RESUME — Prof. Dominique Laroche

Assistant-Professor
University of Florida
Department of Physics

2001 Museum Road
Gainesville, Florida, 32611
dlaroc10@ufl.edu

EDUCATION

McGill University — Montréal, Qc, Canada
Ph. D., Department of Physics — February 2014
Dissertation : Coulomb Drag in Vertically-Integrated One-Dimensional Quantum Wires

B. Sc. Honors in Physics, Department of Physics — May 2006

EMPLOYMENT

Department of Physics, University of Florida — Gainesville, Fl, USA
Assistant-professor — Winter 2019 -

QuTech, TU Delft — Delft, ZH, Netherlands
Post-doctoral researcher — Winter 2016 - Fall 2018

CINT, Sandia National Laboratories — Albuquerque, NM, USA
Condensed Matter Physics Researcher — Spring 2014 – Winter 2016

PUBLICATIONS

- *Observation of the 4π-periodic Josephson effect in InAs nanowires*
  D. Laroche, D. Bouman, D. J. van Woerkom, A. Proutski, C. Murthy, D. I. Pikulin, C. Nayak, R. J. J. van Gulik, J. Nygård, P. Krogstrup, L. P. Kouwenhoven, A. Geresdi. Nature Communications **10**, 245 (2019).
- *Atomic-layer doping of SiGe heterostructures for atomic-precision donor devices*
  E. Bussmann, J. K. Gamble, J. C. Koepke, D. Laroche, S. H. Huang, Y. Chuang, J.-Y. Li, C. W. Liu, B. S. Swartzentruber, M. P. Lilly, M. S. Carroll, T.-M. Lu. Physical Review Materials **2**, 066004 (2018).
- *Density-controlled quantum Hall ferromagnetic transition in a two-dimensional hole system*
  T. M. Lu, L. A. Tracy, D. Laroche, S.-H. Huang, Y. Chuang, Y.-H. Su, J.-Y. Li, and C. W. Liu, Scientific Reports, **7**, 2468 (2017).
- *High-mobility capacitively-induced two-dimensional electrons in a lateral superlattice potential*
  T. M. Lu, D. Laroche, S.-H. Huang, Y. Chuang, J.-Y. Li, and C. W. Liu, Scientific Reports, **6**, 20967 (2016).
- *Magneto-transport analysis of an ultra-low-density two-dimensional hole gas in an undoped strained Ge/SiGe heterostructure*
  D. Laroche, S.-H. Huang, Y. Chuang, J.-Y. Li, C. W. Liu, and T. M. Lu, Applied Physics Letters, **108**, 233504 (2016).
- *Scattering mechanisms in shallow undoped Si/SiGe quantum wells*
  D. Laroche, S.-H. Huang, E. Nielsen, Y. Chuang, J.-Y. Li, C. W. Liu, and T. M. Lu, AIP Adv. **5**, 107106 (2015).
- *Mechanical Flip-Chip for Ultra-High Electron Mobility Devices*
  K. Bennaceur, B. A. Schmidt, S. Gaucher, D. Laroche, M. P. Lilly, J. L Reno, K. W. West, L. N. Pfeiffer and G. Gervais, Sci. Rep. **5**, 13494 (2015).
- *Magneto-transport of an electron bilayer system in an undoped Si/SiGe double-quantum-well heterostructure*

D. Laroche, S.-H. Huang, E. Nielsen, C. W. Liu, J.-Y. Li and T. M. Lu, Applied Physics Letters, **106**, 143503 (2015).

- *1D-1D Coulomb Drag Signature of a Luttinger Liquid*
  D. Laroche, G. Gervais, M. P. Lilly and J. L. Reno, Science, **343**, 631 (2014).

- *Positive and Negative Coulomb Drag in Vertically Integrated One-Dimensional Quantum Wires*
  D. Laroche, G. Gervais, M. P. Lilly and J. L. Reno, Nature Nanotech., **6**, 793 (2011).
  See also *News and Views : Nanoelectronics: A closer look at charge drag.* M. Büttiker and R. Sánchez, Nature Nanotech. **6,** 757 (2011).

- *Scattering Mechanisms in Modulation-Doped Shallow Two-Dimensional Electron Gases*
  D. Laroche, S. Das Sarma, G. Gervais, M. P. Lilly and J. L. Reno, Appl. Phys. Lett., **96**, 162112 (2010).

- *Towards Coulomb Drag in Vertically Coupled Quantum Wires with Independent Contacts*
  D. Laroche, E. S. Bielejec, J . L. Reno, G. Gervais and M. P. Lilly, Physica E, **40**, 1569 (2008).

CONFERENCE PRESENTATIONS

- *Probing the building blocks of topological qubits in superconducting InAs nanowires* [Invited]
  D. Laroche, invited oral presentation at the Fall 2018 INTRIQ meeting, Bromont, Canada, (2018).

- *Observation of the 4π-periodic Josephson effect in InAs nanowires*
  D. Laroche, D. Bouman, D. J. van Woerkom, A. Proutski, C. Murthy, D. I. Pikulin, C. Nayak, R. J. J. van Gulik, J. Nygård, P. Krogstrup, L. P. Kouwenhoven, A. Geresdi, oral presentation at the 34th International Conference on Physics of Semiconductors (ICPS 2018), Montpellier, France (2018).

- *4π Josephson radiation from an InAs nanowire junction* [Invited]
  D. Laroche, D. Bouman, D. van Woerkom, A. Proutski, R. van Gulik, M. Nowak, D. Pikulin, J. Nygård, P. krogstrup, C. Marcus, L. Kouwenhoven and A. Geresdi, oral presentation at the 2017 American Physical Society (APS) March Meeting, New Orleans, LA, USA (2017).

- *1D-1D Coulomb Drag Signature of a Luttinger Liquid*
  D. Laroche, G. Gervais, M. P. Lilly and J. L. Reno, oral presentation at the 32nd International Conference on Physics of Semiconductors (ICPS 2014), Austin, TX, USA, (2014).

- *Coulomb Drag in Vertically-Integrated Quantum Wires*
  D. Laroche, G. Gervais, M. P. Lilly and J. L. Reno, oral presentation at the 20th conference on Electronic Properties of Two-Dimensional Systems and the 16th conference on Modulated Semiconductor Structures (EP2DS-20, MSS-16), Wroclaw, Poland, (2013).

- *Positive and Negative Coulomb Drag in Vertically-Coupled Quantum Wires* [Invited]
  D. Laroche, G. Gervais, M. P. Lilly and J. L. Reno, invited oral presentation at the 31st International Conference on Physics of Semiconductors (ICPS 2012), Zurich, Switzerland, (2012).

- *Positive and Negative Coulomb Drag in Vertically-Coupled Quantum Wires*
  D. Laroche, G. Gervais, M. P. Lilly and J. L. Reno, oral presentation at the 2012 International Conference on Nanoscience + Nanotechnologies (ICN+T 2012), Paris, France, (2012).

- *Positive and Negative Coulomb Drag in a 1D Quantum Circuit*
  D. Laroche, G. Gervais, M. P. Lilly and J. L. Reno, oral presentation at the 2012 American Physical Society March Meeting, Boston, MA, USA (2012).

- *Re-Entrant Negative Coulomb Drag Between Vertically-Coupled Quantum Wires*
  D. Laroche, G. Gervais, M. P. Lilly and J. L. Reno, poster presentation at the 19th International Conference on Electronic Properties of Two-Dimensional Systems (EP2DS-19), Tallahassee, FL, USA (2011).

- *Re-Entrant Negative Coulomb Drag in a 1D Quantum Circuit*
  D. Laroche, G. Gervais, M. P. Lilly and J. L. Reno, oral presentation at the 2011 American Physical Society March Meeting, Dallas, TX, USA (2011).

- *Mobility and Scattering in Shallow 2DEGs : Towards 1D-2D Tunneling*
  D. Laroche, G. Gervais, M. P. Lilly and J. L. Reno, oral presentation at the 2009 American Physical Society March Meeting, Pittsburgh, PA, USA (2009).

- *Towards Coulomb Drag in Vertically Coupled Quantum Wires with Independent Contacts*
  D. Laroche, E. S. Bielejec, J. L. Reno, G. Gervais and M. P. Lilly, poster presentation at the 17th International Conference on Electronic Properties of Two-Dimensional Systems (EP2DS-17), Genoa, Italy (2007).

SCHOLARSHIPS AND AWARDS

- McGill Alumni Association Graduate Thesis Award (1500$) 2014
- D. W. Ambridge Thesis Award (1000$) 2014
- FQNRT Étudiant-chercheur étoile award (star student-researcher, 1000$) 2012
- FQNRT Doctoral Research Scholarship (20 000$ annually) 2010-2011
- NSERC Doctoral Postgraduate Scholarship (PGS D) (21 000$ annually) 2007-2010
- NSERC Master's Postgraduate Scholarship (CGS M) (17 500 $ annually) 2006-2007
- McGill University Robert E. Bell Prize in Physics (1000$) 2006
- McGill University J.W. McConnell Scholarship (3000$ annually) 2005-2006
- McGill University James Mathison Scholarship (3000$ annually) 2003-2006