Raj Gandhi

Curriculum vitae

150 Louis-Pasteur Private, Ottawa, ON
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Canada
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rajgandhi97.github.io

Research interests

Algebraic geometry, category theory, Lie theory.

Education

Sep. 2021 - **Ph.D. in Mathematics**, *Cornell University*.
Thesis title: *TBA*.

Sep. 2019 - **M.Sc. in Mathematics**, *University of Ottawa*.
Aug. 2021 Thesis title: *Oriented cohomology rings of the semisimple linear algebraic groups of ranks* 1 *and* 2. *ruor.uottawa.ca/handle/10393/42566?mode=full*.
Supervisors: Alistair Savage and Kirill Zainoulline.

2015–2019 **B.Sc. in Physics-Mathematics**, *University of Ottawa*.
Summa cum laude.

Awards/Scholarships

Awards

2015–2019 **Dean's honour list**, *University of Ottawa*.

2018 **Student paper award**,
Department of mathematics and statistics, University of Ottawa.
(Awarded for paper titled *Decomposing Frobenius Heisenberg categories*.)

External scholarships

2021 **Canada Graduate Scholarship - Doctoral**, *NSERC*.
(Awarded for Sep. 2021 - Aug. 2024 session.) - Declined

2021 **Postgraduate Scholarship - Doctoral**, *NSERC*.
(Awarded for Sep. 2021 - Aug. 2024 session.) - Accepted

2020 **Ontario graduate scholarship**, *Ontario government*.
(Awarded for Sep. 2020 - Aug. 2021 session.) - Accepted

2019 **Canada graduate scholarship - M.Sc.**, *NSERC*.
(Awarded for Sep. 2019 - Aug. 2020 session.) - Accepted

2019 **Ontario graduate scholarship**, *Ontario government*.
(Awarded for Sep. 2019 - Aug. 2020 session.) - Declined

2019 **Undergraduate student research award**, *NSERC*.

2018 **Undergraduate student research award**, *NSERC*.

2017 **Undergraduate student research award**, *NSERC*.

Internal scholarships

2020 **Excellence scholarship - M.Sc.**, *University of Ottawa*.
(Awarded for Sep. 2020 - Aug. 2021 session.)

2019 **Excellence scholarship - M.Sc.**, *University of Ottawa*.
(Awarded for Sep. 2019 - Aug. 2020 session.)

2016 **Undergraduate research opportunity program**, *University of Ottawa*.

2015 **Admission scholarship - B.Sc.**, *University of Ottawa*.

Experience

Undergraduate research experience

May–Aug. 2019 **Undergraduate student researcher**, *Carleton University*, Ottawa.
Project title: *Rigid realizations of modular forms in Calabi-Yau threefolds*.
Supervisors: Colin Ingalls and Adam Logan.

May–Aug. 2018 **Undergraduate student researcher**, *University of Ottawa*.
Project title: *Decomposing Frobenius Heisenberg categories*.
Supervisor: Alistair Savage.

May–Aug. 2017 **Undergraduate student researcher**, *University of Ottawa*.
Project title: *The formal affine Demazure algebra and real finite reflection groups*.
Supervisor: Kirill Zainoulline.

Teaching experience

2019-2021 **Teaching assistant**, *University of Ottawa*.

- MAT 1320X: Calculus I. Tutorial instructor. (Summer 2021).
- MAT 2355: Introduction to Geometry. Grader. (Winter 2021).
- MAT 1348: Discrete Mathematics for Computing. Grader and tutorial instructor. (Winter 2021).
- MAT 2141: Honours Linear Algebra. Grader. (Fall 2020).
- MAT 1341: Introduction to Linear Algebra. Grader and tutorial instructor. (Fall 2020).
- MAT 1332: Calculus II for the Life Sciences. Grader and tutorial instructor. (Fall 2020).
- MAT 1300X: Mathematical Methods I. Tutorial instructor. (Summer 2020)
- MAT 1320: Calculus I. Grader and tutorial instructor. (Winter 2020).
- MAT 1348: Discrete Mathematics for Computing. Grader and tutorial instructor. (Winter 2020).
- MAT 1362: Mathematical Reasoning and Proofs. Grader. (Winter 2020).
- MAT 1362: Mathematical Reasoning and Proofs. Grader and tutorial instructor. (Fall 2019).

Invited Talks

June 3, 2021 **Algebra and Geometry of Homogeneous Spaces**, *The formal group ring and real finite reflection groups*, University of Ottawa.

Programming

See https://github.com/RajGandhi97 for some of the code that I have written and the slides for the talks I have given.

Presentations

March 24, 2016 **UROP Symposium**, *The ring of twisted differential operators of reflection group* $I_2(5)$, University of Ottawa.
ruor.uottawa.ca/handle/10393/36283.

Papers

Published/Accepted

1. Decomposing Frobenius Heisenberg categories, *Journal of Algebra and its Applications*. (2020). Vol. 19. No. 5. 31 pages. arxiv.org/abs/1905.07463. doi.org/10.1142/S0219498820500942.

Preprints

2. The formal affine Demazure algebra and real finite reflection groups. arxiv.org/abs/1905.07463.
3. Diagrammatics for F_4. (Joint with Alistair Savage and Kirill Zainoulline.) arxiv.org/abs/2107.12464.