

Pericles Philippopoulos

+1 (514) 591 1656
✉ pericles.philippopoulos@mail.mcgill.ca
📄 pphili.github.io
🌐 pphili

Education

- 2015–2020 **Ph. D. Physics**, *McGill University*, Montreal, Qc, 4.0/4.0.
2013–2015 **M. Sc. Physics**, *McGill University*, Montreal, Qc, 4.0/4.0.
2010–2013 **B. Sc. Honours Math and Physics**, *McGill University*, Montreal, Qc, 3.96/4.0.

Experience

Research

- 2015–2020 **Ph. D.**, *Supervisor: Prof. William A. Coish*, McGill University.
Thesis: Hyperfine and spin-orbit interactions in semiconductor nanostructures.
- 2013–2015 **M. Sc.**, *Supervisor: Prof. William A. Coish*, McGill University.
Thesis: First-Principles Hyperfine Tensors in GaAs and Si
- Nov 2014 **Research Assistant**, *work done with: Prof. Stefano Chesi*, CSRC, Beijing, China.
Development of density-functional theoretic procedures to calculate hyperfine tensors.
- Summer 2012 **Research Assistant**, *Supervisor: Prof. Victoria Kaspi*, McGill University.
Analysis of X-ray data from the pulsar PSR B1937+21 to find the pulsar spectrum and period.

Teaching

- 2018 **Teaching Assistant**, *Mechanics and Waves*, PHYS-131, McGill University.
- 2017–2018 **Teaching Assistant**, *Quantum Condensed Matter*, PHYS-660, McGill University.
- 2013–2016 **Teaching Assistant**, *Experimental Methods*, PHYS-257/8, McGill University.
- 2010–2015 **Tutor**, *Cegep level Mathematics and Physics Courses*.

Publications

1. **P. Philippopoulos**, S. Chesi, D. Culcer, and W. A. Coish, *Pseudospin-electric coupling for holes beyond the envelope-function approximation*, arXiv:2005.08821 (2020).
2. **P. Philippopoulos**, S. Chesi, and W. A. Coish, *First-principles hyperfine tensors for electrons and holes in silicon and GaAs*, Phys. Rev. B, **101**, 115302 (2020).
3. **P. Philippopoulos**, A. Ricottone, C. G. Oliver, *Difficulty Scaling in Proof of Work for Decentralized Problem Solving*, arXiv:1911.00435 (2019) - Accepted in the Ledger journal (<https://ledgerjournal.org/ojs/ledger>).
4. **P. Philippopoulos**, S. Chesi, J. Salfi, S. Rogge, and W. A. Coish, *Hole-Spin-Echo Envelope Modulations*, Phys. Rev. B, **100**, 125402 (2019).
5. C. G. Oliver, A. Ricottone, **P. Philippopoulos**, *Proposal for a fully decentralized blockchain and proof-of-work algorithm for solving NP-complete problems*, arXiv:1708.09419 (2017).
6. C.-Y. Ng, J. Takata, G. C. K. Leung, K. S. Cheng, and **P. Philippopoulos**, *High-Energy Emission of the First Millisecond Pulsar*, Astrophys. J. **787**, 167 (2014).

Presentations

- ORAL
- **Philippopoulos, P.** *Calculating hyperfine interactions and spin-orbit coupling for holes in semiconductor nanostructures.* **Invited talk** part of the Steacie Colloquium Series at the National Research Council (NRC) of Canada in Ottawa, On.
 - **Philippopoulos, P.** *Blockchain Technology and Bitcoin.* Introductory talk presented at 2018 CONFETI, the INTRIQ student conference in Bromont, Qc. Winner of best introductory presentation.
 - **Philippopoulos, P.** *Blockchain Technology and Bitcoin.* **Invited talk** for legal department of the National Bank.
 - **Philippopoulos, P.** *Blockchain Technology and Bitcoin.* **Invited talk** for compliance department of the National Bank.
 - **Philippopoulos, P.,** Chesi, S. and Coish, W. A. (2017) *First-principles hyperfine tensors for electrons and holes in silicon and GaAs.* Presented at the 2017 APS March Meeting in New Orleans, La.
 - **Philippopoulos, P.,** Chesi, S. and Coish, W. A. (2016) *First-principles hyperfine tensors for electrons and holes in silicon and GaAs.* Presented at the 2016 APS March Meeting in Baltimore, Md.
 - **Philippopoulos, P.,** Chesi, S. and Coish, W. A. (2013) *Hyperfine Interaction in materials with strong Spin-Orbit Coupling: Group Theoretic Analysis.* Presented at CONFETI the INTRIQ student conference in Bromont, Qc.

- POSTER
- **Philippopoulos, P.,** Chesi, S. and Coish, W. A. (2014) *First-Principles Hyperfine Tensors in GaAs and Si.* Presented at:
 1. 2017 INTRIQ Quantum Industry Day in Montreal, QC.
 2. 2016 RQMP Summer Meeting in Sherbrooke, QC.
 3. 3rd International Workshop on Frontiers in Quantum Optics and Quantum Information in Beijing, China
 4. 2015 INTRIQ Spring Meeting in Bromont, Qc.
 5. 2015 McGill CPM Annual General Meeting
 - **Philippopoulos, P.,** Chesi, S. and Coish, W. A. (2014) *Hyperfine Interaction for Hole Spins in Quantum Dots.* Presented at:
 1. 2nd School and Conference on Spin-based quantum information processing in Konstanz, Germany
 2. 2014 APS March Meeting in Denver, USA
 3. 2014 INTRIQ Spring Meeting in Bromont, Qc
 4. 2014 McGill CPM Annual General Meeting
 - **Philippopoulos, P.,** Chesi, S. and Coish, W. A. (2013) *Hyperfine Interaction for Hole Spins: Group-Theoretic Analysis.* Presented at:
 1. 2013 INTRIQ Fall Meeting in Bromont, Qc
 2. 2013 McGill physics poster competition
 - **Philippopoulos, P.,** Ng, C.-Y. , and Kaspi, V. (2012) *XMM-Newton and Chandra Observations of the First Millisecond Pulsar B1937+21.* Presented at:
 1. 2012 McGill physics poster competition (received honourable mention)
 2. 2012 McGill undergraduate poster competition

Workshops/Seminars

- Summer 2018 **4th School and Conference on Spin-based Quantum Information Processing**, Konstanz, Germany.
- October 2017 **ETHWaterloo**, Waterloo, Ontario.
Project: Pear - Decentralized Peer-Review Journal. (<https://github.com/ricott1/Pear>)
- August 2017 **Brainhack Hackathon**, Montreal, Quebec.
- May 2017 **Spin Canada 2017 workshop**, *Secretary for the student section of the meeting*, Montreal, Quebec.
- November 2015 **3rd International Workshop on Frontiers in Quantum Optics and Quantum Information**, Beijing, China.
- Summer 2014 **2nd School and Conference on Spin-based Quantum Information Processing**, Konstanz, Germany.
- Summer 2013 **Taming spin, beyond theory**, *RQEMP*, Mont Orford, Quebec.

Awards

- 2018–2019 **Sam and Mary Charalambakis Family Scholarship**, Type: Academic.
- 2015–2018 **NSERC PGSD**, Type: Research/Academic.
- 2015–2018 **FQRNT**, Type: Research/Academic (declined).
- 2015 **Lorne Trottier Fellowship**, Type: Research/Academic.
- 2013–2015 **Bourse de maîtrise Hydro-Quebec**, Type: Research/Academic.
- 2013–2014 **NSERC CGSM**, Type: Research/Academic.
- 2013 **Lorne Trottier Fellowship**, Type: Research/Academic.
- 2013 **First Class Honours in Mathematics and Physics**, Type: Academic.
- May 2013 **Anne Moulson Gold Medal**, Type: Academic, Awarded to student with highest average in the Honours Mathematics and Physics Program at McGill University.
- 2012–2013 **James F. Mathison Scholarship**, Type: Academic.
- Summer 2012 **NSERC USRA**, Type: Research/Academic.
- 2011–2013 **Dean's Honour List**, *McGill University*, Type: Academic.
- 2010–2011 **J. W. McConnell Scholarship**, Type: Academic.

Computer skills

- Programming Mathematica, Matlab, Python, scikit-learn, basic Fortran, \LaTeX , HTML, Javascript, basic Solidity
- DFT codes ELK, basic WIEN2k

Additional Information

- Podcast Co-host of the Blockchain journal club: weekly podcast where we discuss new research in blockchain technology. Youtube Channel: Ozeki Inc.
- CMGS I organized the Condensed Matter Graduate Student seminar at McGill in 2017.
- Outreach I was part of the Space Explorers program in 2016: I visited Westmount Park elementary school to teach students about physics and space.