

# Alexander Smith

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Born: March 4, 1993

## Appointments held

2020 - 2021 NSF Postdoctoral fellow at MIT  
2021 - Clay fellow at Stanford University

## Education

2015 - 2020 Harvard University, PhD in Mathematics  
2011 - 2015 Princeton University, AB in Mathematics

## Publications & Talks

### ARTICLES

*The distribution of  $\ell^\infty$ -Selmer groups in degree  $\ell$  twist families.* In preparation.

*The distribution of fixed point Selmer groups in twist families.* In preparation.

*The Cassels–Tate pairing for finite Galois modules.* In preparation (arXiv 2103.08530)

*Field change for the Cassels–Tate pairing and applications to class groups.* In preparation (arXiv 2206.13403)

*Algebraic integers with conjugates in a prescribed distribution.* Submitted (arXiv 2111.12660)

*$2^\infty$ -Selmer groups,  $2^\infty$ -class groups, and Goldfeld’s conjecture.* In preparation (arXiv 1702.02325)

*Governing fields and statistics for 4-Selmer groups and 8-class groups.* In preparation (arXiv 1607.07860)

*The congruent numbers have positive natural density.* In preparation (arXiv 1603.08479)

*Irreducible canonical representations in positive characteristic* (with Benjamin Gunby and Allen Yuan). *Research in Number Theory* 1 : 3 (2015).

*Ball packings with periodic constraints* (with Robert Connelly and Jeffrey Shen). *Discrete & Computational Geometry* 52 : 4 (2014).

#### INVITED TALKS

- Sept 2016 *Statistics for 8-class groups and 4-Selmer groups*  
Number Theory / Representation Theory Seminar, UW Madison
- Mar 2017  *$2^\infty$ -Selmer groups,  $2^\infty$ -class groups, and Goldfeld's conjecture*  
Joint Columbia-CUNY-NYU Number Theory Seminar  
30th Southeastern Regional Meeting on Numbers
- Sept 2017 Princeton University/IAS Number Theory Seminar
- Oct 2017 Harvard University Number Theory Seminar
- Feb 2018 Five College Number Theory Seminar (UMass Amherst)
- Mar 2018 Berkeley Arithmetic Geometry and Number Theory Seminar
- May 2018 Algebraic Groups and Geometrization of the Langlands Program conference (ENS Lyon)
- Jun 2018 Seminar talk at University College London  
New Developments in Arithmetic Geometry (Tsinghua University)  
Automorphic Forms and L-functions (Shandong University, Qingdao)
- Nov 2018 UChicago Number Theory Seminar
- Dec 2018 Quebec-Vermont Seminar (McGill)
- Jan 2019 Joint Mathematics Meeting:  
"Counting Methods in Number Theory" invited paper session  
"Arithmetic Statistics" special session
- Mar 2019 Hawaii Number Theory Conference
- Apr 2019 AMS Grad Student Conference (Brown)
- Jun 2019 Enumerative Arithmetic and the Cohen-Lenstra Heuristic (Max Planck)  
Rational Points on Irrational Varieties (Institut Henri-Poincaré)
- Jul 2019 JNT Biennial Conference
- Sep 2019 UMichigan Number Theory Seminar
- Oct 2019 BostonU Number Theory Seminar
- Feb 2022 UCSD number theory seminar
- Apr 2022 UGA number theory seminar
- Feb 2022 *Simple abelian varieties over finite fields with extreme point counts*  
Number theory days (UCSD)
- Apr 2022 *Anabelian days down in Georgia* (UGA)

## Teaching positions

Spring  
2017, 2018,  
2019      Teaching Fellow for Math 21a (multivariable calculus)

## Honors & awards

2015- 2018    Pierce Fellowship (graduate student fellowship at Harvard)  
2019          David Goss Prize in Number Theory  
2019-2020    Merit/Graduate Society Term-time Research Fellowship

Last updated: July 26, 2022