

# Jerome Quintin (he/him/his) — Curriculum Vitæ

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Citizenship: Canadian

Languages: French, English

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

27. R. Liu, **J. Quintin** and N. Afshordi, *Conformal cores of quantum black holes in quadratic gravity*, [PRD \*\*111\*\*, 044031, arXiv:2411.19311 \[hep-th\]](#)
26. **J. Quintin**, X. Chen and R. Ebadi, *Fingerprints of a non-inflationary universe from massive fields*, [JCAP \*\*2409\*\*, 026, arXiv:2405.11016 \[astro-ph.CO\]](#)
25. J. L. Lehnert and **J. Quintin**, *Delicate curvature bounces in the no-boundary wave function and in the late universe*, [JCAP \*\*2501\*\*, 027, arXiv:2403.15205 \[gr-qc\]](#)
24. J. L. Lehnert 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. Lehnert 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  $\alpha'$  tower*, [JHEP \*\*07\*\*, 149 \(2021\), arXiv:2105.01083 \[hep-th\]](#)
19. C. Jonas, J.-L. Lehnert and **J. Quintin**, *Cosmological consequences of a principle of finite amplitudes*, [PRD \*\*103\*\*, 103525, arXiv:2102.05550 \[hep-th\]](#)
18. J.-L. Lehnert 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  $\alpha'$ -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 \*\*)

- |   |          |
|---|----------|
| 44. <b>Carlton U.</b> Particle Physics Theory Seminar                             | Jan 2025 |
| 43. <b>Bishop's U.</b> Physics & Astronomy Seminar                                | Nov 2024 |
| 42. <a href="#">Majorana-Raychaudhuri Seminar</a>                                 | Nov 2024 |
| 41. <a href="#">IBS Workshop on Cosmological Collider</a>                         | Jun 2024 |
| 40. <a href="#">Canadian Association of Physicists (CAP) Congress</a>             | May 2024 |
| 39. <a href="#">DIAS, School of Theoretical Physics Seminar</a>                   | Apr 2024 |
| 38. <b>KU Leuven</b> , Institute for Theoretical Physics Seminar                  | Apr 2024 |
| 37. <a href="#">U. de Sherbrooke, SAG (Math) Seminar</a>                          | Oct 2023 |
| 36. <a href="#">AnLy Strings and Fields Online Seminar</a>                        | Oct 2023 |
| 35. <a href="#">U. de Montréal, CRM Mathematical Physics Seminar</a>              | Sep 2023 |
| 34. <a href="#">Copernicus Webinar Series</a>                                     | Jul 2023 |
| 33. <a href="#">Canadian Mathematical Society (CMS) Meeting</a>                   | Jun 2023 |
| 32. <b>**McGill U.</b> Theoretical High Energy Journal Club                       | Dec 2021 |
| 31. <a href="#">Perimeter Institute Cosmology Seminar</a>                         | Nov 2021 |
| 30. <b>U. of New Brunswick</b> Gravity Group Meeting                              | Nov 2021 |
| 29. <a href="#">Lisbon U.</a> Institute of Astrophysics and Space Science Seminar | Nov 2021 |
| 28. <a href="#">Copernicus Webinar Series</a>                                     | Oct 2021 |
| 27. <b>Jagiellonian U.</b> Theoretical Cosmology Group Meeting                    | Jul 2021 |
| 26. <a href="#">CAP Congress</a>  | Jun 2021 |
| 25. <b>U. of Science and Technology of China</b> Particle Cosmology Webinar       | Feb 2021 |
| 24. <a href="#">ICTS Workshop - Physics of the Early Universe</a>                 | Sep 2020 |
| 23. <a href="#">Quantum Aspects of Space-Time and Matter (QASTM) Online Talk</a>  | Apr 2020 |
| 22. <b>U. of Cambridge</b> DAMTP Cosmology Journal Club                           | Nov 2019 |
| 21. <b>Warsaw U.</b> Autumn Workshop on Gravity and Cosmology                     | Nov 2019 |
| 20. <a href="#">Dartmouth College Cosmology Seminar</a>                           | Apr 2019 |

19.	<a href="#">Ohio State U. High Energy Physics Seminar</a>	Oct 2018
18.	<a href="#">**Harvard-ITC Luncheon</a>	Sep 2018
17.	<a href="#">**Harvard-ITC Prof. Avi Loeb Group Meeting</a>	Sep 2018
16.	<a href="#">Princeton U. New Directions in Cosmology and Gravitational Theory Talk</a>	Jan 2018
15.	<a href="#">Institut d'Astrophysique de Paris (IAP) GRECO Seminar</a>	Sep 2017
14.	<a href="#">Imperial College London 3-PAC Seminar</a>	May 2017
13.	<a href="#">U. of Cambridge DAMTP Cosmology Journal Club</a>	May 2017
12.	<a href="#">King's College London Theoretical Particle Physics &amp; Cosmology Seminar</a>	May 2017
11.	<a href="#">Queen Mary U. of London Cosmology and Relativity Seminar</a>	May 2017
10.	<a href="#">Portsmouth U. Institute of Cosmology and Gravitation Seminar</a>	May 2017
9.	<a href="#">Tufts U. Institute of Cosmology Seminar</a>	Apr 2017
8.	<a href="#">U. of Pennsylvania Astrophysics and Cosmology Group Talk</a>	Apr 2017
7.	<a href="#">**U. of Tokyo Research Center for the Early Universe Seminar</a>	Jun 2016
6.	<a href="#">**U. of Science and Technology of China Astronomy Colloquium</a>	Jun 2016
5.	<a href="#">Fundan U. Cosmology Seminar</a>	Jun 2016
4.	<a href="#">Tokyo Institute of Technology Cosmology Seminar</a>	Jun 2016
3.	<a href="#">U. of Geneva Cosmology and Astroparticle Physics Journal Club</a>	Oct 2015
2.	<a href="#">**ENS-Lyon Centre de Recherche Astrophysique de Lyon Seminar</a>	Oct 2015
1.	<a href="#">Bishop's U. Physics Seminar</a>	Sep 2015

#### CONTRIBUTED TALKS

11.	<a href="#">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</a>	Oct 2022
10.	<a href="#">Atlantic General Relativity Conference</a>	May 2022
9.	<a href="#">YITP (Kyoto U.) Quantum Cosmology Workshop</a>	Nov 2021
8.	<a href="#">Alternative Gravities and Fundamental Cosmology Conference</a>	Sep 2021
7.	<a href="#">Northeast Cosmology Workshop at McGill U.</a>	Mar 2018
6.	<a href="#">COSMO-17 at Paris U.</a>	Sep 2017
5.	<a href="#">Beyond <math>\Lambda</math>CDM Conference</a>	Jan 2015
4.	<a href="#">Centre for Research in Astrophysics of Qubec (CRAQ) Meeting</a>	May 2013
3.	<a href="#">American Astronomical Society (AAS) Meeting #221</a>	Jan 2013
2.	<a href="#">Canadian Undergraduate Physics Conference (CUPC)</a>	Oct 2012
1.	<a href="#">Centre for Research in Astrophysics of Qubec (CRAQ) Meeting</a>	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**

50 Years of Horndeski Gravity: Exploring Modified Gravity @ PI	Jul 2024
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
Gender Equity in Academia: A First Aid Kit, Online Workshop	Sep 2022
First Meeting of the International Society for Quantum Gravity, Online	Oct 2021
Cosmological Frontiers in Fundamental Physics, Online Conference	May 2021
Gravitational-Wave Primordial Cosmology, Online Workshop	May 2021
Current Challenges in Gravitational Physics, Online Workshop	April 2021
Quantum Gravity, Higher Derivatives and Nonlocality, Online Workshop	Mar 2021
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**

- *What If The Universe DID NOT Start With The Big Bang?* by PBS Space Time on YouTube
- *Roger Penrose refutes his critics: defending the singularity theorem* by Phil Halper on YouTube
- *How big is the universe? The shape of space-time could tell us* by Leah Crane for the NewScientist
- *Applied Math research featured in Quanta Magazine* by the UWaterloo Applied Math news office
- *Mathematicians Attempt to Glimpse Past the Big Bang* by Steve Nadis for Quanta Magazine
- *Initial singularity and extendibility of spacetimes* by NiklasOPF on YouTube
- *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
- *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

- *Fundamentals of University Teaching* Certificate Sep 2024-Feb 2025
- Instructor Sep-Dec 2024
  - MATH 237 - Calculus 3 for Honours Mathematics - Online*
- 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](#)