

Yeqin Liu

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Research Interests	Algebraic Geometry: Sheaves, Bridgeland stability, and derived categories.	
Education	Ph.D in mathematics, under supervision of Izzet Coskun University of Illinois at Chicago	September 2019- May 2024
	B.S. in Mathematics Nanjing University	September 2015- July 2019
Papers and Preprints	<ol style="list-style-type: none">1. <i>Higher rank Brill-Noether theory on \mathbb{P}^2</i>, International Mathematics Research Notices, 2022, rnac333, joint work with Benjamin Gould and Dorian Woo-Hyung2. <i>The cohomology of spherical vector bundles on K3 surfaces</i>, arXiv:2210.11030v2, under revision at EPIGA3. <i>Nonexistence of exceptional bundles on \mathbb{P}^3 with maximal possible ranks</i>, arXiv:2302.11743v2, submitted4. <i>Spherical vector bundles on nodal K3 surfaces</i>, arXiv:2307.00091v1, submitted5. <i>Cones of effective cycles on blow ups of projective spaces along rational curves</i>, arXiv:2308.13964v1, submitted joint work with Benjamin Gould	
Awards	UIC Dean's Scholar Fellowship	2023 Fall
Organized Events	<ol style="list-style-type: none">1. <i>Midwest Algebraic Geometry Graduate Student Conference 2022</i> 2022 Summer co-organized with Sixuan Lou, Shравan Patankar, Benjamin Tighe, Junyan Zhao2. <i>Derived Category Student Seminar</i> 2022 Spring co-organized with Benjamin Gould3. <i>UIC Graduate Algebraic Geometry Seminar</i> 2022 Spring co-organized with Kuang Yu Wu4. <i>Gromov-Witten Theory Student Seminar</i> 2021 Winter5. <i>UIC Graduate Algebraic Geometry Seminar</i> 2021 Fall co-organized with Kuang Yu Wu	
Mentoring	<i>Directed Reading Program in Algebraic Geometry</i> Mentee: Neelima Borade	2020 Spring
Invited Talks	<ol style="list-style-type: none">1. <i>Nonexistence of exceptional bundles on \mathbb{P}^3 with maximal possible ranks</i> 2023 Fall UIC algebraic geometry seminar, Chicago, Illinois2. <i>Nonexistence of exceptional bundles on \mathbb{P}^3 with maximal possible ranks</i> 2023 Fall Michigan algebraic geometry seminar, Ann Arbor, Michigan3. <i>The cohomology of spherical vector bundles on K3 surfaces</i> 2022 Winter BUGCAT 2022, Binghamton, New York4. <i>Higher rank Brill-Noether theory on \mathbb{P}^2</i> 2022 Summer GTA 2022, Philadelphia, Pennsylvania	

Posters

1. *Spherical vector bundles on nodal K3 surfaces* 2023 Fall
MAGNTS 2023, Ann Arbor, Michigan
2. *The cohomology of spherical vector bundles on K3 surfaces* 2022 Fall
MAGNTS 2022
3. *Higher rank Brill-Noether theory on \mathbb{P}^2* 2022 Summer
VBAC 2022: Moduli spaces and vector bundles, Warwick, UK
4. *Higher rank Brill-Noether theory on \mathbb{P}^2* 2022 Summer
Richmond Geometry Festival 2022

**Talks
at UIC**

1. *The Grauert-Mulich theorem and Bogomolov inequality* 2023 Spring
RTG reading group on moduli spaces of sheaves
2. *Maximal rank exceptional vector bundles on \mathbb{P}^3 are constructive* 2023 Spring
UIC graduate algebraic geometry seminar
3. *Divisors on toric varieties* 2022 Fall
RTG reading group on toric varieties
4. *The cohomology of spherical vector bundles on K3 surfaces* 2022 Fall
UIC graduate algebraic geometry seminar
5. *The Brauer-Manin obstruction* 2022 Fall
UIC graduate number theory seminar
6. *The Mukai's Program* 2022 Fall
UIC graduate algebraic geometry seminar
7. *Du Bois singularities* 2022 Spring
UIC graduate algebraic geometry seminar
8. *Donaldson-Thomas invariants* 2021 Winter
Gromov-Witten theory student seminar
9. *Gromov-Witten invariants and quantum cohomology rings* 2021 Winter
Gromov-Witten theory student seminar
10. *Bridgeland stability conditions on K3 surfaces* 2021 Fall
UIC graduate algebraic geometry seminar
11. *Dice of 17 faces? (Regular polyhedrons of all dimensions)* 2021 Fall
UIC Math Club 2021
12. *Irrationality of cubic threefolds* 2021 Fall
UIC graduate algebraic geometry seminar
13. *Setup of Mori's program for $M_{0,0}(\mathbb{P}^3, 3)$* 2021 Summer
Hilbert scheme of twisted cubics student seminar
14. *Resolution of singularities (Hironaka's theorem) II* 2021 Spring
UIC graduate algebraic geometry seminar
15. *Resolution of singularities (Hironaka's theorem) I* 2021 Spring
UIC graduate algebraic geometry seminar
16. *A brief introduction to Brill-Noether theory* 2021 Spring
UIC graduate student colloquium
17. *Introduction to algebraic surfaces* 2021 Spring
UIC graduate algebraic geometry seminar
18. *Introduction to Ulrich bundles* 2020 Fall
UIC graduate algebraic geometry seminar

**Teaching
Experience**

Mathematical reasoning (Fall 2019), Elementary linear algebra (Spring 2020), Calculus I (Fall 2020), Calculus I (Spring 2021), Calculus I (Fall 2021), Calculus II (Spring 2022), Precalculus (Summer 2022), Mathematical reasoning (Fall 2022), Calculus I (Spring 2023), Calculus II (Summer 2023), Calculus II (Fall 2023)

References

- Izzet Coskun (PhD advisor)
- Emanuele Macrì
- Alexander Perry
- John Steenberg (teaching)