Kimoi Kemboi

Contact Information

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Education

Cornell University

Ph.D. Candidate, Mathematics (expected May 2023)

- Dissertation topic: Full exceptional collections on linear GIT quotients
- Advisor: Daniel Halpern-Leistner

M.S. in Mathematics, December 2020

University of Texas at Arlington

B.S. in Mathematics, summa cum laude, May 2017

Honors and Awards

2020	Eleanor Norton York Award, Cornell University
2020–2022	Summer Research Fellowship
2017–2018	Graduate Fellowship, Cornell University
2013–2017	Honors Distinction Scholarship, University of Texas at Arlington

Research Interests

Algebraic geometry: derived categories of coherent sheaves, geometric invariant theory, homological algebra, moduli theory

Papers

Full strong exceptional collections of vector bundles on rank-two linear GIT quotients, with Daniel Halpern-Leistner, https://arxiv.org/abs/2202.12876

> We produce a large class of linear GIT quotients by a reductive group of rank two that admit a "full strong exceptional collection" consisting of vector bundles.

Teaching Experience

- Cornell University:
  - ❑ Instructor:
    - Spring 2022 – Calculus I
    - Spring 2020 – Calculus I
  - ❑ Teaching Assistant:
    - Fall 2021 – Graduate Algebra
    - Fall 2020, Spring 2021, Fall 2022 – Advanced Linear Algebra

- Fall 2019 – Engineering Calculus
- Fall 2018, Spring 2019 – Introductory Linear Algebra

Conference Lectures

Full exceptional collections on rank-two linear GIT quotients, Derived categories and moduli spaces FRG workshop, Cornell University (April 2022).

Full strong exceptional collections on rank two linear GIT quotients, Route 81 conference, zoom edition (November 2021).

Seminar Talks

Full strong exceptional collections on rank-two linear GIT quotients, Algebraic geometry seminar, University of Utah (Upcoming, December 2022)

Full strong exceptional collections on rank-two linear GIT quotients, Algebraic geometry seminar, Brown University (Upcoming, October 2022)

Full strong exceptional collections on rank-two linear GIT quotients, Algebraic geometry seminar, Columbia University (October 2022)

Lectures on Grothendieck duality, Algebraic geometry student seminar, Cornell University (March 2022).

Homological projective duality, Algebraic geometry student seminar, Cornell University (July 2021).

The Artin-Lurie representability theorem, Berstein seminar on derived algebraic geometry, Cornell University (April 2021).

Stable infinity categories, Berstein seminar on derived algebraic geometry, Cornell University (February 2021).

Full strong exceptional collections on linear GIT quotients, Algebraic geometry student seminar, Cornell University (October 2020).

Service

- Served as a mentor for undergraduate students at Cornell participating in the *directed reading program* (Fall 2021 – Present).
- Co-organized student seminars at Cornell University: Olivetti graduate student seminar (Spring 2021), Algebraic geometry student seminar (Fall 2020).
- Served as a representative of the Cornell mathematics department in outreach efforts organized at the annual *Field of Dreams* conference, which aims to support students who are underrepresented or underserved in mathematics to pursue graduate degrees in mathematical sciences (Fall 2020, Fall 2021).

- Served as a volunteer for the annual *Expanding Your Horizons* conference at Cornell University, a one-day science conference for girls between 7th and 9th grade, where I helped design and facilitate engaging mathematical concepts for the participants (Spring 2018, Spring 2019).
- Served as a teaching assistant at the *Awesome Math* summer camp (Summer 2018).

Workshops Attended

Aug. 2022	AGNES summer school, Brown University, "Moduli of higher-dimensional varieties".
July. 2022	Derived FRG workshop, University of Michigan, Ann Arbor "Derived Categories, Moduli Spaces, and Hyperkähler Varieties".
Sept. 2021	Lukecin autumn school in algebraic geometry, zoom edition, "K3 categories and hyperkähler moduli spaces".
June 2018	Fields institute graduate summer school, McMaster University, "Algebraic group actions".
May 2016	Women and Mathematics, Institute for Advanced Study, "Curves, loops, and words in geometry".