

# Raj Gandhi

## Curriculum vitae

Malott Hall, Cornell University  
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📁 [rajgandhi97.github.io](https://github.com/rajgandhi97)

### Research interests

Algebraic geometry.

### 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](https://ruor.uottawa.ca/handle/10393/42566).

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*.

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## Teaching Experience

### 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).

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## Outreach

- March 2019 Aria Beaupré and I taught a four-lesson-long mini-course on the topic of voting theory to middle school students at Namasté Montessori school in Ithaca, NY. This opportunity was provided by the GRASSHOPR program at Cornell.

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## Invited Talks

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

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## Research

### Papers/Preprints

1. The formal affine Demazure algebra and real finite reflection groups. *Algebras and Representation Theory*. To appear. [arxiv.org/abs/1905.07463](https://arxiv.org/abs/1905.07463).
2. Diagrammatics for  $F_4$ . (Joint with Alistair Savage and Kirill Zainoulline.) *Bulletin of the London Mathematical Society*. To appear. [arxiv.org/abs/2107.12464](https://arxiv.org/abs/2107.12464).

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

#### Posters

1. The ring of twisted differential operators of reflection group  $I_2(5)$ . (2016). University of Ottawa library. [ruor.uottawa.ca/handle/10393/36283](https://ruor.uottawa.ca/handle/10393/36283).