

# Jerome Quintin (he/him) — 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	
	‘Prestigious Postdoctoral Fellowship’, <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 Advisor: <b>Lorne Nelson</b>	
	GPA: 95.74/100	
	Recipient of the <i>Governor General’s Silver Medal</i> (student graduating with the highest grade point average in the university at the undergraduate level)	
RESEARCH EXPERIENCE	<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-Mégantic Observatory</b> , Visiting Scientist	Aug 2011-12-13, May 2012
	<b>MIT</b> , Visiting Undergraduate Research Student	May 2011
SELECTED HONORS AND AWARDS	<b>UWaterloo Faculty of Mathematics</b> <i>Prestigious Postdoctoral Fellowship</i>	2022-
	<b>Fields Postdoctoral Fellowship</b> , Fields Institute (U. of Toronto)	2022
	<b>AARMS Postdoctoral Fellowship</b> , UNB (declined)	
	<b>NSERC Postdoctoral Fellowship</b>	2019-21
	<b>FRQNT Postdoctoral Research Scholarship</b>	2019-21
	<b>Kavli IPMU Postdoctoral Fellowship</b> , Tokyo (declined)	
	<b>Nordita Postdoctoral Fellowship</b> , Stockholm (declined)	
	<b>Vanier Canada Graduate Scholarship</b> , NSERC	2016-19
	<b>Reinhardt C. Fellowship</b> , McGill	2017
	<b>Walter C. Sumner Memorial Fellowship</b> , McGill	2015-17
	<b>NSERC Alexander Graham Bell Graduate Scholarship - CGS D</b> (declined)	
	<b>FRQNT Doctoral Research Scholarship</b>	2015-16
	<b>FRQNT Masters Research Scholarship</b>	2014-15
	<b>NSERC Alexander Graham Bell Graduate Scholarship - CGS M</b>	2013-14
	<b>Lorne Trottier Accelerator Award</b> , McGill	2013
	<b>NSERC Undergraduate Student Research Award (USRA, 3 times)</b>	2011-13
	<b>Captain Melville Greenshields Memorial Scholarship</b> , Bishop’s	2011-12

## PUBLICATIONS

25. J. L. Lehnert 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. 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 \*\*)

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|--|---------------------|
| 41. <a href="#">IBS Workshop on Cosmological Collider</a>                                  | Jun 2024 (upcoming) |
| 40. <a href="#">Canadian Association of Physicists (CAP) Congress</a>                      | May 2024 (upcoming) |
| 39. <a href="#">DIAS, School of Theoretical Physics Seminar</a>                            | Apr 2024            |
| 38. <a href="#">KU Leuven, Institute for Theoretical Physics Seminar</a>                   | 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. <a href="#">U. of New Brunswick Gravity Group Meeting</a>                              | Nov 2021            |
| 29. <a href="#">Lisbon U. Institute of Astrophysics and Space Science Seminar</a>          | Nov 2021            |
| 28. <a href="#">Copernicus Webinar Series</a>  | Oct 2021            |
| 27. <a href="#">Jagiellonian U. Theoretical Cosmology Group Meeting</a>                    | Jul 2021            |
| 26. <a href="#">CAP Congress</a>   | Jun 2021            |
| 25. <a href="#">U. of Science and Technology of China Particle Cosmology Webinar</a>       | Feb 2021            |
| 24. <a href="#">ICTS Workshop - Physics of the Early Universe</a>                          | Sep 2021            |
| 23. <a href="#">Quantum Aspects of Space-Time and Matter (QASTM) Online Talk</a>           | Apr 2020            |
| 22. <a href="#">U. of Cambridge DAMTP Cosmology Journal Club</a>                           | Nov 2019            |
| 21. <a href="#">Warsaw U. Autumn Workshop on Gravity and Cosmology</a>                     | 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. <b>**Harvard-ITC Luncheon</b>  | Sep 2018            |
| 17. <b>**Harvard-ITC Prof. Avi Loeb Group Meeting</b>                                      | 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. **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. **Fudan 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**

- *Initial singularity and extendibility of spacetimes* by Niklas OPF 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 in 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](#)
- 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
- Referee for [PRL](#), [PRD](#), [JCAP](#), [PLB](#), [CQG](#), [EPJ C](#), [NPB](#), [MPLA](#), [IJMPA](#), [MDPI \(Universe, Symmetry, Entropy\)](#), [LHEP](#), [Physica Scripta](#), [Ap&SS](#), and [INJP](#)

- 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

## SUPERVISION AND TEACHING

UWaterloo/PI

- Substitute Lecturer Feb 2024  
*PHYS 444 - Introduction to Particle Physics*
- 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](#)