# Pierre-Antoine Graham

**Contact details**
Email adress:
Pierre-Antoine.Graham@USherbrooke.ca
Phone number (mobile): (819) 944-2049

## EDUCATION

**Université de Sherbrooke** — 2019-Present
BSc in Physics — GPA: 4.29/4.30

**Perimeter Institute** — 2022 Summer
PSI-Start 2022 online school — Earned all badges

**CEGEP de Trois-Rivières** — 2017-2019
Sciences, letters and arts — Cote R: 36

## PUBLICATIONS

**Submitted to European Physical Journal C**
Effective fluid mixture of tensor-multi-scalar gravity,
Marcello Miranda, **Pierre-Antoine Graham**, Valerio Faraoni, 8 November 2022, 10 p.

**Physical Review D**
Critical solutions of nonminimally coupled scalar field theory and first-order thermodynamics of gravity,
Valerio Faraoni, **Pierre-Antoine Graham**, and Alexandre Leblanc, 11 October 2022, 11 p.

**Physical Review B**
Disorder effects on hot spots in electron-doped cuprates,
C. Gauvin-Ndiaye, **P.-A. Graham**, and A.-M. S. Tremblay, 24 June 2022, 11 p.

**Submitted to Physical Review Letters**
Photoinduced plasma oscillations in Weyl semimetals,
**Pierre-Antoine Graham**, Simon Bertrand, Michaël Bédard, Robin Durand, Ion Garate, 5 August 2022, 13 p.

## PROFESSIONAL EXPERIENCE

2022 Summer, **Research assistant**,
Physics & Astronomy Department,
Professor Valerio Faraoni's group,
Bishop's University.

- Study of critical solutions in the effective disspative fluid picture of scalar-tensor gravity.
- Work on an adaptation of the first order thermodynamics of the effective fluid picture to scalar multi-tensor gravity.

2021 Fall, **Research assistant**,
Physics Department,
Professor Ion Garate's group,
Université de Sherbrooke.

- Semi-classical analysis of the transient response of a Weyl Semimetal exposed to a magnetic field and a transient light pulse in the quantum limit.

2021 Winter, **Research assistant**,
Physics Department,
Professor André-Marie Tremblay's group,
Université de Sherbrooke.

- Analysis of two-particle self-consistent approach simulations of electron-doped NCCO to study the signature of its quantum critical point and its Fermi liquid behavior.

2020 Summer, **Research assistant**,
Physics Department,
Professor Jeffrey Quilliam's group,
Université de Sherbrooke.

- Realization of a graphical user interface with Python to visualize and treat nuclear magnetic resonance data.
- Cryogenic laboratory manipulations.

2018, **Scientific host**,
Champlain Observatory,
CEGEP de Trois-Rivières.

- Outreach presentations about astronomy and cosmology.
- Handling of astronomical observation instruments.

2015-2018, **Scientific host**,
Club des débrouillards, Technoscience,
Mauricie, Centre-du-Québec.

- Dynamical scientific outreach of diversified concepts and organization of activities for kids of different age groups.

## POPULARIZATION PROJETS

**Expo-Sciences participations**, Hydro-Québec

| **Projects** | **Awards**. |
|---|---|
| 2016, *Pas simple le pendule!* | • Antidote award<br>• Participation at the provincial finals<br>• UQTR Department of Chemistry, Biochemistry and Physics prize |
| 2015, *Les équations de Maxwell* | • Participation at the provincial finals |
| 2014, *Question de relativité!* | • Chemin-du-Roy School Board Award<br>• Silver medal, junior category |
| 2013, *Ré-inventons la roue!* | • Quebec Ministry of Transport Award |

**Popularization event**, Diversity Committee (DiPhUS)

| **Project** | **Award** |
|---|---|
| 2021, *Le «spin» du spin* | • Organizing Committee award |

## SCHOLARSHIPS

2020, J. Armand Bombardier Scholarship (1000$)
2020, NSERC Undergraduate Student Research Award (6000$)
2019, Physics Admission Scholarship (2000$)

## EXTRACURRICULAR ACTIVITIES

2021-Present, **DiPhUS Committee**,
Physics Department,
Université de Sherbrooke .

• Organization of activities promoting diversity and inclusion in the physics community.

2021-Present, **Physics tutor**,
Université de Sherbrooke.

• Physics tutoring for students with diversified academic backgrounds from college to undergraduate level.

2019-2021, **President of social affairs**,
Physics promotion 2019-2022,
Université de Sherbrooke.

• Organization of activities promoting socialization of students from the Faculty of Sciences.

2018-2019, **Mathematics tutor**,
CEGEP de Trois-Rivières.

• Organization of tutoring meetings for multiple students and adaptation to their level from precalculus to calculus.

## LANGUAGE AND COMPUTER SKILLS

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|---|---|
| **Languages** | French (first language, 5/5), English (fluent, 4.5/5) |
| **Programming languages** | Python, Mathematica, C++, bash |
| **Software** | LaTeX, Asymptote vector graphics, Manim, Office |