

Hannah K. Larson

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Citizenship: US Citizen

Research Interests Algebraic Geometry: Moduli spaces, Intersection theory

Education **Stanford University**, Ph.D. candidate in Mathematics, expected June 2022
Harvard University, B.A. in Mathematics, summa cum laude, Phi Beta Kappa, John Harvard Scholar, May 2017

Selected Honors (Grad School) Maryam Mirzakhani Graduate Fellowship, 2019
Hertz Fellowship (5 year graduate school fellowship), 2017
NSF Fellowship (3 year graduate school fellowship), 2017
Stanford Graduate Research Fellowship (5 year graduate fellowship), 2017

Selected Honors (Undergraduate) Alice T. Schafer Prize (top national undergraduate female in math): Winner, 2017
Mumford Prize (most promising senior math concentrator at Harvard), 2017
Friends of Harvard Math (prize for outstanding senior thesis): Winner, 2017
Robert Fletcher Rogers Prize 2017 (for talk at Harvard math table): first place.
Barry M. Goldwater Scholarship, 2015

Selected Honors (High School) Davidson Fellow Laureate, 2013 (\$50,000 scholarship)
Intel Science Talent Search, National 4th Place, 2013 (\$40,000 scholarship)

Publications *An enriched count of the bitangents to a smooth plane quartic*, preprint at <https://arxiv.org/abs/1909.05945>

A refined Brill-Noether theory over Hurwitz spaces, preprint at <https://arxiv.org/abs/1907.08597>

Universal degeneracy classes for vector bundles on \mathbb{P}^1 bundles, preprint at <http://arxiv.org/abs/1906.10290>

Normal bundles of lines on hypersurfaces, Michigan Math Journal, preprint at [arXiv:1705.01972](https://arxiv.org/abs/1705.01972)

Hyperbolicity of partition Jensen polynomials, with I. Wagner, *Research in Number Theory*, preprint at [arXiv:1904.12727](https://arxiv.org/abs/1904.12727)

Coefficients of McKay-Thompson series and distributions of the moonshine module, to appear in *Proc. of the Amer. Math. Soc.*, preprint at [arXiv:1508.03742](https://arxiv.org/abs/1508.03742)

Modular units from quotients of Rogers-Ramanujan type q -series, to appear in *Proc. of the Amer. Math. Soc.*, preprint at [arXiv:1506.08313](https://arxiv.org/abs/1506.08313)

Shifted distinct-part partition identities in arithmetic progressions, with E. Alwaise et al., published in *Annals of Combinatorics*, Vol. 21, No. 4, 2017; preprint at [arXiv:1507.07943](https://arxiv.org/abs/1507.07943)

Proof of conjecture regarding the level of Rose's generalized sum-of-divisor functions, published in *Research in Number Theory*, **1**, 1:16, 2015, preprint at [arXiv:1507.02671](https://arxiv.org/abs/1507.02671)

Generalized Andrews-Gordon style identities, published in *Research in Number Theory*, **1**, 1:13, 2015, preprint at [arXiv:1506.05063](https://arxiv.org/abs/1506.05063)

Traces of singular values of Hauptmoduln, with L. Beneish, published in *Int. J. Number Theory*, Vol. 11, 2015, preprint at [arXiv:1407.4479](https://arxiv.org/abs/1407.4479)

Congruence properties of Taylor coefficients of modular forms with G. Smith, published in *Int. J. Number Theory*, Vol. 10, 2014, preprint at [arXiv:1406.2999](https://arxiv.org/abs/1406.2999)

Pseudo-unitary non-self-dual fusion categories of rank 4, published in *Journal of Algebra*, Vol. 415, 2014, preprint at [arXiv:1401.1879](https://arxiv.org/abs/1401.1879)

- Teaching**
- Stanford Elementary Math Circle**, Instructor, Stanford, CA, Spring 2017 – present
 - Emory University Number Theory REU**, Instructor, Decatur, GA, Summer 2017
 - Girl's Angle: a Math Club for Girls**, Mentor, Cambridge, MA, 2014–2017
 - Harvard University**, Undergraduate Course Assistant in Mathematics, Cambridge, MA, 2015–2016, *Certificate of Distinction in Teaching*
 - Math 137 (undergraduate algebraic geometry)*, Spring 2016.
 - Math 129 (undergraduate algebraic number theory)*, Spring 2015.
- Invited Talks**
- Lines in Algebraic Geometry**; San Francisco State University, Fall 2019
 - A refined Brill-Noether theory over Hurwitz spaces**; University of Kentucky, Fall 2019
 - A refined Brill-Noether theory over Hurwitz spaces**; University of Illinois Chicago, Fall 2019
 - Vector bundles on \mathbb{P}^1 bundles**; Berkeley Algebraic Geometry Seminar, Fall 2019
 - Vector bundles on \mathbb{P}^1 bundles**; University of Wisconsin Algebra and Algebraic Geometry Seminar, Spring 2019
 - Lines on hypersurfaces**; Indiana University Algebra Seminar, Fall 2018
 - Lines on hypersurfaces**; Harvard Friends of Mathematics Meeting, Spring 2017
 - Lines on hypersurfaces with certain normal bundles**; Stanford Algebraic Geometry Seminar, Winter 2017
- Other presentations**
- Lines in Algebraic Geometry**; University of Kentucky Math Club, Fall 2019
 - Brill-Noether theory**; Stanford Student Algebraic Geometry Seminar, Spring 2019
 - Vector bundles on \mathbb{P}^1 bundles**; Stanford Student Algebraic Geometry Seminar, Winter 2019
 - Normal bundles of lines on hypersurfaces**; Stanford Student Algebraic Geometry Seminar, Fall 2018
 - Counting rational plane curves of degree d through $3d - 1$ points**; Stanford Student Algebraic Geometry Seminar, Spring 2018
 - Lines on hypersurfaces with certain normal bundles**; Harvard Graduate Algebraic Geometry Seminar, Fall 2016
 - Lines on hypersurfaces**; Harvard Science Research Conference, *Keynote speaker*, Fall 2016
 - Partition Party**; Harvard Math Table, Spring 2016
 - Why $e^{\pi\sqrt{163}}$ is so close to an integer**; Harvard Math Table, Fall 2015
 - Congruence properties of Taylor coefficients of modular forms**, MAA Undergraduate Poster Session, *Outstanding Presentation Award*, Winter 2014