Kimoi J. Kemboi

Contact Information

Department of Mathematics
Cornell University
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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

- Thesis: Representation theory of finitely extended Poincaré superalgebras in dimension four.

Honors and Awards

2020	Eleanor Norton York Award, Cornell University
2020–2021	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, moduli of sheaves

Publications

In preparation:

"Full strong exceptional collections of vector bundles on rank two linear GIT quotients", with Daniel Halpern-Leistner.

> 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 2020 – Calculus I
  - ❑ Teaching Assistant:
    - Fall 2021 – Graduate Algebra
    - Fall 2020, Spring 2021 – Honors Linear Algebra
    - Fall 2019 – Engineering Calculus
    - Fall 2018, Spring 2019 – Introductory Linear Algebra
- University of Texas at Arlington
  - Served for 6 semesters as a supplemental instruction leader for engineering calculus (2014 – 2016).

Conference Lectures

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

Workshops/ mini-schools Attended

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".

Seminar Talks

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

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

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

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

Topological cyclic homology, Berstein seminar -Algebraic K-theory, Cornell University (December 2019).

Milnor K-theory and Matsumoto's theorem, Berstein seminar -Algebraic K-theory, Cornell University (September 2019).

Stratifications of the unstable locus, Algebraic geometry student seminar, Cornell University (July 2019).

Service

- Served as a mentor for undergraduate students at Cornell participating in the *directed reading program* (Fall 2021).
- 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).