD + £200GBP
Awarded for the best contributed talk at the 2024 Canadian Symposium on Theoretical and Computational Chemistry (CSTCC), decided by vote. The winner was awarded $200CAD from the American Institute of Physics (AIP) and a £200GBP book voucher from the Royal Society of Chemistry (RSC).

Inaugural Mary Margaret Werner Graduate Scholarship 2024
Award: $5,000
Awarded to four deserving graduate students from the Dalhousie Faculty of Science, upon recommendation from their departments. These scholarships recognize the students scholarly achievements and exceptional contributions to their research fields and academic community.

IBM-Zerner Graduate Student Award 2024
Award: $500USD
Awarded at the Sixty-Third Sanibel Symposium, February 25th – March 1st, 2024. Sanibel has a long history of giving awards to deserving undergraduate students, graduate students, postdoctoral researchers, and young investigators. Depending upon the quality of the applicants, up to six awards will be granted among those four categories. Each award consists of a $500USD travel reimbursement to attend the meeting.

CCAM Physics Conference Feedback Award 2022
Award: $30
Awarded to deserving participants at the 2022 Canadian-Cuban-American-Mexican Graduate Student Physics Conference (C^2AM).

Killam Predoctoral Scholarship 2020-2022
Award: $30,000/yr for 3 years
Dalhousie awards Killam Predoctoral Scholarships on a competitive basis to outstanding graduate students planning to enroll or already enrolled in thesis-based programs (Master's or Doctoral level) in any discipline in the sciences, engineering, humanities, and social sciences. This scholarship is open to both Canadians and non-Canadians.

Nova Scotia Graduate Scholarship 2020-2023
Award: $15,000/yr for 4 years
The Nova Scotia Graduate Scholarship program provides funding to research graduates at Dalhousie for innovative work aligned with or advancing Nova Scotia priorities. The objectives of this award are to attract and retain top-quality research graduates, as well as to encourage exploration, discovery, and innovation in research priority areas for Nova Scotia.

Dalhousie President's Award 2020-2021
Award: Full-Tuition Scholarship for 2 years
The President's Awards are for students starting PhD programs who have a full doctoral scholarship to cover their full costs of tuition.

Walter C. Sumner Memorial Fellowship 2020
Award: $8,200/yr for 2 years
Up to 40 Walter C. Sumner Memorial Fellowships will be awarded nationally to doctoral students who are registered or about to commence studies in Chemistry, Physics, Electrical Engineering, or Computer Science. Candidates must be nominated by one of the participating universities. Recommendations for the award of fellowships will be made to the Foundation by a selection committee of senior scientists who are not from the participating universities.

Canadian Mathematical Society President's Award 2019
Award: $100
Awarded to a deserving student based on their research quality and presentation skills at the 2019 CMS Winter Meeting.

NSERC Canada Graduate Scholarship - Masters 2017
Award: $17,500
The objective of the Canada Graduate Scholarships-Master's (CGS M) Program is to help develop research skills and assist in the training of highly qualified personnel by supporting students who demonstrate a high standard of achievement in undergraduate and early graduate studies.

Ontario Graduate Scholarship 2017
Award: $15,000 (Declined)
The Ontario Graduate Scholarship (OGS) Program recognizes academic excellence in graduate studies at the master's and doctoral levels in all disciplines of academic study. The ministry contributes two-thirds of the value of the award and the university provides one-third. A recipient will be awarded $5,000 per semester for up to three semesters.

Ontario Graduate Fellowship 2016
Award: $9,000
The Ontario Graduate Fellowships (OGF) Program recognizes academic excellence in graduate studies at the master's and doctoral levels in all disciplines of academic study. The OGF is valued at $3,000 per semester for two to three semesters of study. Selection criteria is based on academic excellence as defined by a combination of grades, research, demonstrated leadership and publications.

Jeff Praught Award in Mathematics 2016
Award: $500
Awarded to a deserving graduating student who has been involved in student life at UPEI and/or the community. Preference will be given to those not been in receipt of a scholarship or bursary of more than $2,000 during his/her undergraduate degree and is not receiving another graduation award.

Physics Department Graduation Prize 2016
Award: $200
Awarded to a graduating physics student, referred by the physics department.

George Coles Graduate Scholarship 2016
Award: $1,400
Awarded to Island residents graduating from UPEI or Maritime Christian College in their first undergraduate degree.

UPEI Diamond Award in Educational Leadership 2016
Award: $500
This award is presented to full-time students in good academic standing who impart knowledge and experience to others to support their current and future success. These students are dedicated to creating and sustaining vibrant learning communities and assisting other students and community members to reach their full potential.

UPEI Student/Alumnus of the Month, February 2016 2016
Award: Prestigious Recognition
Recognition for creating the nonprofit educational program, UPEI Mathematics Achievement Program, which taught grade 3-6 PEI students math during the 2015-2016 academic year. The full profile may be found here: `https://web.archive.org/web/20160304210544/https://www.upei.ca/science/notice/2016/02/studentalumnus-profile-month-february-2016`

Robert Haines Memorial Science Award of Merit 2015
Award: Prestigious Recognition
A prestigious award where nominees are judged for excellence in two categories: academic standing and service and leadership either within the academic community or the community at large. The Chair of each Science Department submits a letter of nomination with supporting documents to the Dean of Science, on behalf of a student within their respective department for consideration.

Dr. John H. Maloney Scholarship in Science/Business 2015
Award: $390
Awarded to an undergraduate student in the School of Business or Faculty of Science who has expressed inquisitiveness and desire to learn, shows leadership, is a team player, contributes to UPEI or the general community in a meaningful manner.

MacLauchlan Prize for Effective Writing 2015
Award: $500
Awarded to returning UPEI undergraduate students who have produced an outstanding written work during the previous academic year. Writing is a natural extension of human life and plays a tremendous role in personal and professional growth. Success as a knowledge-based society depends on a population that is able to communicate effectively. By celebrating writing excellence, these awards send a powerful signal regarding the collective importance of writing.

Dr. Terry McCormack Award 2015
Award: $500
Awarded to a student entering third-year or fourth-year from rural PEI who has expressed an interest in health care; the student must have maintained at least an 80% average in the last two semesters of study.

UPEI Academic Excellence Award 2015
Award: $2,000
Awarded to UPEI students who demonstrated high academic standing in their past year of studies.

NSERC Undergraduate Student Research Award 2014
Award: $4,500
Awarded to Canadian undergraduate students currently enrolled in a bachelor's degree program at an eligible university who have high academic standing. The purpose is to stimulate undergraduate students' interest in research in the natural sciences and engineering.

UPEI Academic Excellence Award 2014
Award: $1,000
Awarded to UPEI students who demonstrated high academic standing in their past year of studies.

Island Student Award - Fourth Year 2014
Award: $600
Awarded to eligible Island students enrolled in full-time studies at UPEI or Maritime Christian College, offered by the Government of Prince Edward Island. Available to fourth-year students only.

Chin-Hai Lin Memorial Award 2013
Award: $120
Awarded to the student majoring in Physics who achieved the highest overall average in second year.

Physics Co-operative Education Student of the Year 2013
Award: $500
Awarded to a deserving student in the Physics Co-operative Education program based on academic achievement, community involvement, contribution to their previous employer, and the impact the co-operative education program has had on their professional development.

Physics Department Prize in Modern Physics 2013
Award: $200
Awarded to the student ranking highest in Physics 221 based on the recommendation of the chair of the Physics Department.

Island Student Award - Third Year 2013
Award: $600
Awarded to eligible Island students enrolled in full-time studies at UPEI or Maritime Christian College, offered by the Government of Prince Edward Island. Available to third-year students only.

Austin A. Scales Scholarship 2012
Award: $2,000
Awarded to students from rural PEI, one from each county, based on financial need and achievement in the first year of a university program. Available to second-year students only.

Island Student Award - Second Year 2012
Award: $400
Awarded to eligible Island students enrolled in full-time studies at UPEI or Maritime Christian College, offered by the Government of Prince Edward Island. Available to second-year students only.

Inspiring Excellence Award 2011
Award: $1,000
Awarded to all students entering UPEI from high school who have a cumulative average of 85% based on the five courses used for admission to UPEI.

Access PEI: Community Service Bursary 2011
Award: $500
Awarded to students entering post secondary studies who have completed and recorded over 100 hours of community service.

George Coles Bursary 2011
Award: $2,000
The George Coles Bursary is available to first time, first year student residents of Prince Edward Island enrolled in full-time studies at the University of Prince Edward Island, Holland College, Collège Acadie ÎPÉ or the Maritime Christian College, who do not have any previous post-secondary education.

PROJECT FUNDING

University of Prince Edward Island 2015
Award: $2,000
Awarded to the UPEI Mathematics Achievement Program 2015-2016 school year pilot project.

PEI, Department of Workforce and Advanced Learning: Skills PEI 2015
Award: $5,600
Shared award between the PEI Volunteers for Literacy Program, and the UPEI Mathematics Achievement Program 2015-2016 school year pilot project.

Atlantic Association for Research in the Mathematical Sciences 2015
Award: $5,000
Awarded to the UPEI Mathematics Achievement Program 2015-2016 school year pilot project.

Atlantic Association for Research in the Mathematical Sciences 2015
Award: $5,000 (Declined)
Offered to the UPEI Mathematics Achievement Program 2015 summer program.

PAST RESEARCH EXPERIENCE

Graduate Research Assistant 2020–2025
Dalhousie University, Department of Physics and Atmospheric Science
PI: Dr. Erin Johnson
Physics-guided Solutions to Dispersion in Density-functional Theory

Research Fellow 2019
UPEI, School of Mathematical and Computational Sciences
PI: Dr. Nasser Saad
On Polynomial Solutions of Linear Differential Equations
Exactly Solvable Anharmonic Potentials with Variable Bumps and Depths
Generalized Heun Equation and Associated Orthogonal Polynomials

Graduate Research Assistant 2016–2018
University of Guelph, Guelph-Waterloo Physics Institute
PI: Dr. Elisabeth Nicol
Optical Properties of the α-$\mathcal{T}_3$ Semi-Dirac Model

Undergraduate Research Assistant 2016
UPEI, School of Mathematical and Computational Sciences
PI: Dr. Nasser Saad
Generation of New Non-Linear Harmonic-Like Classes of Exceptionally Orthogonal Polynomials

Undergraduate Research Assistant 2015–2016
UPEI, School of Mathematical and Computational Sciences
PI: Dr. Nasser Saad
Explicit Evaluation of the Polynomial Solutions of Differential Equations with Polynomial Coefficients

Undergraduate Research Assistant 2014–2015
UPEI, Mathematics Department & Physics Department
PI: Dr. Nasser Saad & Dr. Sheldon Opps
Darboux-Crum Transformations, Supersymmetric Quantum Mechanics, and the Eigenvalue Problem

Undergraduate Research Assistant 2015
UPEI, Mathematics Department
PI: Dr. Nasser Saad
Generalizing the Shifted Non-Linear Oscillator using Supersymmetric Quantum Mechanics

Physics Co-op Research Placement 2014
UPEI, Mathematics Department
PI: Dr. Nasser Saad
An Investigation of the Darboux-Crum Transformation and its Applications to Eigenvalue Problems

Undergraduate Research Assistant 2014
UPEI, Mathematics Department
PI: Dr. Gordon MacDonald
Finding Fast Matrix Multiplication Methods Using Genetic Algorithms

Physics Co-op Research Placement 2013
PEI, Cancer Treatment Centre
PI: Dr. John Andrew & Grant MacNevin
Finding the Mechanical Isocentre of Medical Linear Accelerators using MATLAB Image Processing

Physics Co-op Research Placement 2012
UPEI, Mathematics Department
PI: Dr. Nasser Saad
The Pochhammer Symbol, and Related Identities

ACADEMIC WORK EXPERIENCE

Department of Physics, Dalhousie University, NS 2022
PHYC 3640 — Quantum Mechanics — Lecturer / Tutorial Instructor / Marker

Department of Physics, Dalhousie University, NS 2020
PHYC 2140 — Physics-Tools: Theory — Tutorial Instructor

Department of Physics, Dalhousie University, NS 2020
First-Year Physics — Lecturer / Tutorial Instructor / Resource Centre Tutor

Department of Physics, University of Guelph, ON 2016–2018
First-Year Physics — Help Room / Laboratory Instructor / Marker / Exam Invigilator

UPEI Mathematics Achievement Program, UPEI, PE 2015–2016
Founder & Director

Physics Department, UPEI, PE 2012–2016
Observatory Technician

Physics Department, UPEI, PE 2012–2016
PHYS 251/252 — Introductory Astronomy — Teaching Assistant

English Language School Board, Stratford, PE 2012–2016
Registered Tutor

Physics Department, UPEI, PE 2015
PHYS 312 — Electromagnetism I — Tutorial Instructor

Physics Department, UPEI, PE 2013–2014
First-Year Physics — Teaching Assistant / Laboratory Assistant

School of Mathematical and Computational Sciences, UPEI, PE 2013
Math Help Centre Tutor

RESEARCH CONTRIBUTIONS

Non-Peer-Reviewed Articles

[13] **K. R. Bryenton**, E. R. Johnson, *The exchange-correlation dipole moment dispersion method*. Submitted to: Phys. Chem. Chem. Phys. (2025). doi: 10.48550/arXiv.2506.02352

[12] V. Blum, *et al.* (including: **K. R. Bryenton**), *Roadmap on Advancements of the FHI-aims Software Package*. Submitted to: IOP Electronic Structure. (2025). doi: 10.48550/arXiv.2505.00125

[11] K. Panchagnula, D. Graf, **K. R. Bryenton**, E. R. Johnson, A. J. W. Thom, *Endofullerenes and Dispersion-Corrected Density Functional Approximations: A Cautionary Tale*. (Preparing for Submission). (2025). doi: 10.48550/arXiv.2503.01637

Peer-Reviewed Articles

[10] **K. R. Bryenton**, E. R. Johnson, *WTMAD-4: A Fair Weighting Scheme for GMTKN55*. Phys. Chem. Chem. Phys. *(Advance Article)* (2025). doi: 10.1039/D5CP03741G [09] C. J. Nickerson, **K. R. Bryenton**, A. J. Price, E. R. Johnson, *Comparison of DFT Dispersion Corrections for the DES15K Database*. J. Phys. Chem. **127**, 41, 8712–8722 (2023). doi: 10.1021/acs.jpca.3c04332

[08] **K. R. Bryenton**, E. R. Johnson, *Many-Body Dispersion in Model Systems and the Sensitivity of Self-Consistent Screening*, J. Chem. Phys. **158**, 204110 (2023). doi: 10.1063/5.0142465

[07] **K. R. Bryenton**, A. A. Adeleke, S. G. Dale, E. R. Johnson, *Delocalization Error: The Greatest Outstanding Challenge in Density-functional Theory*, WIREs Comput. Mol. Sci. **13** e1631, (2023). doi: 10.1002/wcms.1631

[06] A. J. Price, **K. R. Bryenton**, E. R. Johnson, *Requirements for an Accurate Dispersion-corrected Density Functional*, J. Chem. Phys. **154**, 23, 230902, (2021). doi: 10.1063/5.0050993

[05] **K. R. Bryenton**, N. Saad, *Exactly Solvable Schrödinger Eigenvalue Problems for New Anharmonic Potentials with Variable Bumps and Depths*, Eur. Phys. J. Plus. **135**, 369, (2020). doi: 10.1140/epjp/s13360-020-00378-9

[04] **K. R. Bryenton**, A. R. Cameron, K. L. A. Kirk, N. Saad, P. Strongman, N. Volodin, *On the Solutions of Second-Order Differential Equations with Polynomial Coefficients: Theory, Algorithm, Application*, Algorithms. **13**, 286, (2020). doi: 10.3390/a13110286

[03] J. Carbotte, **K. R. Bryenton**, E. J. Nicol, *Optical Properties of a Semi-Dirac Material*, Phys. Rev. B. **99**, 115406, (2019). doi: 10.1103/PhysRevB.99.115406

[02] R. L. Hall, N. Saad, **K. R. Bryenton**, *The D-Dimensional Softcore Coloumb Potential and the Generalized Confluent Heun Equation*, J. Math. Phys. **59**, 102105, (2018). doi: 10.1063/1.5035357

[01] K. L. A. Kirk, **K. R. Bryenton**, N. Saad, *A Note on the Generalized and Universal Associated Legendre Equations*, Commun. Theor. Phys. **70**, (2018). doi: 10.1088/0253-6102/70/1/19

Theses

[03] **K. R. Bryenton**, *Physics-Guided Solutions to Dispersion in Density-Functional Theory*, Ph.D. Thesis, Department of Physics and Atmospheric Science, Dalhousie University, Halifax, Nova Scotia, Canada, (2025). doi: 10.13140/RG.2.2.21305.84328

[02] **K. R. Bryenton**, *Optical Properties of the α-$\mathcal{T}_3$ Semi-Dirac Model*, M.Sc. Thesis, Guelph-Waterloo Physics Institute, University of Guelph, Guelph, Ontario, Canada, (2018). doi: 10.13140/RG.2.2.17048.24325

[01] **K. R. Bryenton**, *Darboux-Crum Transformations, Supersymmetric Quantum Mechanics, and the Eigenvalue Problem*, B.Sc. Hons. Thesis, Department of Physics, University of Prince Edward Island, Charlottetown, Prince Edward Island, Canada, (2016). doi: 10.13140/RG.2.2.23129.98408

Poster Presentations

World Association of Theoretical and Computational Chemists (WATOC) - Oslo, Norway 2025
The Exchange-correlation Dipole Moment (XCDM) Model and Z-Damping

Sixty-Third Sanibel Symposium - St. Augustine Beach, FL 2024
Adding Correlation to the Exchange-Hole Dipole Moment Model

FHI-aims Developers Meeting - Hamburg, Germany 2023
Improved Forces for the Exchange-Hole Dipole Moment Model

Canadian Association of Physicists (CAP) Congress - Fredericton, NB 2023
Many-Body Dispersion in Model Systems and the Sensitivity of Self-Consistent Screening

American Chemical Society Spring Meeting - Indianapolis, IN 2023
Many-Body Dispersion in Model Systems and the Sensitivity of Self-Consistent Screening

Canadian Mathematical Society Winter Meeting - Toronto, ON 2019
Exactly Solvable Anharmonic Potentials with Variable Bumps and Depths

Conference Presentations

The Canadian Symposium on Theoretical and Computational Chemistry (CSTCC) - Halifax, NS 2024
XCDM: The Exchange-correlation-hole Dipole Moment Model

Canadian Association of Physicists (CAP) Congress - Fredericton, NB 2023
Many-Body Dispersion in Model Systems and the Sensitivity of Self-Consistent Screening

American Chemical Society Spring Meeting - Indianapolis, IN 2023
Many-Body Dispersion in Model Systems and the Sensitivity of Self-Consistent Screening

Canadian-Cuban-American-Mexican (C2AM) Graduate Student Physics Conference 2022
Capturing Many-Body Dispersion with Exchange-Hole Dipoles

Canadian Mathematical Society (CMS) Winter Meeting - Toronto, ON 2019
Exactly Solvable Anharmonic Potentials with Variable Bumps and Depths

Atlantic Universities Physics and Astronomy Conference (AUPAC) - St. John's, NL 2016
Darboux-Crum Transformations, Supersymmetric Quantum Mechanics, and the Eigenvalue Problem

UPEI Science Undergraduate Research Conference (USURC) - Charlottetown, PE 2015
Darboux-Crum Transformations, Supersymmetric Quantum Mechanics, and the Eigenvalue Problem

Canadian Mathematical Society (CMS) Summer Meeting - Charlottetown, PE 2015
On the Darboux-Crum Transformation and Supersymmetric Quantum Mechanics

Atlantic Universities Physics and Astronomy Conference (AUPAC) - Sackville, NB 2015
On the Darboux-Crum Transformation and Supersymmetric Quantum Mechanics

Science Atlantic Math and Computer Science Conference - St. John, NB 2014
Finding Fast Matrix Multiplication Methods Using Genetic Algorithms

UPEI Science Undergraduate Research Conference (USURC) - Charlottetown, PE 2014
Finding Fast Matrix Multiplication Methods Using Genetic Algorithms

Science Atlantic Math and Computer Science Conference - Sackville, NB 2012
On the Pochhammer Symbol, and its Generalization

UPEI Science Undergraduate Research Conference (USURC) - Charlottetown, PE 2012
On the Pochhammer Symbol, and its Generalization

Technical Reports

PEI Cancer Treatment Centre - Charlottetown, PE 2013
Finding the Mechanical Isocentre of Medical Linear Accelerators Using MATLAB Image Processing

Invited Talks

UPEI School of Mathematical and Computational Sciences - Seminar 2024
Climbing Down the Order of Purity, and the XCDM Dispersion Model

UPEI School of Mathematical and Computational Sciences - Public Seminar 2016
Explicit Evaluation of the Polynomial Solutions of Differential Equations with Polynomial Coefficients

TECHNICAL EXPERIENCE

Mathematical Systems:	Mathematica	MATLAB	Maple			
Markup Languages:	LaTeX/TeX	HTML	XML	YAML	CSS	
Tools & Applications:	Git	Critic2	SLURM	Capstone	QTGrace	SDSM
Programming Languages:	Python	Fortran	Bash	Octave	C++	C
	Javascript	Java				

ACHIEVEMENTS

- Erdös Number of 4: (Nasser Saad → Mourad Ismail → Joseph Gillis → Paul Erdös)
- Passed the Canadian Association of Physicists professional practice exam
- Represented UPEI at the 2014 Science Atlantic Mathematics Competition
- Competed in the 2010 Canadian Swimming Championships

CERTIFICATIONS AND COURSES

- Dalhousie University - Cybersecurity Training 2024
- Canadian Red Cross - Volunteering in Emergencies 2024
- Udacity - Discovering Ethical AI 2024
- ACENET - Molecular Dynamics 2023
- ACENET - Using Git Tools to Manage File Changes and Collaborate: Collaboration 2022
- ACENET - Modern FORTRAN for scientific programming 2022
- ACENET - Introduction to Advanced Computing 2020
- Dalhousie University - WHMIS 2020
- AODA - Accessibility Service Provision 2016
- AODA - Making Education Accessible 2016
- EHS - Worker Health and Safety Awareness 2016
- GPS - Academic and Research Integrity 2016
- GPS - Understanding and Avoiding Plagiarism 2016
- University of Guelph - WHMIS 2016
- University of Guelph - Academic Integrity 2016
- University of Guelph - Sexual Violence Referral and Support Training 2016
- National Lifesaving Society - Lifesaving Instructor 2014
- Government of Canada - Nuclear Energy Worker 2013
- University of Prince Edward Island - WHMIS 2012
- National Lifesaving Society - National Lifeguard Service 2010
- National Lifesaving Society - Swim for Life Instructor 2010
- Canadian Red Cross - Water Safety Instructor 2009
- Canadian Red Cross - Assistant Water Safety Instructor 2008
- CPR First Aid & Safety Services - CPR & Basic Life Services Level C 2008
- CPR First Aid & Safety Services - Standard Care First Aid 2008
- National Lifesaving Society - Bronze Cross 2007
- National Lifesaving Society - Bronze Medallion 2006

SELECTED NON-ACADEMIC WORK EXPERIENCE

Elections Canada, PE — 2019
Central Poll Supervisor

Cornwall Poolside Park, PE — 2014
Aquatics Supervisor

Cornwall Poolside Park, PE — 2010–2014
Lifeguard and Swimming Instructor

Safety First Training Services, Cornwall, PE — 2011
Swimming Instructor

COMMUNITY SERVICE

- Volunteer Corps Member, Nova Scotia Guard Humanitarian Aid — 2024–present
- Telescope Operator, Out of This World with Colonel Chris Hadfield: Charlottetown — 2014
- Coordinator, Muscular Dystrophy Canada, Walk for Muscular Dystrophy — 2012
- Coordinator, Canada-Wide Science Fair: Charlottetown 2012 — 2012
- Torchbearer, International Olympic Committee: Vancouver 2010 — 2010
- Member, Friendship Program, Prince Edward Island Newcomers Association — 2010
- Coordinator, Horse Canada: Gingerwood Charity Horse Show — 2010