

Michelle Richer

PhD Candidate

Education

- 2015–present **PhD chemistry**, McMaster University, Hamilton, ON, present candidate
2011–2015 **BSc chemistry**, Laurentian University, Sudbury, ON, *magna cum laude*

Employment

- 2015–present **Teaching assistant**, McMaster University, Hamilton, ON
TA for introductory chemistry, quantum chemistry, and applied math and software development courses. Conduct laboratory demonstrations, supervise students, and teach supplementary material.
- 2015–present **Research**, McMaster University, Hamilton, ON
Develop algorithms and software for modeling the quantum electronic structure of molecules, with aim to make accurate and robust methods more efficient.
- 2014–2015 **Teaching assistant**, Laurentian University, Sudbury, ON
Supervised students and conducted demonstrations for organic chemistry laboratories.
- 2014–2015 **Research**, Laurentian University, Sudbury, ON
Wrote software and performed simulations of polymers attached to surfaces in order to predict their properties.

Skills

Languages

- English Fluent; native language
French Fluent; excellent reading/writing, good speaking/listening

Computers

- Management Manage small software projects with a team of developers
Programming Numerical computing in C++, Fortran, Python, Julia
Typesetting Latex and troff/groff typesetting systems
SysAdmin System administration on Unix-like operating systems

Laboratory

- Techniques Analytical chemistry, inorganic synthesis, IR and NMR spectrometry
Teaching Experienced with teaching laboratory skills and safety

Publications

- 2022 Fanwang Meng, Michael Richer, Alireza Tehrani, Jonathan La, Taewon David Kim, Paul W Ayers, and Farnaz Heidar-Zadeh. **Procrustes: a Python library to find transformations that maximize the similarity between matrices.** *Computer Physics Communications*, 108334, 2022. doi:10.1016/j.cpc.2022.108334
- 2021 Taewon David Kim, Michael Richer, Gabriela Sánchez-Díaz, Farnaz Heidar-Zadeh, Toon Verstraelen, Ramón Alain Miranda-Quintana, and Paul W Ayers. **FanPy: a Python library for prototyping multideterminant methods in ab initio quantum chemistry.** *arXiv preprint*, 2021. arXiv:2102.01224
- 2021 Taewon David Kim, Ramón Alain Miranda-Quintana, Michael Richer, and Paul W Ayers. **Flexible ansatz for N-body configuration interaction.** *Computational and Theoretical Chemistry*, 1202:113–187, 2021. doi:10.1016/j.comptc.2021.113187
- 2021 Toon Verstraelen, William Adams, Leila Pujal, Alireza Tehrani, Braden D Kelly, Luis Macaya, Fanwang Meng, Michael Richer, Raymundo Hernández-Esparza, Xiaotian Derrick Yang, and others. **IOData: a Python library for reading, writing, and converting computational chemistry file formats and generating input files.** *Journal of Computational Chemistry*, 42(6):458–464, 2021. doi:10.1002/jcc.26468
- 2017 Paul A Johnson, Peter A Limacher, Taewon D Kim, Michael Richer, Ramón Alain Miranda-Quintana, Farnaz Heidar-Zadeh, Paul W Ayers, Patrick Bultinck, Stijn De Baerdemacker, and Dimitri Van Neck. **Strategies for extending geminal-based wavefunctions: open shells and beyond.** *Computational and Theoretical Chemistry*, 1116:207–219, 2017. doi:10.1016/j.comptc.2017.05.010
- 2016 Farnaz Heidar-Zadeh, Michael Richer, Stijn Fias, Ramón Alain Miranda-Quintana, Matthew Chan, Marco Franco-Pérez, Cristina E González-Espinoza, Taewon David Kim, Caitlin Lanssens, Anand HG Patel, and others. **An explicit approach to conceptual density functional theory descriptors of arbitrary order.** *Chemical Physics Letters*, 660:307–312, 2016. doi:10.1016/j.cplett.2016.07.039