Levent Alpöge

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URL: http://people.math.harvard.edu/~alpoge
Born: April 1, 1992, Long Island, U.S.A.
Nationalities: U.S.A., Turkey.

Positions

2021-2025 Junior Fellow, Society of Fellows, Harvard University
2020-2022 NSF Postdoctoral Fellow (Columbia/Harvard)

Education

2020 PhD in Mathematics, Princeton University
Thesis: *Points on Curves*
Advisor: Manjul Bhargava
2016 MA in Mathematics, Princeton University
2015 MASt in Mathematics, University of Cambridge
2014 AM in Physics, Harvard University
2014 AB in Mathematics, Harvard University
GPA: 4.0/4.0, *summa cum laude* with highest honours
Senior thesis: *The average elliptic curve has few integral points*
Advisor: Jacob Tsimerman

Awards

NSF Postdoctoral Fellowship. Harvard Junior Fellowship (deferred (2020...)). AMS-MAA-SIAM Morgan Prize. Sophia Freund prize. (Highest GPA at Harvard.) Captain Jonathan Fay Prize. (Best senior thesis at Harvard.) Thomas T. Hoopes Prize. Alex G. Booth '30 Fellow. Mumford Prize. (Most outstanding mathematics concentrator at Harvard (shared with Akhil Mathew).) Princeton Centennial Fellowship. NSF GRFP fellow. Churchill Scholar. Goldwater Scholar. Phi Beta Kappa. John Harvard Scholar (3x). Harvard University Certificate of Distinction in Teaching (5x). Detur Book[1] Prize. Finalist, Intel STS. Asteroid "25898 Alpöge". "Tough as Nails" award, Hills West Soccer.

Publications & preprints

L. Alpöge, *Note on theorems of Kane and Kane-Thorne.*

L. Alpöge, M. Bhargava, A. Shnidman, *Integers expressible as the sum of two cubes.* (arXiv:2210.10730)

L. Alpöge, N. M. Katz, G. Navarro, E. A. O'Brien, P. H. Tiep, *Local Systems and Suzuki Groups.*

L. Alpöge, *Un peu d'effectivité pour les variétés modulaires de Hilbert-Blumenthal.* (arXiv:2111.12466)

L. Alpöge, *Quadrics in arithmetic statistics.* (arXiv:2110.03947)

L. Alpöge, *Note on a theorem of Professor X.* (arXiv:2109.14328)

L. Alpöge, *Modularity and effective Mordell I.* (arXiv:2109.07917)

L. Alpöge, M. Bhargava, A. Shnidman, *A positive proportion of quartic fields are not monogenic yet have no local obstruction to being so.* (arXiv:2107.05514)

L. Alpöge, M. Bhargava, A. Shnidman, *A positive proportion of cubic fields are not monogenic yet have no local obstruction to being so.* (arXiv:2011.01186)

L. Alpöge, W. Ho *The second moment of the number of integral points on elliptic curves is bounded.* (arxiv:1807.03761)

L. Alpöge, *The average number of rational points on genus two curves is bounded.* (arxiv:1804.05859)

L. Alpöge, *Square-root cancellation for the signs of Latin squares*, Combinatorica. (arxiv:1412.7574)

L. Alpöge, *Nagell-Lutz, quickly.*

L. Alpöge, *The average number of integral points on elliptic curves is bounded.* (arxiv:1412.1047)

L. Alpöge, *van der Waerden and the primes*, Amer. Math. Monthly 122 (2015), no. 8, 784–-785.

L. Alpöge, *Proof of a conjecture of Stanley-Zanello*, J. Combin. Theory Ser. A 125 (2014), 166–176. (arxiv:1308.2358)

L. Alpöge, *Self-conjugate core partitions and modular forms*, J. Number Theory 140 (2014), 60–-92. (arxiv:1307.0158)

L. Alpöge, N. Amersi, G. Iyer, O. Lazarev, S. Miller, and L. Zhang, *Maass waveforms and low-lying zeroes*, in: C. Pomerance, M. Rassias (eds.), *Analytic Number Theory: in Honor of Helmut Maier's 60th Birthday*, 19–56, Springer, 2015. (arxiv:1306.5886).

L. Alpöge, and S. Miller, *Low lying zeroes of Maass form L-functions*, Int. Math. Res. Not. IMRN 2015, no. 10, 2678–-2701. (arxiv:1301.5702)

L. Alpöge, T. Ang, L. Schaeffer, and J. Shallit, *Decidability and Shortest Strings in Formal Languages*, Descriptional complexity of formal systems, 55-–67, Lecture Notes in Comput. Sci., 6808, Springer, Heidelberg, 2011. (arxiv:1103.1622)

L. Alpöge, A. Joshi, D. Scheinost, J. Onofrey, X. Qian, X. Papademetris, *A VTK-based, CUDA-optimized Non-Parametric Vessel Detection Method*, The VTK Journal (2010).

L. Alpöge, *Quadratic Reciprocity and Analytic Number Theory*, Harvard College Mathematics Review, volume 4. (Expository.)

Research visits

- "Reinventing Rational Points" program, April-July 2019, Institut Henri Poincaré, Paris, France. (Invited to give minicourse on "Arithmetic Statistics".)

Seminar talks

- Degeneracy of Algebraic Points, MSRI, Berkeley, CA, 2023.
- Number Theory Seminar, Stanford University, Stanford, CA, 2023.
- Number Theory Colloquium, University of California, Berkeley, Berkeley, CA, 2023.
- Number Theory Seminar, Harvard University, Cambridge, MA, 2023.
- IAS/Princeton Arithmetic Geometry Seminar, Princeton University, Princeton, NJ, 2023.
- Joint Mathematics Meetings, Boston, MA, 2023.
- Mathematics Seminar, Koç University, İstanbul, Turkey, 2022.
- Department Colloquium, Boğaziçi University, İstanbul, Turkey, 2022.
- Seminar, University of Wisconsin, Madison, Madison, WI, 2022.
- Department Colloquium, University of California, Berkeley, Berkeley, CA, 2022.
- Number Theory Informed by Computation, Park City Mathematics Institute, Park City, UT, 2022.
- Modern Breakthroughs in Diophantine Problems, Banff International Research Station, Banff, Canada, 2022.
- Number Theory Web Seminar, Zoom, 2022.

- Triangle Groups, Belyi Uniformization, and Modularity, Bhaskaracharya Pratishthana, Zoom, 2022.
- AMS Special Session on Analytic Methods in Arithmetic Statistics, Tufts University, Zoom, 2022.
- Number Theory Seminar, Columbia University, Zoom, 2021.
- Seminar, Princeton University, Princeton, NJ, 2021.
- Number Theory Seminar, The Ohio State University, Zoom, 2021.
- Number Theory Seminar, MIT, Cambridge, MA, 2021.
- Number Theory Seminar, Harvard University, Cambridge, MA, 2021.
- Explicit Methods in Number Theory, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Zoom, 2021.
- FGC-IPM Number Theory Seminar, Boğaziçi University, Zoom, 2021.
- Workshop on Arithmetic Statistics Problems, Max Planck Institute for Mathematics, Zoom, 2021.
- Ramanujan-Serre Seminar, University of Virginia, Zoom, 2021.
- Number Theory Seminar, Columbia University, Zoom, 2021.
- Algebra Research Seminar, Groningen, Zoom, 2021. (Two talks.)
- Diophantine Problems Seminar, MSRI, Zoom, 2020.
- Number Theory Seminar, Princeton University, Zoom, 2020.
- MAGIC Seminar, Michigan/Columbia, Zoom, 2020.
- Joint Mathematics Meetings, Denver, CO, 2020.
- Mathematics Seminar, Koç University, İstanbul, Turkey, 2019.
- Rational Points 2019, Universität Bayreuth, Schney, Germany, 2019.
- Number Theory Seminar, Duke University, Durham, NC, 2019.
- Tokyo-Princeton Workshop on Arithmetic Geometry, University of Tokyo, Tokyo, Japan, 2019.
- Number Theory Seminar, University of Chicago, Chicago, IL, 2019.
- Number Theory Seminar, Northwestern University, Evanston, IL, 2019.
- Joint Mathematics Meetings, Baltimore, MD 2019. (Two talks.)
- Group, Lie, and Number Theory Seminar, University of Michigan, Ann Arbor, MI, 2018.

- Explicit Methods in Number Theory, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, 2018.
- Joint Mathematics Meetings, San Diego, CA, 2018.
- CMS Winter Meeting, University of Waterloo, Waterloo, Canada, 2017.
- Rational Points 2017, Universität Bayreuth, Schney, Germany, 2017.
- Department Colloquium, Michigan Tech, Houghton, MI, 2016.
- Joint Mathematics Meetings, Seattle, WA, 2016.
- Rational Points 2015, Universität Bayreuth, Schney, Germany, 2015.
- Cambridge Number Theory Seminar, University of Cambridge, Cambridge, UK, 2015.
- Heilbronn (number theory) Seminar, Bristol University, Bristol, UK, 2015.
- Boğaziçi University Mathematics Society Seminar, Boğaziçi University, İstanbul, Turkey, 2015.
- Turkish Mathematical Society Seminar, Sabancı University, İstanbul, Turkey, 2015.
- London Number Theory Seminar, University College London, London, UK, 2015.
- Warwick Number Theory Seminar, University of Warwick, Coventry, UK, 2015.
- Joint Mathematics Meetings, San Antonio, TX, 2015.
- Center for Communications Research, Princeton, NJ, 2014.
- Joint Mathematics Meetings, Baltimore Convention Center, Baltimore, MD, 2014.
- Joint Mathematics Meetings, San Diego Convention Center, San Diego, CA, 2013.
- Québec-Maine Number Theory Conference, Université Laval, Quebéc, Canada, 2012.
- Young Mathematicians Conference, The Ohio State University, Columbus, OH, 2012.

Teaching

2011-2014 *Course Assistant*
Harvard University Mathematics Department
Taught section/graded problem sets for: Math 55a/b (2x), 122, 129.
5x winner of Certificate of Distinction in Teaching.

Service

2012-2014 *Teacher* (8-10 year-olds)
The Math Circle, Harvard University

2015-2018 *Advisor*
Duluth REU, University of Minnesota Duluth

2016-2017 *Co-Organizer*
Graduate Student Seminar, Princeton University

2017-2019 *Organizer*
Informal Analytic Number Theory Seminar, Princeton University

[1]Book chosen for sealing: *Radyo, Televizyon, Radar: ilkeler ve uygulama*, Oğuz Alpöge.