

Allen Yuan

CONTACT INFORMATION	Address: Department of Mathematics, Columbia University, New York, NY 10027 Email: yuan@math.columbia.edu Webpage: allenyuan.me
RESEARCH	Algebraic topology, higher category theory, and interactions with algebraic K -theory, number theory, and algebraic geometry.
EDUCATION & EMPLOYMENT	<p><i>NSF Postdoctoral Fellow</i> 2020 - Present Columbia University, New York NY</p> <p><i>Visitor</i> 2020 - 2021 Institute for Advanced Study, Princeton, NJ</p> <p><i>Ph.D. Mathematics</i> 2015 - 2020 Massachusetts Institute of Technology, Cambridge, MA Dissertation: <i>The Frobenius in higher algebra</i>, advised by Jacob Lurie.</p> <p><i>A.B. in Mathematics, secondary in Computer Science</i> 2011 - 2015 Harvard University, Cambridge, MA</p>
GRANTS FELLOWSHIPS & AWARDS	<ul style="list-style-type: none">• NSF Mathematical Sciences Postdoctoral Research Fellowship 2020 - 2023• NSF Graduate Research Fellowship 2015 - 2020• Barry M. Goldwater Scholarship 2014 - 2015• William Lowell Putnam Competition, 1st Place Team 2012• International Mathematics Olympiad, Silver Medal 2010• USA Mathematics Olympiad, 1st Place 2010
PAPERS	<ol style="list-style-type: none">15. <i>G-spectra of cyclic defect</i> (with T. Feng and D. Treumann), 2023.14. <i>The sphere of semiadditive height 1</i>, submitted, 2022.13. <i>The Chromatic Nullstellensatz</i> (with R. Burklund and T. Schlank), submitted, 2022.12. <i>Examples of chromatic redshift in algebraic K-theory</i>, submitted, 2021.11. <i>Chromatic convergence for the algebraic K-theory of the sphere spectrum</i> (with A. Blumberg and M. Mandell), submitted, 2021.10. <i>Higher semiadditive Grothendieck-Witt theory and the $K(1)$-local sphere</i> (with S. Carmeli), to appear in Communications of the American Mathematical Society, 2021.9. <i>A version of Waldhausen's chromatic convergence for TC</i> (with A. Blumberg and M. Mandell), to appear in Bulletin of the London Mathematical Society, 2021.8. <i>Wilson Spaces, Snaithe Constructions, and Elliptic Orientations</i> (with H. Chatham and J. Hahn), submitted, 2019.7. <i>Integral Models for Spaces via the Higher Frobenius</i>, Journal of the American Mathematical Society 36 (2023).

6. *Exotic Multiplications on Periodic Complex Bordism* (with J. Hahn). **Journal of Topology** 13 (2020).
5. *Multiplicative Structure in the Stable Splitting of $\Omega SL_n(\mathbb{C})$* , (with J. Hahn), **Advances in Mathematics** 348 (2019).

Pre-graduate school:

4. *Irreducible Canonical Representations in Positive Characteristic* (with B. Gunby and A. Smith), *Research in Number Theory* **1(1)** (2015).
3. *Proof of a Conjecture of Guy on Class Numbers* (with L. Chua, B. Gunby, and S. Park), *International Journal of Number Theory*, **11(4)** (2015).
2. *Linearly Many Faults in Arrangement Graphs* (with E. Cheng and L. Liptak), *Networks*, **61(4)** (2013).
1. *Linearly Many Faults in (n, k) -Star Graphs* (with E. Cheng and L. Liptak), *International Journal for the Foundations of Computer Science*, **22(7)** (2011).

INVITED TALKS	28. Generalised Lie algebras in Derived Geometry Utrecht, Netherlands	TBD
	27. MIT Topology Seminar	Dec 2022
	26. UChicago Topology Seminar	Nov 2022
	25. Northwestern Topology Seminar	Nov 2022
	24. AMS Western Sectional Meeting <i>The chromatic Nullstellensatz</i>	Oct 2022
	23. UPenn geometry and topology seminar <i>The geometric points of a cohomology theory</i>	Apr 2022
	22. Electronic Computational Homotopy Theory Seminar <i>The chromatic Nullstellensatz</i>	Apr 2022
	21. UCSD Topology Seminar <i>The chromatic Nullstellensatz</i>	Mar 2022
	20. Chicagoland Topology Seminar <i>The chromatic Nullstellensatz</i>	Feb 2022
	19. Utrecht Chromatic Homotopy Theory seminar <i>Ambidexterity Phenomena at height 1</i>	Jan 2022
	18. Munster Topology Seminar <i>Examples of chromatic redshift in algebraic K-theory</i>	Dec 2021
	17. Jerusalem Topology seminar <i>Examples of chromatic redshift in algebraic K-theory</i>	May 2021
	16. Electronic Algebraic K-theory Seminar <i>Examples of chromatic redshift in algebraic K-theory</i>	April 2021
	15. Bonn Topology Seminar <i>Ambidexterity Phenomena at height 1</i>	Dec 2020
	14. EPFL Topology Seminar <i>Integral models for spaces via the higher Frobenius</i>	Sep 2020

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| 13. Oberseminar: Integral Homotopy Theory (after Allen Yuan)
University of Regensburg
<i>\mathbb{E}_∞-coalgebras and a generalized Segal conjecture</i> | Jul 2020 |
| 12. CUNY Geometry and Topology Seminar
<i>Integral models for spaces via the higher Frobenius</i> | Jun 2020 |
| 11. Johns Hopkins Topology Seminar
<i>A generalized Segal Conjecture</i> | Feb 2020 |
| 10. Copenhagen Topology Seminar
<i>A generalized Segal Conjecture</i> | Dec 2019 |
| 9. Oberwolfach Seminar: Topological Cyclic Homology and Arithmetic
<i>Integral models for spaces via the higher Frobenius</i> | Oct 2019 |
| 8. UVA Topology Seminar
<i>Integral models for spaces via the higher Frobenius</i> | Oct 2019 |
| 7. AMS Sectional Meeting: Homotopy theory and Algebraic K-theory
Binghamton University
<i>Integral models for spaces via the higher Frobenius</i> | Oct 2019 |
| 6. UCLA Algebraic Topology Seminar
<i>The Frobenius in higher algebra</i> | Feb 2019 |
| 5. USC Geometry and Topology seminar
<i>The Frobenius in higher algebra</i> | Feb 2019 |
| 4. UIC Topology Seminar
<i>The Frobenius in higher algebra</i> | Oct 2018 |
| 3. UChicago Topology Seminar
<i>The Frobenius in higher algebra</i> | Oct 2018 |
| 2. Northwestern Topology Seminar
<i>The Frobenius in higher algebra</i> | Oct 2018 |
| 1. BIRS-CMO: ∞ -categories, ∞ -operads, and applications
Oaxaca, Mexico
<i>The Frobenius for coalgebras</i> | May 2018 |

TEACHING

Columbia University

Instructor for Math UN2010: Linear Algebra Spring 2022

Massachusetts Institute of Technology

Teaching Assistant for 18.03: Differential Equations Spring 2018

MIT MathROOTS

Academic mentor Summer 2019

Academic mentor Summer 2018

MIT Directed Reading Program

Mentor for Alexander Clifton and Miguel Young Winter 2015 - 2016

Harvard University

Course Assistant for Math 123: Rings and Fields Spring 2014

IDEA Math

Instructor 2011 - 2013

PROFESSIONAL
ACTIVITIES
& SERVICE

Columbia Algebraic Topology Seminar
Co-organizer

Spring 2022 - present

MIT Juvitop
Organizer

Fall 2016

MIT Topology seminar
Organizer

Spring 2016

Referee for: Adv. Math., Isr. J. Math

Expert opinions for: IMRN, J. Top., Compositio