

Jungjoon Leo Kim

PhD Student in Physics at Queen's University

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Education

- 2021–Present **PhD, Physics**, *Queen's University*, Kingston, ON, Canada.
2019–2021 **MMath, Applied Mathematics**, *University of Waterloo*, Waterloo, ON, Canada.
2014–2019 **BMath, Mathematical Physics**, *University of Waterloo*, Waterloo, ON, Canada.

Research Experience

- 2021–Present **Graduate Research Assistant**, *Queen's University*, Kingston, ON, Canada.
Advisor: Joseph Bramante
Thesis: TBD
- 2019–2021 **Graduate Research Assistant**, *University of Waterloo*, Waterloo, ON, Canada.
Advisor: Ghazal Geshnizjani
Thesis: Spectrum of Cuscuton Bounce and Cosmological Parameter Inference Using Dark Sirens
- 2019 **Undergraduate Research Assistant**, *McGill University*, Montréal, QC, Canada.
Advisor: Gantumur Tsogtgerel
Project: Quadrilateral Regge Elements
- 2018 **Undergraduate Research Assistant**, *University of Waterloo*, Waterloo, ON, Canada.
Advisor: Ghazal Geshnizjani
Project: Power Spectrum for Cuscuton Bounce
- 2016 **Undergraduate Researcher**, *Institute for Quantum Computing*, Waterloo, ON, Canada.
Advisor: Kyung Soo Choi
Project: PID Controllers for ECDL Frequency Stabilization

Publications

Published

1. **J. L. Kim** and G. Geshnizjani, *Spectrum of Cuscuton Bounce*, *JCAP* **03** (2021) 104 [[2010.06645](#)].

Talks & Presentations

- 2020 ‘Power spectrum for scalar and tensor perturbations in Cuscuton bounce’ ([poster](#) and talk)
The 9th KIAS Workshop on Cosmology and Structure Formation (virtual) – *Korea Institute for Advanced Study*
- 2020 “Towards scale invariance in Cuscuton bounce”
Applied Mathematics Graduate Seminar (virtual) – *University of Waterloo*
- 2020 “Towards scale invariance in Cuscuton bounce”
Cosmology group meeting (virtual) – *Perimeter Institute for Theoretical Physics*
- 2019 “Quadrilateral Regge elements”
Mathematics and Statistics Undergraduate Research Conference – *McGill University*
- 2018 “Power spectrum for Cuscuton bounce” (Awarded best presentation)
Applied Mathematics Undergraduate Research Mini-Conference – *University of Waterloo*

Honours & Awards

University of Waterloo

2021	Applied Mathematics Outstanding Teaching Assistant Award	\$500
2020	Math Domestic Graduate Student Award	\$3000
2019	Mathematics Domestic Masters Scholarship	\$5000
2019	Math Domestic Graduate Student Award	\$3000
2018	NSERC Undergraduate Student Research Award	\$4500
2016	NSERC Undergraduate Student Research Award (Declined)	\$4500
2014	Adel S. Sedra Entrance Scholarship	\$3000
2014	University of Waterloo President's Scholarship	\$1500

Conference & Workshop Participation

2021	IV Joint ICTP-Trieste/ICTP-SAIFR School on Cosmology (virtual) – <i>ICTP-SAIFR</i>
2020	The 9th KIAS Workshop on Cosmology and Structure Formation (virtual) – <i>KIAS</i>
2020	Cosmology from Home (virtual) – <i>Cosmology from Home</i>
2020	Michigan Cosmology Summer School (virtual) – <i>University of Michigan</i>
2019	Mathematics and Statistics Undergraduate Research Conference – <i>McGill University</i>
2018	Applied Mathematics Undergraduate Research Mini-Conference – <i>University of Waterloo</i>

Mentoring

- 2020 **Summer Undergraduate Research Project**, *University of Waterloo and Perimeter Institute for Theoretical Physics*, Waterloo, ON, Canada.
Project: Cross-correlation of the Astrophysical Gravitational Wave Background with Galaxy Surveys
Mentees: Kieana Fana (Waterloo), Jordan Krywonos (Perimeter), Madison Tindall (Perimeter)

Teaching Experience

- 2021–Present **Graduate Teaching Assistant**, *Queen's University*, Kingston, ON, Canada.
- PHYS 316: Methods in Mathematical Physics I
 - PHYS 344: Introduction to Quantum Mechanics
- 2019–2021 **Graduate Teaching Assistant**, *University of Waterloo*, Waterloo, ON, Canada.
- MATH 674: Special Relativity for Teachers (Spring 2021)
 - AMATH 373: Quantum Theory 1 (Winter 2021)
 - MATH 228: Differential Equations for Physics and Chemistry (Winter 2021)
 - AMATH 456: Calculus of Variations (Fall 2020)
 - MATH 636: Linear Algebra for Teachers (Spring 2020)
 - AMATH 353: Partial Differential Equations 1 (Winter 2020)
 - MATH 217: Calculus 3 for Chemical Engineering (Winter 2020)
 - MATH 115: Linear Algebra for Engineering (Fall 2019)
- 2016–2020 **Private Tutor**, *Self-employed*, Waterloo, ON, Canada.
- MTE 203: Advanced Calculus (Mechatronics)
 - MATH 124: Calculus for Kinesiology
 - MATH 127: Calculus for Honours Science
 - PHYS 112: Physics 2
 - PHYS 115: Mechanics for Engineering
 - PHYS 121: Mechanics for Honours Physics
 - MCAT Physics
- 2016–2019 **Undergraduate Teaching Assistant**, *University of Waterloo*, Waterloo, ON, Canada.
- MATH 137: Calculus 1 for Honours Mathematics (Fall 2016, Fall 2018)
 - MATH 138: Calculus 2 for Honours Mathematics (Winter 2017, Winter 2019)
 - ECE 206: Advanced Calculus 2 for Electrical Engineers (Fall 2017)

Graduate Coursework

Queen's University, Kingston, ON, Canada

- 2021 PHYS 825: Advanced Quantum Mechanics (Ongoing)
- 2021 PHYS 862: The Early Universe and Multimessenger Astrophysics (Ongoing)

University of Waterloo, Waterloo, ON, Canada

- 2021 AMATH 741: Numerical Solution of Partial Differential Equations
- 2020 PHYS 782: Fundamentals of Astrophysics II
- 2020 AMATH 731: Applied Functional Analysis
- 2020 AMATH 872: Quantum Field Theory for Cosmology
- 2019 AMATH 875: General Relativity for Cosmology
- 2019 PHYS 787: Cosmology

Perimeter Institute for Theoretical Physics, Waterloo, ON, Canada

- 2019 PHYS 601: Perimeter Scholars International Quantum Field Theory 1
- 2019 PHYS 603: Perimeter Scholars International Quantum Field Theory 2

Volunteer Activities

- 2019–2021 Instructor and Club Executive Member – University of Waterloo Kendo Club
- 2018–2019 VP of Communications – University of Waterloo Kendo Club
- 2018 Mathematics Ambassador – Faculty of Mathematics, University of Waterloo
- 2017–2018 Volunteer Notetaker – AccessAbility Services, University of Waterloo