

Jerome Quintin (he/him) — Curriculum Vitæ

Email: jquintin@uwaterloo.ca

Website: <https://jerome-quintin.github.io/>

Citizenship: Canadian

Languages: French, English

EMPLOYMENT	Perimeter Institute for Theoretical Physics (PI) , Waterloo (ON), Canada	
	Associate Postdoctoral Researcher	Dec 2022-present
	University of Waterloo (UWaterloo) , Waterloo (ON), Canada	
	William T. Tutte Fellowship, Dept. of Applied Math	Dec 2022-present
	Associate Postdoc, Waterloo Centre for Astrophysics (WCA)	Dec 2022-present
	Joint postdoc with Fields (see below)	July 2022-Nov 2022
	Fields Institute, University of Toronto , Toronto (ON), Canada	
	Fields Postdoctoral Fellow, jointly affiliated with UWaterloo	July 2022-Nov 2022
	Max Planck Institute for Gravitational Physics (Albert Einstein Institute) , Potsdam, Germany (AEI-Potsdam)	
	Postdoctoral Researcher	Sep 2019-Jun 2022
EDUCATION	Ph.D. and M.Sc. in Physics, McGill U.	Sep 2013-Jun 2019
	Thesis Supervisor: Robert Brandenberger	
	GPA: 4.0/4.0	
	B.Sc. in Physics and Mathematics, Bishop's U.	Sep 2010-Apr 2013
	Research Advisor: Lorne Nelson	
	GPA: 95.74/100	
	<i>Recipient of the Governor General's Silver Medal (student graduating with the highest grade point average in the university at the undergraduate level)</i>	
RESEARCH EXPERIENCE	UWaterloo/Perimeter/Fields , independent postdoctoral research	2022-
	AEI-Potsdam , postdoctoral research with Jean-Luc Lehnert	2019-2022
	McGill , doctoral research with Robert Brandenberger	2015-19
	ETH-ITS Zurich , Visiting Graduate Research Student	Oct-Nov 2015
	McGill , M.Sc. Student with Robert Brandenberger & Yi-Fu Cai	2013-15
	Bishop's , Honors Student with Lorne Nelson & Saul Rappaport (MIT)	2011-13
	Mont-Mégantic Observatory , Visiting Scientist	Aug 2011-12-13, May 2012
	MIT , Visiting Undergraduate Research Student	May 2011
SELECTED HONORS AND AWARDS	UWaterloo Faculty of Mathematics William T. Tutte Fellowship	2022-
	Fields Postdoctoral Fellowship, Fields Institute (U. of Toronto)	2022
	AARMS Postdoctoral Fellowship, UNB (declined)	
	NSERC Postdoctoral Fellowship	2019-21
	FRQNT Postdoctoral Research Scholarship	2019-21
	Kavli IPMU Postdoctoral Fellowship, Tokyo (declined)	
	Nordita Postdoctoral Fellowship, Stockholm (declined)	
	Vanier Canada Graduate Scholarship , NSERC	2016-19
	Reinhardt C. Fellowship, McGill	2017
	Walter C. Sumner Memorial Fellowship, McGill	2015-17
	NSERC Alexander Graham Bell Graduate Scholarship - CGS D (declined)	
	FRQNT Doctoral Research Scholarship	2015-16
	FRQNT Masters Research Scholarship	2014-15
	NSERC Alexander Graham Bell Graduate Scholarship - CGS M	2013-14
	Lorne Trottier Accelerator Award, McGill	2013
	NSERC Undergraduate Student Research Award (USRA, 3 times)	2011-13
	Captain Melville Greenshields Memorial Scholarship, Bishop's	2011-12

PUBLICATIONS

26. **J. Quintin**, X. Chen and R. Ebadi, *Fingerprints of a Non-Inflationary Universe from Massive Fields*, [arXiv:2405.11016 \[astro-ph.CO\]](#)
25. J. L. Lehnerns and **J. Quintin**, *Delicate curvature bounces in the no-boundary wave function and in the late universe*, [arXiv:2403.15205 \[gr-qc\]](#)
24. J. L. Lehnerns and **J. Quintin**, *A small Universe*, *Phys. Lett. B* **850** (2024) 138488, [arXiv:2309.03272 \[hep-th\]](#)
23. G. Geshnizjani, E. Ling and **J. Quintin**, *On the initial singularity and extendibility of flat quasi-de Sitter spacetimes*, *JHEP* **10**, 182 (2023), [arXiv:2305.01676 \[gr-qc\]](#)
22. C. Jonas, J. L. Lehnerns and **J. Quintin**, *Uses of complex metrics in cosmology*, *JHEP* **08**, 284 (2022), [arXiv:2205.15332 \[hep-th\]](#)
21. C. Ganguly and **J. Quintin**, *Microphysical manifestations of viscosity and consequences for anisotropies in the very early universe*, *PRD* **105**, 023532, [arXiv:2109.11701 \[gr-qc\]](#)
20. **J. Quintin**, H. Bernardo and G. Franzmann, *Cosmology at the top of the α' tower*, *JHEP* **07**, 149 (2021), [arXiv:2105.01083 \[hep-th\]](#)
19. C. Jonas, J.-L. Lehnerns and **J. Quintin**, *Cosmological consequences of a principle of finite amplitudes*, *PRD* **103**, 103525, [arXiv:2102.05550 \[hep-th\]](#)
18. J.-L. Lehnerns and **J. Quintin**, *Quantum circuit complexity of primordial perturbations*, *PRD* **103**, 063527, [arXiv:2012.04911 \[hep-th\]](#)
17. Y. Sakakihara, D. Yoshida, K. Takahashi and **J. Quintin**, *Theories with limited extrinsic curvature and a nonsingular anisotropic universe*, *PRD* **102**, 084004, [arXiv:2005.10844 \[gr-qc\]](#)
16. **J. Quintin** and D. Yoshida, *Cuscuton gravity as a classically stable limiting curvature theory*, *JCAP* **2002**, 016, [arXiv:1911.06040 \[gr-qc\]](#)
15. **J. Quintin**, R. H. Brandenberger, M. Gasperini and G. Veneziano, *Stringy black-hole gas in α' -corrected dilaton gravity*, *PRD* **98**, 103519, [arXiv:1809.01658 \[hep-th\]](#)
14. D. Yoshida and **J. Quintin**, *Maximal extensions and singularities in inflationary spacetimes*, *CQG* **35**, 155019, [arXiv:1803.07085 \[gr-qc\]](#)
13. C. Lin, **J. Quintin** and R. H. Brandenberger, *Massive gravity and the suppression of anisotropies and gravitational waves in a matter-dominated contracting universe*, *JCAP* **1801**, 011, [arXiv:1711.10472 \[hep-th\]](#)
12. L. Santos, W. Zhao, E. G. M. Ferreira and **J. Quintin**, *Constraining interacting dark energy with CMB and BAO future surveys*, *PRD* **96**, 103529, [arXiv:1707.06827 \[astro-ph.CO\]](#)
11. D. Yoshida, **J. Quintin**, M. Yamaguchi and R. H. Brandenberger, *Cosmological perturbations and stability of nonsingular cosmologies with limiting curvature*, *PRD* **96**, 043502, [arXiv:1704.04184 \[hep-th\]](#)
10. Y. B. Li, **J. Quintin**, D. G. Wang and Y. F. Cai, *Matter bounce cosmology with a generalized single field: non-Gaussianity and an extended no-go theorem*, *JCAP* **1703**, 031, [arXiv:1612.02036 \[hep-th\]](#)
9. B. Kalomeni, L. Nelson, S. Rappaport, M. Molnar, **J. Quintin** and K. Yakut, *Evolution of cataclysmic variables and related binaries containing a white dwarf*, *ApJ* **833**, 83, [arXiv:1610.03051 \[astro-ph.SR\]](#)
8. **J. Quintin** and R. H. Brandenberger, *Black hole formation in a contracting universe*, *JCAP* **1611**, 029, [arXiv:1609.02556 \[astro-ph.CO\]](#)

7. **J. Quintin**, Z. Sherkatghanad, Y. F. Cai and R. H. Brandenberger, *Evolution of cosmological perturbations and the production of non-Gaussianities through a nonsingular bounce: Indications for a no-go theorem in single field matter bounce cosmologies*, [PRD **92**, 063532](#), [arXiv:1508.04141 \[hep-th\]](#)
6. Y. F. Cai, E. G. M. Ferreira, B. Hu and **J. Quintin**, *Searching for features of a string-inspired inflationary model with cosmological observations*, [PRD Rapid Communications **92**, 121303](#), [arXiv:1507.05619 \[astro-ph.CO\]](#)
5. S. F. Bramberger, R. H. Brandenberger, P. Jreidini and **J. Quintin**, *Cosmic string loops as the seeds of super-massive black holes*, [JCAP **1506**, 007](#), [arXiv:1503.02317 \[astro-ph.CO\]](#)
4. Y. F. Cai, F. Chen, E. G. M. Ferreira and **J. Quintin**, *New model of axion monodromy inflation and its cosmological implications*, [JCAP **1606**, 027](#), [arXiv:1412.4298 \[hep-th\]](#)
3. E. G. M. Ferreira, **J. Quintin**, A. A. Costa, E. Abdalla and B. Wang, *Evidence for interacting dark energy from BOSS*, [PRD **95**, 043520](#), [arXiv:1412.2777 \[astro-ph.CO\]](#)
2. **J. Quintin**, Y. F. Cai and R. H. Brandenberger, *Matter creation in a nonsingular bouncing cosmology*, [PRD **90**, 063507](#), [arXiv:1406.6049 \[gr-qc\]](#)
1. Y. F. Cai, **J. Quintin**, E. N. Saridakis and E. Wilson-Ewing, *Nonsingular bouncing cosmologies in light of BICEP2*, [JCAP **1407**, 033](#), [arXiv:1404.4364 \[astro-ph.CO\]](#)

INVITED TALKS
(long-term visits
of $\gtrsim 2$ weeks
denoted by **)

- | | |
|--|----------|
| 41. IBS Workshop on Cosmological Collider | Jun 2024 |
| 40. Canadian Association of Physicists (CAP) Congress | May 2024 |
| 39. DIAS, School of Theoretical Physics Seminar | Apr 2024 |
| 38. KU Leuven , Institute for Theoretical Physics Seminar | Apr 2024 |
| 37. U. de Sherbrooke , SAG (Math) Seminar | Oct 2023 |
| 36. AnLy Strings and Fields Online Seminar | Oct 2023 |
| 35. U. de Montréal , CRM Mathematical Physics Seminar | Sep 2023 |
| 34. Copernicus Webinar Series | Jul 2023 |
| 33. Canadian Mathematical Society (CMS) Meeting | Jun 2023 |
| 32. **McGill U. Theoretical High Energy Journal Club | Dec 2021 |
| 31. Perimeter Institute Cosmology Seminar | Nov 2021 |
| 30. U. of New Brunswick Gravity Group Meeting | Nov 2021 |
| 29. Lisbon U. Institute of Astrophysics and Space Science Seminar | Nov 2021 |
| 28. Copernicus Webinar Series | Oct 2021 |
| 27. Jagiellonian U. Theoretical Cosmology Group Meeting | Jul 2021 |
| 26. CAP Congress | Jun 2021 |
| 25. U. of Science and Technology of China Particle Cosmology Webinar | Feb 2021 |
| 24. ICTS Workshop - Physics of the Early Universe | Sep 2021 |
| 23. Quantum Aspects of Space-Time and Matter (QASTM) Online Talk | Apr 2020 |
| 22. U. of Cambridge DAMTP Cosmology Journal Club | Nov 2019 |
| 21. Warsaw U. Autumn Workshop on Gravity and Cosmology | Nov 2019 |
| 20. Dartmouth College Cosmology Seminar | Apr 2019 |
| 19. Ohio State U. High Energy Physics Seminar | Oct 2018 |
| 18. **Harvard-ITC Luncheon | Sep 2018 |
| 17. **Harvard-ITC Prof. Avi Loeb Group Meeting | Sep 2018 |

16. [Princeton U.](#) New Directions in Cosmology and Gravitational Theory Talk Jan 2018
15. [Institut d'Astrophysique de Paris \(IAP\)](#) GRECO Seminar Sep 2017
14. [Imperial College London](#) 3-PAC Seminar May 2017
13. [U. of Cambridge](#) DAMTP Cosmology Journal Club May 2017
12. [King's College London](#) Theoretical Particle Physics & Cosmology Seminar May 2017
11. [Queen Mary U. of London](#) Cosmology and Relativity Seminar May 2017
10. [Portsmouth U.](#) Institute of Cosmology and Gravitation Seminar May 2017
9. [Tufts U.](#) Institute of Cosmology Seminar Apr 2017
8. [U. of Pennsylvania](#) Astrophysics and Cosmology Group Talk Apr 2017
7. [**U. of Tokyo](#) Research Center for the Early Universe Seminar Jun 2016
6. [**U. of Science and Technology of China](#) Astronomy Colloquium Jun 2016
5. [Fundan U.](#) Cosmology Seminar Jun 2016
4. [Tokyo Institute of Technology](#) Cosmology Seminar Jun 2016
3. [U. of Geneva](#) Cosmology and Astroparticle Physics Journal Club Oct 2015
2. [**ENS-Lyon](#) Centre de Recherche Astrophysique de Lyon Seminar Oct 2015
1. [Bishop's U.](#) Physics Seminar Sep 2015

CONTRIBUTED TALKS

11. [Workshop on Mathematical Relativity, Scalar Curvature and Synthetic Lorentzian Geometry as part of the Thematic Program on Nonsmooth Riemannian and Lorentzian Geometry at the Fields Institute](#) Oct 2022
10. Atlantic General Relativity Conference May 2022
9. [YITP \(Kyoto U.\) Quantum Cosmology Workshop](#) Nov 2021
8. [Alternative Gravities and Fundamental Cosmology Conference](#) Sep 2021
7. [Northeast Cosmology Workshop at McGill U.](#) Mar 2018
6. [COSMO-17 at Paris U.](#) Sep 2017
5. [Beyond \$\Lambda\$ CDM Conference](#) Jan 2015
4. Centre for Research in Astrophysics of Qubec (CRAQ) Meeting May 2013
3. [American Astronomical Society \(AAS\) Meeting #221](#) Jan 2013
2. Canadian Undergraduate Physics Conference (CUPC) Oct 2012
1. Centre for Research in Astrophysics of Qubec (CRAQ) Meeting May 2012

LOCAL TALKS (number of presentations given inside parenthesis)

- 2022-present: UWaterloo/PI/WCA (8), CITA (1), Fields (1; [link](#))
- 2019-2022: AEI-Potsdam (7)
- 2013-2019: McGill U. [Centre for High Energy Physics](#) (14), [McGill Space Institute](#) (2)
- 2013: Bishop's U. Department of Physics (3)

**SELECTED
WORKSHOPS,
SCHOOLS AND
ADDITIONAL
CONFERENCES
ATTENDED**

Puzzles in the Quantum Gravity Landscape, conference @ PI	Oct 2023
Gravity, Strings and Fields, conference @ CRM	Jul 2023
Quantum Simulators of Fundamental Physics, meeting @ PI	Jun 2023
Quantum Spacetime in the Cosmos, workshop @ PI	May 2023
10th Central European Relativity Seminar, conference @ AEI	Feb 2020
Advanced Winter School on Theoretical Cosmology @ Nordita	Jan 2020
Workshop on Geometry and Duality @ AEI	Dec 2019
Symposium on History for Physics: Quantum Gravity @ AEI	Nov 2019
XI International Symposium: Quantum Theory and Symmetries @ UdeM	Jul 2019
XIX International Congress on Mathematical Physics @ Montréal	Jul 2018
Northeast Cosmology Workshop @ McGill	Mar 2018
Gravity in the Early Universe, workshop @ Princeton-PCTS	Jan 2018
McGill-Dartmouth Cosmology Day, workshop @ McGill	May 2017
Einstein Symposium @ ETH Zurich	Nov 2015
AdS/CFT and the Resolution of Cosmological Singularities, workshop @ CRM	Jul 2015
Summer School on Cosmology @ ICTP	Aug 2014
Theory Canada 8, conference @ Bishop's	May 2013
AAS Meeting @ Boston	May 2011

**OUTREACH
TALKS**

- Talk to Cegep students, *Unveiling the Big Bang* @ Marianopolis College Jan 2024
- Talk (in French) for the [Club mathématique de l'Université de Sherbrooke](#), *Les mathématiques du Big Bang (The mathematics of the Big Bang)* Oct 2023
- Public talk (in French) as part of “Astronomie en Fût” ([Astronomy on Tap](#)), *L'univers a-t-il eu un commencement? (Did the universe have a beginning?)* @ Montréal Apr 2017
- Speaker and guide for tours at the [Bishop's University Observatory](#) 2011-13

**PRESS
COVERAGE**

- *Mathematicians Attempt to Glimpse Past the Big Bang* by Steve Nadis for Quanta Magazine
- *Initial singularity and extendibility of spacetimes* by NiklasOPF on YouTube (interview)
- *The Case for a Small Universe* by Brian Koberlein for Universe Today
- *The Case for a Small Universe* on Phys.org
- *How large is our Universe?* by Elke Müller of the AEI Press Office
- *The hunt for black holes older than the universe itself* by Bernard Carr for the NewScientist
- *Did the Universe Begin? Rethinking the Penrose Hawking & BGV theorems* by Phil Halper on YouTube (documentary)
- *Semeando buracos negros supermassivos (Sowing supermassive black holes)* by Rua Josephine for Cientistas Feministas (in Portuguese)
- *Evolution of cataclysmic variables and related binaries containing accreting white dwarfs* on Phys.org
- *The ‘Dark’ Universe May Be Full of Strange Interactions* by Charles Q. Choi for NOVA

**PROFESSIONAL
ACTIVITIES
AND
COMMUNITY**

- Member of the SOC for the conference [50 Years of Horndeski Gravity: Exploring Modified Gravity](#) Jul 2024
 - applied for and secured funding from the [Gravity Theory Trust](#)
- Reviewer for the [Newton International Fellowships of the Royal Society](#) May 2024
- [Institute of Physics \(IOP\) Trusted Reviewer](#) status Sep 2023

- Review Editor for [Frontiers in Astronomy and Space Sciences](#) and [Frontiers in Physics, Cosmology section](#) Jan 2023-present
- Writing reviews for the [American Mathematical Society's Mathematical Reviews Database](#) Sep 2021-present
- Member of the SOC for the [Nordita Winter School on Theoretical Cosmology](#) Jan 2020
- Reviewed a grant proposal for the [National Science Center](#) of Poland Dec 2018
- [McGill HEP-th Journal Club](#) organizer Sep 2017-Dec 18
- Helped with the organization of the [Northeast Cosmology Workshop](#) Mar 2018
- Helped with the organization of the [McGill-Dartmouth Cosmology Day](#) May 2017
- Helped with the organization of the [Theory Canada 8 Conference](#) May 2013
- Referee for [Phys. Rev. Lett.](#), [Phys. Rev. D](#), [JCAP](#), [Phys. Lett. B](#), [Class. Quantum Gravity](#), [Eur. Phys. J. C](#), [Eur. Phys. J. Plus](#), [Nucl. Phys. B](#), [Int. J. Mod. Phys. D](#), [Int. J. Mod. Phys. A](#), [Mod. Phys. Lett. A](#), [MDPI \(Universe, Symmetry, Entropy, Astronomy\)](#), [Physica Scripta](#), [Commun. Theor. Phys.](#), [LHEP](#), [Astrophys. Space Sci.](#), and [INJP](#)

SUPERVISION AND TEACHING

UWaterloo/PI

- Substitute Lecturer Feb 2024
PHYS 444 - Introduction to Particle Physics
- Mentoring MSc student [Ruolin Liu](#) Jan 2024-present
- Participation in the [Math Teaching Seminar](#) Sep 2023-present
- Mentoring PhD student [Brayden Hull](#) Jan 2023-present
- Mentoring MMath student [Elly Moghtaderi](#) Sep 2022-present
- Mentoring PhD student [Amir Dehghani](#) Sep 2021-present

AEI-Potsdam

- Mentoring PhD student [Caroline Jonas](#) Oct 2019-Jun 2022

McGill U.

- Substitute Lecturer Sep 2017
Very Early Universe
- Mentor for the [MGAPS](#) mentorship program Sep-Dec 2016
- Teaching Assistant Sep 2013-Apr 2017
General Relativity and Cosmology, Modern Physics and Relativity, Electromagnetic Waves, Introductory Physics – Mechanics, Honours Classical Mechanics 2, Honours Classical Mechanics 1, Topics in Classical Mechanics, Modern Physics and Relativity

Bishop's U.

- Tutor at the Bishop's University Physics Help Centre Sep 2012-Apr 13
- Teaching Assistant Jan 2012-Apr 2013
Introduction to Mechanics, Differential Equations, Thermal and Fluid Physics

Private mathematics and physics tutor (high school and college level) 2009-11, 2015

PROGRAMMING

- Languages I have had experience with: [Python](#) (including [NumPy](#), [SciPy](#), [Matplotlib](#), etc.), [Fortran](#), [C/C++](#), [Java](#), [UNIX shell scripts](#), [Perl](#), [Mathematica](#), [Maple](#)
- Some codes I have run and/or modified over the years: [CAMB](#), [MultiModeCode](#), [MathGR](#), [xAct](#), [PyTransport](#), [CosmicPy](#), [Pyflation](#), [MESA](#)