

Peter G. Lelièvre – Curriculum Vitae

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Assistant Professor
Department of Mathematics & Computer Science
Mount Allison University
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Degrees

PhD Geophysics

- 2009: University of British Columbia, Dept. of Earth and Ocean Sciences

MSc Geophysics

- 2003: University of British Columbia, Dept. of Earth and Ocean Sciences

BScH Physics and Mathematics

- 1999: Acadia University, Dept. of Physics
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Employment History

Mount Allison University, Department of Mathematics and Computer Science

- 2020–present: Assistant Professor

Independent Consultant

- 2019: Vale Canada Ltd.

Memorial University of Newfoundland, Department of Earth Sciences

- 2012–2020: Research Scientist (Research Assistant III)
- 2009–2012: Postdoctoral Fellow

University of British Columbia, Department of Earth and Ocean Sciences

- 2004: Research Scientist with the UBC-Geophysical Inversion Facility (UBC-GIF)
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Academic Honours and Awards

Honours

- 1999: Academic Scholar, Acadia University
- 1996–1999: Dean’s List, Faculty of Pure and Applied Science, Acadia University

Awards

- 2010: NSERC Postdoctoral Fellowship (\$80,000)
- 2006: Egil H. Lorntzen Scholarship, UBC (\$6,500)
- 2004: Graduate Entrance Scholarship, UBC (\$3,000)
- 2001: Egil H. Lorntzen Scholarship, UBC (\$4,000)
- 2000: Thomas and Marguerite MacKay Memorial Scholarship, UBC (\$4,000)
- 2000: NSERC Postgraduate Scholarship (\$17,300)
- 1998–1999: MacKay Memorial Scholarship in Physics, Acadia University (\$2,157)
- 1997–1998: MacKay Memorial Scholarship in Physics, Acadia University (\$2,157)
- 1996–1997: Physics Department Scholarship, Acadia University (\$1,500)
- 1995: Fred C. Manning Scholarship, Acadia University (\$250)

Scholarly and Professional Academic Activities

Editorial Positions

- 2019–present: Associate Editor, Geophysical Prospecting
- 2015–2016: Associate Editor, Wiley-Blackwell

Visiting Scientist Invitations

- Speaker, geophysical inversion workshop convener and scientific collaborator, Clermont-Ferrand Centre for Volcano Research (ClerVolc), December 2017, Clermont-Auvergne University-CNRS, Clermont-Ferrand, France.

Invited Conference Presentations

- **P. Lelièvre**, M. Darijani, C. Galley, P. Zheglova and C. Farquharson, 2019, No Magic Bullet: Three Integrated Imaging Problems, Three Solutions, *International Union of Geodesy and Geophysics (IUGG) General Assembly*, July 2019, Montréal, Canada.
 - C. Farquharson, J. Long, X. Lu and **P. G. Lelièvre**, 2017, Electromagnetic forward modelling for realistic Earth models using unstructured tetrahedral meshes and a meshfree approach, *AGU Fall Meeting*, December 2017, New Orleans, USA.
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Supervision

Chris Galley

- 2020–ongoing: Co-supervisor, Doctoral, Memorial University of Newfoundland, Thesis/Project Title: *The three dimensional modelling of seafloor hydrothermal alteration through voxel and surface based magnetic inverse modelling*
- Best Student Paper, Society of Exploration Geophysicists (SEG) Annual Meeting, 2020.
- Best Paper Overall, SEG Annual Meeting, 2020.

Mehrdad Darijani

- 2020–ongoing: Co-supervisor, Postdoctoral, Memorial University of Newfoundland.
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Teaching*

*This section only lists teaching activities from the last seven years.

Mount Allison University, Dept. of Mathematics and Computer Science

- 2020/2021–W: MATH 3311 “Probability and Statistics I”
- 2020/2021–W: MATH 1151 “Applied Calculus”
- 2020/2021–F: MATH 1151 “Applied Calculus”

Mount Allison University, Dept. of Geography and Environment

- 2015/2016–W: GENS 3991 “Natural Hazards”
 - 2015/2016–F: GENS 4951 “Meteorology for Aviation”
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Funding

External

- 2021: NSERC Discovery Launch Supplement (\$12,500)
Mount Allison University, primary applicant.
 - 2021: NSERC Discovery Grant (\$90,000)
Mount Allison University, primary applicant.
 - 2020: New Brunswick Innovation Foundation (NBIF) Start-Up Grant (\$50,000),
Mount Allison University, primary applicant.
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Publications*

*This section only lists publications from the last seven years.

Life-time summary count	
Books	1
Chapters in Books	1
Refereed Journals	23
Refereed Conference Proceedings	18
Conference Abstracts	44
Other Publications	1
Total	88

Books

- M. Moorkamp, **P. G. Lelièvre**, N. Linde and A. Khan (eds), 2016, *Integrated Imaging of the Earth: Theory and Applications*, John Wiley & Sons

Chapters in Books

- **P. G. Lelièvre** and C. G. Farquharson, 2016, Integrated imaging for mineral exploration, in *Integrated Imaging of the Earth: Theory and Applications*, eds. M. Moorkamp, **P. G. Lelièvre**, N. Linde and A. Khan

Articles Published in Refereed Journals

- C. G. Galley, **P. Lelièvre**, A. Haroon, S. Graber, J. W. Jamieson, F. Sztikar, I. Yeo, C. Farquharson, S. Petersen and R. L. Evans, 2021, Magnetic and Gravity Surface Geometry Inverse Modelling of the TAG Active Mound, submitted to *Journal of Geophysical Research: Solid Earth*.
- M. Darijani, C. Farquharson and **P. Lelièvre**, 2021, Joint and constrained inversion of magnetic and gravity data: A case history from McArthur River area, Canada, *Geophysics*, 86, B79–B95.
- A. Barnoud, V. Cayol, **P. G. Lelièvre**, A. Portal, P. Labazuy, P. Boivin and L. Gailler, 2020, Robust Bayesian joint inversion of gravimetric and muographic data for the density imaging of the Puy de Dôme volcano (France), *Frontiers in Earth Science*, 8:575842.
- C. G. Galley, J. W. Jamieson, **P. G. Lelièvre**, C. G. Farquharson and J. M. Parianos, 2020, Magnetic imaging of subseafloor hydrothermal fluid circulation pathways, *Science Advances*, 6, eabc6844.
- C. G. Galley, **P. G. Lelièvre** and C. G. Farquharson, 2020, Geophysical inversion for 3D contact surface geometry, *Geophysics*, 85, K27–K45.
- **P. G. Lelièvre**, D. Fournier, S. E. Walker, N. C. Williams and C. G. Farquharson, 2020, A proposed procedure for ameliorating edge effects in magnetic data transformations, *Geophysical Prospecting*, 68, 1999–2006.
- M. Darijani, C.G. Farquharson and **P. G. Lelièvre**, 2020, Clustering and constrained inversion of seismic refraction and gravity data for overburden stripping: Application to uranium exploration in the Athabasca Basin, Canada, *Geophysics*, 85, B133–B146.
- A. Barnoud, V. Cayol, V. Niess, C. Cârloganu, **P. Lelièvre**, P. Labazuy and Eve Le Ménédeu, 2019, Bayesian joint muographic and gravimetric inversion applied to volcanoes, *Geophysical Journal International*, 218, 2179–2194.
- **P. G. Lelièvre**, A. Barnoud, V. Niess, C. Cârloganu, V. Cayol and C. G. Farquharson, 2019, Joint inversion methods with relative density offset correction for muon tomography and gravity data, with application to volcano imaging, *Geophysical Journal International*, 218, 1685–1701.

- **P. G. Lelièvre**, A. E. Carter-McAuslan, M. W. Dunham, D. J. Jones, M. Nalepa, C. L. Squires, C. J. Tycholiz, M. A. Vallée and C. G. Farquharson, 2018, FacetModeller: Software for manual creation, manipulation and analysis of 3D surface-based models, *SoftwareX*, 7, 41–46.
- P. Zheglova, **P. G. Lelièvre**, and C. G. Farquharson, 2018, Multiple level-set joint inversion of traveltimes and gravity data with application to ore delineation: A synthetic study, *Geophysics*, 83(1), R13–R30.
- **P. G. Lelièvre** and Melissa Grey, 2017, JMorph: Software for performing rapid morphometric measurements on digital images of fossil assemblages, *Computers & Geosciences*, 105, 120–128.
- R. Bijani, **P. G. Lelièvre**, C. F. Ponte-Neto and C. G. Farquharson, 2017, Physical-property-, lithology- and surface-geometry-based joint inversion using Pareto Multi-Objective Global Optimization, *Geophysical Journal International*, 209(2), 730–748.
- A. Carter-McAuslan, **P. G. Lelièvre** and C. G. Farquharson, 2015, A study of fuzzy c-means coupling for joint inversion using seismic tomography and gravity data test scenarios, *Geophysics*, 80(1), W1–W15.

Articles Published in Refereed Conference Proceedings (Expanded Abstracts)

- S. Mukherjee, **P. Lelièvre**, C. Farquharson and S. Adavani, 2021, Three-dimensional inversion of geophysical field data on an unstructured mesh using deep learning neural networks, applied to magnetic data, *Society of Exploration Geophysicists (SEG) Technical Program Expanded Abstracts*, (submitted).
- H. Jahandari, C. Farquharson and **P. Lelièvre**, *SEG Technical Program Expanded Abstracts*, 2021, Forward modelling of direct-current resistivity data on unstructured grids using an adaptive mimetic finite-difference method, *SEG Technical Program Expanded Abstracts*, (submitted).
- X. Lu, C. Farquharson, **P. Lelièvre**, G. Harrison and J.-M. Miehé, 2021, Surface geometry inversion of Preston Lake transient electromagnetic data, *SEG Technical Program Expanded Abstracts*, (submitted).
- X. Lu, **P. Lelièvre** and C. Farquharson, 2021, Surface geometry inversion of time-domain EM data, *SEG Technical Program Expanded Abstracts*, (submitted).
- C. Galley, **P. Lelièvre**, C. Farquharson, J. Jamieson, A. Haroon, S. Graber, S. Petersen and F. Sztikar, 2020, Modelling the geometry of the Trans-Atlantic Geotraverse seafloor massive sulphide deposit through magnetic surface geometry inversion, *SEG Technical Program Expanded Abstracts*, 1364–1368.
- X. Lu, **P. Lelièvre** and C. Farquharson, 2020, Surface geometry inversion of time-domain EM data, *SEG Technical Program Expanded Abstracts*, 1399–1403.
- C. G. Galley, **P. G. Lelièvre**, C. G. Farquharson and J. W. Jamieson, 2019, Modelling the subseafloor structure of seafloor massive sulphide deposits using surface geometry magnetic inversion, *International Workshop on Gravity, Electrical & Magnetic Methods and Their Applications*.
- C. G. Farquharson and **P. G. Lelièvre**, 2017, Modelling and Inversion for Mineral Exploration Geophysics: A Review of Recent Progress, the Current State-of-the-Art, and Future Directions, *Proceedings of Exploration 17: Sixth Decennial International Conference on Mineral Exploration*, edited by V. Tschirhart and M. D. Thomas, 51–74, invited.
- **P. G. Lelièvre**, K. Butler and C. G. Farquharson, 2016, Inversion for wireframe surface geometry applied to the Cocagne Subbasin, New Brunswick, Canada, *SEG Technical Program Expanded Abstracts*.
- **P. G. Lelièvre**, C. G. Farquharson and R. Bijani, 2015, 3D potential field inversion for wireframe surface geometry, *SEG Technical Program Expanded Abstracts*.

Conference Abstracts (additional to those listed directly above)

- **P. G. Lelièvre**, Z. Pastore, N. Church, M. Lee, H. Oda and S. McEnroe, 2021, Constrained Magnetic Vector Inversion of Scanning Magnetic Microscopy Data for Modelling Magnetization of Multidomain Mineral Grains, *European Geosciences Union (EGU) General Assembly*, April 2021 (virtual meeting).
- X. Lu, C. Galley, **P. G. Lelièvre** and C. Farquharson, 2020, Surface geometry inversion of potential field and electromagnetic geophysical data, *American Geophysical Union (AGU) Fall Meeting*, December 2020 (virtual meeting).

- C. Galley, J. W. Jamieson, **P. G. Lelièvre**, C. Farquharson and J. Parianos, 2020, Imaging Subseafloor Hydrothermal Systems, *AGU Fall Meeting*, December 2020 (virtual meeting).
- **P. G. Lelièvre**, D. Fournier, S. Walker, N. Williams, and C. Farquharson, 2020, Assessing and ameliorating edge effects in magnetic data transformations, *EGU General Assembly*, April 2020, Vienna, Austria.
- **P. Lelièvre**, M. Darijani, C. Galley, P. Zheglova and C. Farquharson, 2019, No Magic Bullet: Three Integrated Imaging Problems, Three Solutions, *International Union of Geodesy and Geophysics (IUGG) General Assembly*, July 2019, Montréal, Canada, invited.
- **P. G. Lelièvre**, C. Galley and C. Farquharson, 2019, Incorporating Geological and Geophysical Data To Determine Surface-Based Model Geometry, *Geological Association of Canada - Mineralogical Association of Canada - International Association of Hydrogeologists (GAC-MAC-IAH) Conference*, May 2019, Québec City, Canada.
- **P. G. Lelièvre**, C. Galley and C. Farquharson, 2019, 3D Geophysical Inversion for Surface-Based Model Geometry, *EGU General Assembly*, April 2019, Vienna, Austria.
- **P. G. Lelièvre**, A. Carter-McAuslan, M. Dunham, C. Galley, H. Jahandari, M. Vallée and C. Farquharson, 2018, Lessons learned, and hardships endured, when performing geophysical numerical modelling directly on geological models, *Canadian Exploration Geophysical Society (KEGS) Symposium*, March 2018, Toronto, ON, Canada.
- **P. Lelièvre**, A. Barnoud, C. Cârloganu, V. Cayol, C. Farquharson and V. Niess, 2018, Joint inversion of gravity and muon tomography data on unstructured meshes, *EGU General Assembly*, April 2018, Vienna, Austria.
- J. Long, X. Lu and **P. G. Lelièvre**, 2017, Electromagnetic forward modelling for realistic Earth models using unstructured tetrahedral meshes and a meshfree approach, Colin Farquharson, *AGU Fall Meeting*, December 2017, New Orleans, USA, invited.
- **P. G. Lelièvre** and M. Grey, 2016, JMorph: A digital tool for measuring fossils, *Canadian Paleontological Conference (CPC)*, August 2016, Sydney, NS, Canada.
- **P. Lelièvre** and C. Farquharson, 2016, Inversion of Potential Field Data for Contact Surface Geometry, European Association of Geoscientists and Engineers (EAGE) 78th Conference and Exhibition, May 2016, Vienna, Austria.
- **P. Lelièvre**, A. Carter-McAuslan and C. Farquharson, 2016, Joint Inversion of Gravity and Seismic Tomography Data for a Magmatic Massive Sulphide Exploration Example, EAGE 78th Conference and Exhibition, May 2016, Vienna, Austria.
- **P. Lelièvre** and C. Farquharson, 2016, 3D Geologically Constrained Inversion on Unstructured Meshes for the Voisey's Bay Eastern Deeps Deposit, EAGE 78th Conference and Exhibition, May 2016, Vienna, Austria.
- **P. G. Lelièvre**, R. Bijani and C. G. Farquharson, 2016, Geophysical inversion with multi-objective global optimization methods, *EGU General Assembly*, April 2016, Vienna, Austria.
- **P. G. Lelièvre**, R. Bijani and C. G. Farquharson, 2016, Lithological and surface geometry joint inversions using multi-objective global optimization methods, *EGU General Assembly*, April 2016, Vienna, Austria.
- **P. G. Lelièvre**, C. Juhlin and C. G. Farquharson, 2016, Joint and constrained inversions in a complex geological setting, example from the Skellefte District, M. A. Garcia Juanatey, *New Advances in Geophysics 2016 (BGA - NAG 2016)*, February 2016, London, England.
- **P. G. Lelièvre**, R. Bijani and C. G. Farquharson, 2015, Joint geophysical inversion with multi-objective global optimization methods, *AGU Fall Meeting*, December 2015, San Francisco, USA.
- **P. G. Lelièvre**, C. Juhlin and C. G. Farquharson, 2015, Joint and constrained inversions in a complex geological setting, example from the Skellefte District, M. A. Garcia Juanatey, *AGU Fall Meeting*, December 2015, San Francisco, USA.
- **P. G. Lelièvre**, R. Bijani and C. G. Farquharson, 2015, Integrating geological model surfaces into 3D geophysical inversions, *Society for Geology Applied to Mineral Deposits (SGA) General Assembly*, August 2015, Nancy, France.
- M. A. Garcia Juanatey, **P. G. Lelièvre** and C. G. Farquharson, 2015, Joint and constrained inversions in the Skellefte District, *EGU General Assembly*, April 2015, Vienna, Austria.
- **P. G. Lelièvre**, C. G. Farquharson and R. Bijani, 2015, 3D stochastic geophysical inversion for contact surface geometry, *EGU General Assembly*, April 2015, Vienna, Austria.

- **P. Lelièvre** and C. G. Farquharson, 2015, Mesh- and surface-based geophysical inversion of IOCG deposits, *Atlantic Geoscience Society (AGS) Colloquium*, February 2015, Sackville, NB, Canada.
 - **P. Lelièvre** and C. Farquharson, 2014, 3D geophysical inversion for contact surfaces, *EGU General Assembly*, April/May 2014, Vienna, Austria.
 - A. Carter-McAuslan, **P. Lelièvre** and C. Farquharson, 2014, Joint inversion of gravity and seismic tomography data for modelling magmatic massive sulphide bodies, *EGU General Assembly*, April/May 2014, Vienna, Austria.
 - **P. G. Lelièvre**, A. Carter-McAuslan, C. G. Farquharson and N. C. Williams, 2014, Choices for effectively incorporating geological constraints into geophysical inversion, *KEGS Symposium*, March 2014, Toronto, ON, Canada.
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