Jerome Quintin – CV

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EMPLOYMENT

Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Potsdam, Germany
Joint AEI Junior Scientist and NSERC+FRQNT Postdoctoral Fellow — Sep 2019-present

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
Recipient of the Governor General's Silver Medal (student graduating with the highest grade point average in the university at the undergraduate level)

RESEARCH EXPERIENCE

AEI Potsdam, Postdoctoral Researcher with Jean-Luc Lehners	2019-present
McGill, Ph.D. Student 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-Megantic Observatory, Visiting Scientist	Aug 2011-12-13, May 2012
MIT, Visiting Undergraduate Research Student	May 2011

HONORS AND AWARDS

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
Richard Tomlinson Scholarship, Bishop's	2010-11

PUBLICATIONS

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. Lehners and **J. Quintin**, *Cosmological consequences of a principle of finite amplitudes*, PRD **103**, 103525, arXiv:2102.05550 [hep-th]
18. J.-L. Lehners 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 SEMINARS AND CONFERENCE TALKS

2021

- *Cosmological Consequences of a Principle of Finite Amplitudes*
  AltFunCosmo'21, Jagiellonian U.
- *Discriminating Between Theories of the Very Early Universe*
  CAP Congress
- *Quantum Circuit Complexity of Primordial Perturbations*
  USTC

2020

- *Limiting Curvature in the Very Early Universe*
  ICTS Workshop - Physics of the Early Universe, Cargèse (canceled due to the pandemic)
- *Bouncing Cosmology: the Current State and the Road Ahead*
  QASTM Online Talk

2019

- *Cuscuton Gravity as a Classically Stable Limiting Curvature Theory*
  Cambridge-DAMTP, Workshop on Gravity and Cosmology @ Warsaw U., Dartmouth

2018

- *The Fate of a Contracting Universe and the Evolution of Stringy Black Holes*
  OSU
- *Black Hole Formation in a Contracting Universe*
  Harvard-ITC
- *Challenges for the Matter Bounce Scenario*
  Harvard-ITC, Princeton-PCTS, Northeast Cosmology Workshop @ McGill

2017

- *Stability of Nonsingular Cosmologies with Limiting Curvature*
  Imperial, COSMO @ Paris VII
- *The Fate of a Contracting Universe: Black Holes Before the Big Bang*
  Cambridge-DAMTP, UPenn, IAP, KCL, QMUL, Tufts, Portsmouth-ICG

2016

- *No-Go Theorem in Nonsingular Bouncing Cosmology*
  Tokyo U., Tokyo Tech, Fudan
- *Conspiracy in the Dark: A New Twist on Dark Matter and Dark Energy*
  USTC

2015

- *No-Go Theorem in Nonsingular Bouncing Cosmology*
  Geneva
- *The Successes and Problems of Inflationary Cosmology and its Alternatives*
  ENS-Lyon
- *Connecting Theories of the Very Early Universe with Cosmological Observations*
  Bishop's
- *Matter Creation in a Nonsingular Bouncing Cosmology*
  Beyond ΛCDM conference @ Oslo

2013

- *X-Ray Binary Evolution: The Effects of Self-Induced Irradiation*
  AAS Meeting @ Long Beach, CRAQ Meeting, CUPC @ Vancouver

INTERNAL SEMINARS

AEI Potsdam, Theoretical Cosmology Group Meeting/Journal Club (JC)

- On the role of conformal symmetry in the very early universe
- On classical, semi-classical and quantum versions of the null energy condition
- Isotropisation mechanisms in bouncing cosmology

- What are primordial standard clocks?
- Cuscuton gravity as a classically stable limiting curvature theory

McGill

- Cosmological scalar-tensor theories after GW170817, MSI Cosmo-ph JC
- The connection between mimetic gravity, limiting curvature, and the cuscuton, HEP-th JC
- The string/black hole correspondence, HEP-th Graduate Seminar
- Nonsingular spacetimes with limiting curvature, HEP-th JC
- Hamiltonian analysis of gauge systems: gravity as an example, HEP-th Graduate Seminar
- The fate of a contracting universe and the state of matter at high density, HEP-th JC
- The search for a theory of the very early universe, MSI Lunch Talk
- Stability of nonsingular cosmologies, HEP-th Graduate Seminar
- Thermal fluctuations in the very early universe, HEP-th Graduate Seminar
- Interacting dark matter and dark energy, how crazy is that?!, HEP-th JC
- Backreaction in cosmology, part I: averaging Einsteins equations, HEP-th Graduate Seminar
- Towards a no-go theorem in bouncing cosmology, HEP-th JC
- Black hole superradiance, Lecture as part of Advanced GR and QFT in curved spacetime (PHYS 731)
- Cosmological perturbations in bouncing cosmology, HEP-th Graduate Seminar
- More on manifolds, Lie groups and Lie algebras, Lecture as part of Geometry/Topology (MATH 691)
- Gravitational particle production: application to bouncing cosmology, HEP-th Graduate Seminar

Bishop's

- X-ray Binary Evolution: The Effects of Self-Induced Irradiation, Physics Seminar
- Amazing Astronomy using the New BU Telescope, Physics Seminar

WORKSHOPS, SCHOOLS AND ADDITIONAL CONFERENCES ATTENDED

Cosmological Frontiers in Fundamental Physics, Online Conference	May 2021
Gravitational-Wave Primordial Cosmology, Online Workshop	May 2021
The Quantum & The Gravity, Online Workshop	April 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 @ 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 @ Princeton-PCTS	Jan 2018
McGill-Dartmouth Cosmology Day @ McGill	May 2017
100 Years, General Theory of Relativity, Einstein Symposium @ ETH Zurich	Nov 2015
Workshop on AdS/CFT and the Resolution of Cosmological Singularities @ 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

Public talk (in French), "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

Semeando buracos negros supermassivos (Sowing supermassive black holes) by Rua Josephine in Cientistas Feministras (in Portuguese)
Evolution of cataclysmic variables and related binaries containing accreting white dwarfs in Phys.org
The 'Dark' Universe May Be Full of Strange Interactions by Charles Q. Choi in NOVA

PROFESSIONAL ACTIVITIES AND COMMUNITY

Referee for PRD, PRL, JCAP, PLB, CQG, EPJ C, MPLA, LHEP, Physica Scripta, and Ap&SS
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 @ McGill Mar 2018
Helped with the organization of the McGill-Dartmouth Cosmology Day @ McGill May 2017
Helped with the organization of the Theory Canada 8 Conference @ Bishop's May 2013

SUPERVISION AND TEACHING

AEI

- Co-supervised PhD student Caroline Jonas Oct 2019-Feb 2021

McGill

- Substitute Lecturer Sep 2017
  Very Early Universe (Instructor: Robert Brandenberger)
- Teaching Assistant Sep 2013-Apr 2017
  General Relativity and Cosmology (Instructor: Robert Brandenberger), *Modern Physics and Relativity* (Alex Maloney), *Electromagnetic Waves* (James Cline), *Introductory Physics – Mechanics* (Kenneth Ragan), *Honours Classical Mechanics 2* (Guillaume Gervais), *Honours Classical Mechanics 1* (Robert Brandenberger), *Topics in Classical Mechanics* (Gilbert Holder), *Modern Physics and Relativity* (Lilian Childress)

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 (Instructor: Ariel Edery), *Differential Equations* (Brad Willms), *Thermal and Fluid Physics* (Sylvain Turcotte)

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