Victor Drouin-Touchette

Curriculum Vitæ

Center for Materials Theory
Department of Physics and Astronomy
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Education

2016 - *present* **Ph.D. candidate in Theoretical Condensed Matter Physics**
Thesis Advisor: Prof. Piers Coleman
Rutgers, The State University of New Jersey, Piscataway, NJ, USA

2013 - 2016 **B.Sc, Mathematics and Physics** *with honors*
Université de Montréal, Montréal, Québec, Canada

Honors & Awards

2021 **Samuel Marateck Fellowship in Quantum Field Theory** (Rutgers, $12 500)

2018 - 2021 **Doctoral Research Scholarship** (FRQNT, $56 000)

2018-2020 **T. Daniel Brennan Travel Scholarship** (Physics Department, Rutgers, $6 000)

2019 **ICAM Travel Award** (950$)

2018 **School of Graduate Studies Travel Award** (Rutgers, $150)

2018 **Professional Development Fund Award** (Rutgers, $633)

2016 - 2018 **Masters Research Scholarship, with supplement for studying outside of Quebec** (FRQNT, $33 000)

2017 **Van Dyke Fund Travel Award** (Physics and Astronomy Department, Rutgers, 500$)

2017 **ICAM Travel Award** (500$)

2017 **Professional Development Fund Award** (Rutgers University, $925)

2016 **Research Internship Grant** (Okinawa Institute of Science and Technology, $5 000)

2014 - 2015 **Dean's Prize List** (Université de Montréal)

2015 **Undergraduate Student Research Award** (NSERC, $4 500)

2015 **Undergraduate Student Research Award** (University of Waterloo, $4 000)

2014 **Summer Research Award** (Université de Montréal, $ 4500)

2013 **Best Extracurricular Project Award** (CEGEP Bois-de-Boulogne, $500)

2013 **Advanded Mathematics Seminar Award** (CEGEP Bois-de-Boulogne, $666)

Research Experience

2017 - present Research Assistant, Rutgers University, with Pr. Piers Coleman

Summer 2016 Research Intern, Okinawa Institute of Science and Technology, with Pr. Nic Shannon and Pr. Ludovic Jaubert

Summer 2015 Research Intern, University of Waterloo, with Pr. Michel Gingras

Summer 2014 Research Intern, Université de Montréal, with Pr. Yvan Saint-Aubin

Publications

- ◇ Victor Drouin-Touchette, Peter P. Orth, Piers Coleman, Premala Chandra, and Tom C. Lubensky, "Emergent Potts Order in a Ccoupled Hexatic-Nematic XY Model", `https://arxiv.org/abs/2103.01878`
- ◇ Victor Drouin-Touchette, Elio J. König, Yashar Komijani, and Piers Coleman, "Emergent moments in a Hund's impurity", `http://arxiv.org/abs/2101.10332`, *submitted to PRB (2021)*
- ◇ Xiaoran Liu, Sobhit Singh, Victor Drouin-Touchette, T. Asaba, Jess H. Brewer, Qinghua Zhang, Yanwei Cao, B. Pal, S. Middey, P. S. Anil Kumar, M. Kareev, Lin Gu, D. D. Sarma, P. Shafer, E. Arenholz, J. W. Freeland, Lu Li, David Vanderbilt, and Jak Chakhalian, "Proximate Quantum Spin Liquid on Designer Lattice," Nano Letters **Article ASAP** DOI: `10.1021/acs.nanolett.0c04498`

Presentations and Posters

03/2021 APS March Meeting, *Virtual*, **talk title:** *Doping the multiorbital Hund's coupled impurity: an exploration of non-Fermi liquid ground states*

10/2020 Rutgers, SSPAR, *Virtual*, **talk title:** *ARPES: uncovering the superconducting gap.*

06/2020 Condensed Matter in the Cities 2020 Conference, *Virtual*, **talk title:** *Exploring the multiorbital Hund's impurity*

03/2020 APS March Meeting, *Virtual*, **talk title:** *Exploring the multiorbital Hund's impurity*

09/2019 School on Electron Correlation **Poster:** *Local Pairing in the Iron-Based Superconductors*

08/2019 Workshop on Strongly Correlated Electrons, Max Planck Institute for Complex Systems, Dresden, **Poster:** *Potts Transitions in Coupled XY Models*

07/2019 Princeton Condensed Matter Summer School, Princeton, **Poster:** *Potts Transitions in Coupled XY Models*

03/2019 APS March Meeting, Boston, **talk title:** *Potts Transitions in Coupled XY Models*

10/2018 Rutgers, SSPAR, **talk title:** *Potts Transitions in Coupled XY Models*

08/2018 ICTP, Advanced Workshop and School: Correlations in Electron Systems, **Poster:** $L{\cdot}S$ *Pairing In Iron-Based Superconductors*

03/2018 Rutgers, SSPAR, **talk title:** *ARPES study of unconventional superconductors*

09/2017 Rutgers, SSPAR, **talk title:** *Emergence of Competing Order in Liquid Crystals*

08/2017 Rutgers, Condensed Matter Summer Seminar, **talk title:** *Introduction to the Nonperturbative Renormalization Group*

08/2017 IESC, SUNSET 2017, **Poster:** *Emergence of Composite Order: Liquid Crystals and Superfluids*

03/2017 Rutgers, SSPAR, **talk title:** *Liquid crystals, 2D Coulomb gas and superfluids: insight into universality.*

08/2016 Université de Montréal, Physics Journal Club, **talk title:** *Renormalization group in the Okinawan landscape*

07/2015 Université de Montréal, Physics Journal Club, **talk title:** *Hubbard model on the anisotropic triangular lattice*

07/2014 Carleton University, CUMC, **talk title:** *The Spin Chains and their resolution by the Bethe Ansatz*

07/2014 Carleton University, CUMC, **talk title:** *The Spin Chains and their resolution by the Bethe Ansatz*

06/2014 Université de Montréal, Physics Journal Club, **talk title:** *The Heisenberg Model and its resolution by the Bethe Ansatz*

06/2014 Université de Montréal, Clubmath, **talk title:** *The Heisenberg Model and its resolution by the Bethe Ansatz*

Teaching Experience

Spring 2020 Workshop Instructor (3 sections), Rutgers. Ph 204 & 203 - General Physics

Fall 2019 Lab Instructor (1 lab), Rutgers. Ph 161 - Elements of Physics

Spring 2018 Grader, Rutgers. Ph 611 - Graduate Statistical Mechanics

Spring 2018 Recitation Instructor, Rutgers. Ph 204 - General Physics

Fall 2016 Lab Instructor (3 labs), Rutgers. Ph 161 - Elements of Physics

Conferences & Workshops

03/2021 **March Meeting of the American Physical Society** - *Virtual*

06/2020 **Condensed Matter in the Cities 2020 Conference** - *Virtual*

03/2020 **March Meeting of the American Physical Society** - *Virtual*

10/2019 **Gotham Metro Condensed Matter Meeting**
Columbia U, New York - Co-organizer

09/2019 **School on Advanced Methods on Strongly Correlated Electrons**
Forschmentzing Julich, Germany

08/2019 **Advanced Workshop and School: Correlations in Electron Systems**
Max Planck Institute for Complex Systems, Dresden, Germany

03/2019 **March Meeting of the American Physical Society**
Boston, Massachusetts, USA

08/2018 **Advanced Workshop and School: Correlations in Electron Systems – from Quantum Criticality to Topology**
Abdus Salam International Center for Theoretical Physics (ICTP, Trieste, Italy)

05/2018 **International Summer School on Computational Quantum Materials 2018**
Sherbrooke, Quebec, Canada (**for credit**)

08/2017 **School on Unconventional Superconductivity: Experiment and Theory**
(SUNSET 2017) IESC, Cargese, Corsica, France

05/2017 **International Physics School on Quantum Materials**
Sherbrooke, Quebec, Canada (**for credit**)

07/2014 **Canadian Undergraduate Mathematics Conference** (CUMC)
Carleton University, Ottawa, Canada

Outreach & Extracurriculars

2020 - now **Graduate Student Reviewer**, Aresty Rutgers Undergraduate Research Journal

2019 - 2020 **Co-Organizer**, Rutgers Representative, Gotham Metro Condensed Matter Conference

2018 - 2019 **Chancellor**, Graduate Student Organization, Physics and Astronomy, Rutgers

2017 - 2018 **Co-President**, Graduate Student Organization, Physics and Astronomy, Rutgers

04/2017 **Judge**, Aresty Center's 13th annual Undergraduate Research Symposium, Rutgers

2014 -2016 **Member of the Organizing Committee of the Clubmath**, Mathematics Departments, Université de Montréal

Professional development

Spring 2017 **Certificate of Training in Physics Mentorship**, Rutgers University

Fall 2016 **Certificate of Training in Physics Teaching**, Rutgers University

Professional affiliations

Member of the American Physical Society

Technical skills

Programming in Python, Matlab, and *Wolfram Mathematica*. I am also familiar with computing on serial infrastructure of supercomputers.

Hobbies

Running (Completed many half-marathons and a marathon) - Cooking - Poetry

Languages

Fluent in French *(native language)* and English.

References

Piers Coleman coleman@physics.rutgers.edu

Peter P. Orth porth@iastate.edu

Jak Chakhalian jak.chakhalian@rutgers.edu