

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

Honours & Awards

2022-2025	NSERC Canada Graduate Scholarship – Doctoral (CGS D)	\$105,000
2021	University of Waterloo Applied Math Outstanding Teaching Assistant Award	\$500
2018	NSERC Undergraduate Student Research Award	\$4,500
2016	NSERC Undergraduate Student Research Award [Declined]	\$4,500
2014	Adel S. Sedra Entrance Scholarship	\$3,000

Publications

Published

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

Talks & Seminars

- 2022 “A Poisson Log-Normal Framework for Cosmological Parameter Inference Using Dark Sirens”
TeVPA 2022 – Queen's University
- 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*

Conference & Workshop Participation

- 2022 TeVPA 2022 – *Queen's University*
- 2022 New Horizons in Astro and Particle Theory Workshop – *Queen's University*
- 2022 Gravitational Waves Beyond the Boxes II – *Perimeter Institute for Theoretical Physics*
- 2021 IV Joint ICTP-Trieste/ICTP-SAIFR School on Cosmology (virtual) – *ICTP-SAIFR*
- 2021 Astrostatistics Summer School XVI (virtual) – *Penn State University*
- 2020 The 9th KIAS Workshop on Cosmology and Structure Formation (virtual) – *KIAS*
- 2020 Cosmology from Home 2020 (virtual) – *Cosmology from Home*
- 2020 Michigan Cosmology Summer School (virtual) – *University of Michigan*
- 2019 Mathematics and Statistics Undergraduate Research Conference – *McGill University*
- 2018 Applied Mathematics Undergraduate Research Mini-Conference – *University of Waterloo*

Mentoring & Teaching

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

- 2021–Present **Graduate Teaching Assistant**, *Queen's University*, Kingston, ON, Canada.
- PHYS 345: Quantum Physics of Atoms, Nuclei and Particles (Winter 2022)
 - PHYS 316: Methods in Mathematical Physics I (Fall 2021)
 - PHYS 344: Introduction to Quantum Mechanics (Fall 2021)
- 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)

Institutional Service

2022–Present **Colloquium Committee Graduate Representative**, *Graduate Physics Society, Queen's University*, Kingston, ON, Canada.

2022 **Volunteer**, *TeVPA 2022, Queen's University*, Kingston, ON, Canada.

Graduate Coursework

Queen's University, Kingston, ON, Canada

2022 PHYS 832: Classical Electrodynamics

2022 PHYS 892: Particle Physics

2021 PHYS 825: Advanced Quantum Mechanics

2021 PHYS 862: The Early Universe and Multimessenger Astrophysics

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 603: Perimeter Scholars International Quantum Field Theory 2

2019 PHYS 601: Perimeter Scholars International Quantum Field Theory 1