

Jungjoon Leo Kim

MMath Graduate Student in Applied Mathematics

Research Interests

Early universe cosmology, inflation, alternatives to inflation, general relativity, modified gravity, gravitational wave cosmology

Education

- 2019–Present **MMath, Applied Mathematics**, *University of Waterloo*, Waterloo, ON, Canada.
2014–2019 **BMath, Mathematical Physics**, *University of Waterloo*, Waterloo, ON, Canada.

Research Experience

- 2019–Present **Graduate Research Assistant**, *University of Waterloo*, Waterloo, ON, Canada.
Supervisor: Dr. Ghazal Geshnizjani
Thesis: TBD
- 2019 **Undergraduate Research Assistant**, *McGill University*, Montréal, QC, Canada.
Supervisor: Dr. Gantumur Tsogtgerel
Project: Quadrilateral Regge Elements
- 2018 **Undergraduate Research Assistant**, *University of Waterloo*, Waterloo, ON, Canada.
Supervisor: Dr. Ghazal Geshnizjani
Project: Power Spectrum for Cuscuton Bounce
- 2016 **Undergraduate Researcher**, *Institute for Quantum Computing*, Waterloo, ON, Canada.
Supervisor: Dr. Kyung Soo Choi
Project: PID Controllers for ECDL Frequency Stabilization

Publications and Preprints

Submitted

1. **J. L. Kim** and G. Geshnizjani, *Spectrum of Cuscuton Bounce*, Submitted to JCAP (2020), [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

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

2020	The 9th KIAS Workshop on Cosmology and Structure Formation (virtual) – Korea Institute for Advanced Study
2020	Cosmology from Home (virtual) – <i>Cosmology from Home</i>
2020	48th SLAC Summer Institute (virtual) – <i>SLAC National Accelerator Laboratory</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>

Teaching Experience

2019–Present **Graduate Teaching Assistant**, *University of Waterloo*, Waterloo, ON, Canada.

- AMATH 373: Quantum Theory 1 (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–Present **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

University of Waterloo, Waterloo, ON, Canada

2021	AMATH 741: Numerical Solution of Partial Differential Equations (Ongoing)
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–Present Instructor and General 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