

Samit Dasgupta

Professor of Mathematics

✉ dasgupta@math.duke.edu
📁 services.math.duke.edu/~dasgupta/



Employment

- 2018–present **Duke University**, *Professor*.
- 2016–2018 **University of California, Santa Cruz**, *Professor*.
- 2012–2016 **University of California, Santa Cruz**, *Associate Professor*.
- 2008–2012 **University of California, Santa Cruz**, *Assistant Professor*.
- 2004–2008 **Harvard University**, *Benjamin Peirce Assistant Professor*, *National Science Foundation Postdoctoral Research Fellow*.

Outside Appointments

- 2018 Summer **University of Regensburg and Oberwolfach Research Institute for Mathematics**, *Simons Visiting Professor*.
- 2017 Fall **Institut Henri Poincaré**, *Professor*, Research in Paris program (with P. Charollois and M. Spiess).
- 2015 Fall **Université Pierre et Marie Curie, Paris VI, Jussieu**, *Professeur Invité*.

Education

- 2000–2004 **University of California, Berkeley**, *Ph.D. in Mathematics*, May 2004, Advisor: Prof. Kenneth Ribet.
- 1995–1999 **Harvard University**, *A.B. in Mathematics*, June 1999, *summa cum laude*.

Grants/Awards

- 2023 **Frontiers of Science Award**, joint with Mahesh Kakde and Kevin Ventullo, International Congress of Basic Science, Beijing, China, \$25,000.
- 2022–2027 **National Science Foundation**, DMS 2200787, \$550,000.
- 2019–2022 **National Science Foundation**, DMS 1901939, \$186,004.
- 2016–2019 **National Science Foundation**, DMS 1600943, \$159,000.
- 2015–2016 **National Security Agency**, MSP Grant H98230-15-1-0321, \$40,000.
- 2010–2015 **National Science Foundation**, CAREER Grant 0952251, \$471,283.
- 2009–2012 **National Science Foundation**, DMS 0900924, \$150,000.
- 2009–2011 **Sloan Research Fellowship**, \$50,000.

2007–2009 **National Science Foundation**, DMS 0653023, \$87,196.

2004–2007 **National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship**, \$108,000.

Distinguished/Plenary Lectures

2022 **Quebec–Maine Number Theory Conference**, *plenary lecture*, Laval University.

2022 **International Congress of Mathematicians**, *invited speaker, Number Theory section*, joint with Mahesh Kakde.

2022 **Britton Distinguished Lecturer**, McMaster University.

2022 **Distinguished Lecture Series of the Mathematics Consortium of India**, ICTS Bangalore.

Publications

- [38] Samit Dasgupta et al. “The Brumer–Stark Conjecture over \mathbf{Z} ”. Preprint.
- [37] Samit Dasgupta et al. “The Residually Indistinguishable Case of Ribet’s Method for \mathbf{GL}_2 ”. Preprint.
- [36] Samit Dasgupta. “Ranks of Matrices of Algebraic Numbers I: the Theorems of Baker and Waldschmidt–Masser”. Preprint, arXiv:2303.02037.
- [35] Benedict Gross and Samit Dasgupta. “Two Encounters with the p -adic Stark Conjecture”. Preprint, arXiv:2303.03299.
- [34] Samit Dasgupta and Matthew Honnor. “On the Equality of Three Formulas for Brumer–Stark Units”. Preprint, arXiv:2211.01715.
- [33] Samit Dasgupta and Mahesh Kakde. “On the Brumer–Stark Conjecture and Refinements”. To appear in Proceedings of the 2022 ICM, arXiv:2204.09037.
- [32] Samit Dasgupta and Mahesh Kakde. “Brumer–Stark Units and Explicit Class Field Theory”. *Duke Mathematical Journal*, to appear, arXiv:2103.02516.
- [31] Samit Dasgupta and Mahesh Kakde. “Trivial Zeroes in the Iwasawa Main Conjecture”. To appear in Proceedings of the Colloquium on Arithmetic Geometry, Tata Institute of Fundamental Research, Mumbai, India, 2020.
- [30] Samit Dasgupta and Mahesh Kakde. “On the Brumer–Stark Conjecture”. *Annals of Mathematics*, **197** (2023), no. 1, pp. 289–388.
- [29] Samit Dasgupta and Mahesh Kakde. “On Constant Terms of Eisenstein Series”. *Acta Arithmetica*, **200** (2021), no. 2, pp. 119–147. to appear, arxiv:2010.00657.
- [28] Samit Dasgupta and Mahesh Kakde. “On the rank one Gross–Stark conjecture for quadratic extensions and the Deligne–Ribet q -expansion principle”. *Development of Iwasawa theory—the centennial of K. Iwasawa’s birth*. Vol. 86. Adv. Stud. Pure Math. Math. Soc. Japan, Tokyo, 2020, pp. 243–254.
- [27] Samit Dasgupta and Michael Spiess. “On the characteristic polynomial of the Gross regulator matrix”. *Transactions of the American Mathematical Society*, **372** (2019), no. 2, pp. 803–827.

- [26] Samit Dasgupta, Mahesh Kakde, and Kevin Ventullo. "On the Gross–Stark conjecture". *Annals of Mathematics*, **188** (2018), no. 3, pp. 833–870.
- [25] Samit Dasgupta and John Voight. "Sylvester's problem and mock Heegner points". *Proceedings of the American Mathematical Society*, **146** (2018), no. 8, pp. 3257–3273.
- [24] Samit Dasgupta and Michael Spieß. "Partial zeta values, Gross's tower of fields conjecture, and Gross–Stark units". *Journal of the European Mathematical Society (JEMS)*, **20** (2018), no. 11, pp. 2643–2683.
- [23] Samit Dasgupta and Michael Spieß. "The Eisenstein cocycle and Gross's tower of fields conjecture". *Annales Mathématiques du Québec*, **40** (2016), no. 2, pp. 355–376.
- [22] Samit Dasgupta. "Factorization of p -adic Rankin L -series". *Inventiones Mathematicae*, **205** (2016), no. 1, pp. 221–268.
- [21] Pierre Charollois, Samit Dasgupta, and Matthew Greenberg. "Integral Eisenstein cocycles on \mathbf{GL}_n , II: Shintani's method". *Commentarii Mathematici Helvetici*, **90** (2015), no. 2, pp. 435–477.
- [20] Massimo Bertolini et al. " p -adic L -functions and Euler systems: a tale in two trilogies". *Automorphic forms and Galois representations. Vol. 1*. Vol. 414. London Mathematical Society Lecture Note Series. Cambridge University Press, Cambridge, 2014, pp. 52–101.
- [19] Joël Bellaïche and Samit Dasgupta. "The p -adic L -functions of evil Eisenstein series". *Compositio Mathematica*, **151** (2015), no. 6, pp. 999–1040.
- [18] Pierre Charollois and Samit Dasgupta. "Integral Eisenstein cocycles on \mathbf{GL}_n , I: Sczech's cocycle and p -adic L -functions of totally real fields". *Cambridge Journal of Mathematics*, **2** (2014), no. 1, pp. 49–90.
- [17] Samit Dasgupta. "A conjectural product formula for Brumer-Stark units over real quadratic fields". *Journal of Number Theory*, **133** (2013), no. 3, pp. 915–925.
- [16] Samit Dasgupta and Matthew Greenberg. " \mathcal{L} -invariants and Shimura curves". *Algebra & Number Theory*, **6** (2012), no. 3, pp. 455–485.
- [15] Samit Dasgupta, Henri Darmon, and Robert Pollack. "Hilbert modular forms and the Gross–Stark conjecture". *Annals of Mathematics*, **174** (2011), no. 1, pp. 439–484.
- [14] Samit Dasgupta and Alison Miller. "A Shintani-type formula for Gross-Stark units over function fields". *The University of Tokyo. Journal of Mathematical Sciences*, **16** (2009), no. 3, pp. 415–440.
- [13] Samit Dasgupta and John Voight. "Heegner points and Sylvester's conjecture". *Arithmetic geometry*. Vol. 8. Clay Mathematics Proceedings. American Mathematical Society, Providence, RI, 2009, pp. 91–102.
- [12] Samit Dasgupta and Jeremy Teitelbaum. "The p -adic upper half plane". *p -adic geometry*. Vol. 45. University Lecture Series. American Mathematical Society, Providence, RI, 2008, pp. 65–121.
- [11] Samit Dasgupta. "Shintani zeta functions and Gross–Stark units for totally real fields". *Duke Mathematical Journal*, **143** (2008), no. 2, pp. 225–279.

- [10] Massimo Bertolini, Henri Darmon, and Samit Dasgupta. “Stark-Heegner points and special values of L -series”. *L-functions and Galois representations*. Vol. 320. London Mathematical Society Lecture Note Series. Cambridge University Press, Cambridge, 2007, pp. 1–23.
- [9] Samit Dasgupta. “Computations of elliptic units for real quadratic fields”. *Canadian Journal of Mathematics*, **59** (2007), no. 3, pp. 553–574.
- [8] Henri Darmon and Samit Dasgupta. “Elliptic units for real quadratic fields”. *Annals of Mathematics*, **163** (2006), no. 1, pp. 301–346.
- [7] Samit Dasgupta. “Stark-Heegner points on modular Jacobians”. *Annales Scientifiques de l’École Normale Supérieure*, **38** (2005), no. 3, pp. 427–469.
- [6] Henri Darmon and Samit Dasgupta. “Unités elliptiques, corps quadratiques réels, et une formule limite de Kronecker”, **28** (2004), no. 1-2.
- [5] Samit Dasgupta. “Gross-Stark units, Stark-Heegner points, and class fields of real quadratic fields”. PhD thesis. University of California, Berkeley, 2004.
- [4] Samit Dasgupta et al. “Transversals of additive Latin squares”. *Israel Journal of Mathematics*, **126** (2001), pp. 17–28.
- [3] Daniel K. Biss and Samit Dasgupta. “A presentation for the unipotent group over rings with identity”. *Journal of Algebra*, **237** (2001), no. 2, pp. 691–707.
- [2] Samit Dasgupta. “On the size of minimum super Arrovian domains”. *SIAM Journal on Discrete Mathematics*, **12** (1999), no. 4, pp. 524–534.
- [1] Samit Dasgupta. “Stark’s Conjectures”. Undergraduate honors thesis. Harvard University, 1999.

Professional Activities

Editorial Boards

Algebra and Number Theory (2017–present), International Mathematics Research Notices (2021–present), Research in the Mathematical Sciences (2019–present), Research in Number Theory (2019–present)

Refereeing

Referee for dozens of journals including *Annals*, *Inventiones*, *JAMS*, *DMJ*, *JEMS*, *ANT*, *Math Annalen*, *IMRN*, *Documenta*, *AJM*, *MRL*, *Compositio*, *Crelle*, *JNT*, *Proc AMS*, *Trans AMS*.

Conference Organization

- August 2025 **Arithmetic Cycles, Modular Forms, and L -functions**, *Montreal, Canada*, with Francesc Castella, Adrian Iovita, Antonio Lei, Alicia Pozzi, Giovanni Rosso, and Jan Vonk.
- June 2024 **Modular Forms, L -functions, and Eigenvarieties**, *Paris, France*, with John Bergdall, Pierre Charollois, Gaëtan Chenevier, Mladen Dimitrov, and Anna Medvedovsky.

- 2010–2017 **Bay Area Algebraic Number Theory and Arithmetic Geometry Days**, *twice yearly conference rotating between University of California Santa Cruz, Stanford University, and University of California Berkeley*, with Brian Conrad, Akshay Venkatesh, and Kenneth Ribet.
- Oct 2011 **Cycles on Modular Varieties**, *Banff International Research Station, Banff, Canada*, with Pierre Charollois, Matthew Greenberg, and Benedict Gross.
- Jun 2008 **Workshop on Modular Forms and Arithmetic**, *University of California, Berkeley and MSRI*, with Frank Calegari, Bjorn Poonen, and Richard Taylor.
- Nov 2005 **Gathering on Stark’s Conjectures**, *Centre de Recherches Mathématiques, Montreal, QC*, with Pierre Charollois and Henri Darmon.

Grant Panels

Served on review panels for National Science Foundation, National Security Agency Mathematical Sciences Program, EPSRC (EU), NSERC (Canada).

Mentoring and Student Advising

Postdoctoral Advisees

Jiuya Wang (Fall 2020–Spring 2021), **Jesse Silliman** (Fall 2019–Spring 2022), **George Ander Steele** (Fall 2015–Spring 2017), **Cameron Franc** (Fall 2011–Spring 2014)

Graduate Students

Shawn Tsosie (Ph.D. 2018), **Joe Ferrara** (Ph.D. 2018), **Mitchell Owen** (Ph.D. 2015), **Alex Beloi** (Ph.D. 2015), **Michael Daub** (informal advisor, Ph.D. 2013)

Undergraduate Senior Theses Advised

Jonathan Siegel (2012–13), **Tomoaki Mizoguchi** (2012–13), **Jennifer Glover** (2009–10), **Alison Miller** (2007–08), **Luca Candelori** (2007–08), **Kaloyan Slavov** (2006–07), **Jennifer Balakrishnan** (2005–06)

Mentoring

- 2021–present **Math Alliance**, *Mentor for undergraduate and graduate students from underrepresented backgrounds.*
- 2020–present **Association for Women in Mathematics**, *Mentor for undergraduate women at Duke University.*

Undergraduate Research Supervised

- 2020 Summer **DoMath**, *Led student group conducting research on representation theory with Jiuya Wang. Will result in student journal publication, Students: Zizai Cui, Max Fleischer, Yijia Liu.*
- 2020–2021 **Computations of Brumer–Stark Units**, *Led and funded students performing computations related to my research, Students: Max Fleischer, Yijia Liu.*
Results available at <https://github.com/liuyj8526/Computation-of-Elliptic-Units>

K–12 Outreach

2016–23 **Regeneron Science Talent Search**, *Judge*.

2015–16 **Intel Science Talent Search**, *Judge*.

Invited Conference Talks

Over 40 conference talks, including most recently:

August 2023 **Conference on Global Langlands, Shimura Varieties, and Shtukas**, *Hausdorff Institute of Mathematics*, Bonn, Germany.

August 2023 **Number Theory and Combinatorics in Duluth**, *University of Minnesota, Duluth*.

May 2023 **Arithmetic Geometry and Algebraic Groups**, *University of Virginia*.

Oct 2022 **Québec–Maine Number Theory Conference**, *Laval University*, plenary lecture.

Sep 2022 **School on Arithmetic Geometry**, *University of Duisburg-Essen*, minicourse: “Ribet’s Method”.

Aug 2022 **Elliptic Curves and the special values of L -functions**, *International Centre for Theoretical Sciences*, Bengaluru (online).

Jul 2022 **International Congress of Mathematicians**, *St. Petersburg, Russia*, Invited Speaker, Number Theory Section.

Jun 2022 **p -adic L -functions and Eigenvarieties**, *University of Notre Dame*.

Jun 2021 **Canadian Mathematical Society**, *75th Anniversary Meeting*.

Jun 2021 **Summer School on Polynomial Methods**, *Hausdorff Research Institute for Mathematics*, online, minicourse: “Introduction to Transcendence Theory”.

Jan 2020 **International Colloquium on Arithmetic Geometry**, *Tata Institute of Fundamental Research*, Mumbai, India.

Invited Seminar and Colloquium Talks

Over 80 invited seminar and colloquium talks, including:

Harvard (2019, 2012, 2006, 2004), **Stanford** (2023, 2020, 2018, 2017, 2013, 2012, 2011, 2009, 2006, 2004), **University of Michigan** (2021, 2008, 2003), **Berkeley** (2018, 2017, 2008, 2009, 2004), **Princeton/IAS** (2018, 2010, 2003), **MIT** (2016), **Columbia University** (2018, 2011), **Duke University** (2018), **UCLA** (2016, 2014, 2012, 2004), **Caltech** (2017, 2009), **University of Chicago** (2015), **Northwestern University** (2015, 2011), **McGill University** (2021, 2016, 2003), **Fields Institute** (2020 online), **UPC Barcelona** (2020 online), **University of Duisburg–Essen** (2020 online), **University of Pennsylvania** (2019), **Rutgers** (2019, 2011), **Rutgers–Newark** (2020 online, 2007), **Temple University** (2023) **University of Regensburg** (2018), **University of Paris** (2017, 2015, 2008), **King’s College London** (2017, 2016), **UT-Austin** (2017, 2010, 2008), **University of Wisconsin** (2012, 2010, 2007), **Boston College** (2012), **University of Maryland** (2009), **UC-Davis** (2009), **University of Arizona** (2007), **UCSD** (2006, 2023), **University of Illinois–Chicago** (2007), **Brandeis University** (2006), **McMaster University** (2005), **Brown University** (2004), **Boston University** (2004), **Amherst College** (2004), **UNC-Greensboro** (2022), **Emory University** (2022), **University of Virginia** (2022), **ICTS Bangalore** (2021), **École Normale Supérieure de Lyon** (2021).