Isabel M. Vogt

Brown University	Citizenship: USA and Switzerland
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Employment

2024 –	Associate Professor, Brown University
2021 – 2024	Assistant Professor, Brown University
2020 – 2021	Assistant Professor, University of Washington in Seattle
2019 – 2020	National Science Foundation Postdoctoral Scholar, Stanford University

Education

2014 – 2019 Ph.D. Pure Mathematics, Massachusetts Institute of Technology
Thesis: *Some results in the arithmetic and geometry of curves*
Advisors: Bjorn Poonen (MIT) and Joe Harris (Harvard University)

2010 – 2014 A.B. Mathematics and Chemistry and Physics, Harvard University, summa cum laude

Visiting Positions

2023	Research Member, MSRI, "Diophantine Geometry" semester
2019	Academic Guest, Institut Henri Poincaré, "Reinventing Rational Points" trimester
2018 – 2019	Exchange Scholar, Stanford University

Current and completed grants

2024 – 2029 NSF CAREER Grant "CAREER: Interpolation, stability, and rationality"
DMS-2338345, sole PI, $549,455

2023 – 2024 NSF Conference Grant "AGNES Summer School in Algebraic Geometry"
DMS-2312088, PI, $30,000

2022 – 2025 NSF Standard Grant "Geometry and arithmetic of Brill–Noether loci and Brill–Noether curves"
DMS-2200655, sole PI, $210,000

2022 – 2025 NSF Conference Grant "Southwest Conference on Arithmetic Geometry"
DMS-2200721, Senior Scientist, $448,399

2019 – 2023 NSF Mathematical Sciences Postdoctoral Research Fellowship
DMS-1902743, sole PI, $150,000

2017 – 2018 Grant from Number Theory Foundation for Graduate Workshop in Algebraic Geometry
with R. Ramadas, $2,000

2014 – 2019 NSF Graduate Research Fellowship

Selected awards

2020 Association for Women in Mathematics Dissertation Prize (national award, 3 per year)

2019 Maryam Mirzakhani Postdoctoral Fellowship, Stanford University Math Department
2017 IAS Women and Mathematics Charles and Lisa Simonyi Ambassadorship
2015 George Lusztig PRIMES Mentorship Award, MIT Math Department
2015 Graduate Women of Excellence Award, MIT
2014 Ida M. Green Graduate Fellowship, MIT
2014 Undergraduate Thesis Prize, Harvard Math Department

Submitted Preprints[1]

25. Isolated and parameterized points on curves (with B. Viray), submitted, 26 pp., arXiv:2406.14353
24. Conic bundle threefolds differing by a constant Brauer class and connections to rationality (with S. Frei, L. Ji, S. Sankar, and B. Viray), submitted, 18 pp., arXiv:2406.13510
23. Normal bundles of rational curves in Grassmannians (with I. Coskun and E. Larson), submitted, 13 pp., arXiv:2404.08102
22. The embedding theorem in Hurwitz-Brill-Noether theory (with K. Cook-Powell, D. Jensen, E. Larson and H. Larson), submitted, 20 pp., arXiv:2303.15189

Refereed Publications[1]

21. Subspace configurations and low degree points on curves (with B. Kadets), *Advances in Math.*, forthcoming, 26 pp., arXiv:2208.01067
20. Quadratic enrichment of the logarithmic derivative of the zeta function (with M. Bilu, W. Ho, P. Srinivasan, and K. Wickelgren), *Trans. Amer. Math. Soc. Ser. B*, 11 (2024), 1183-1225, arXiv:2210.03035
19. Generic Beauville's conjecture (with I. Coskun and E. Larson), *Forum of Math. Sigma*, **12**:e51 (2024), 7 pp., arXiv:2307.04730
18. Brauer-Manin obstructions requiring arbitrarily many Brauer classes (with J. Berg, C. Pagano, B. Poonen, M. Stoll, N. Triantafillou, and B. Viray), *Bull. Lond. Math. Soc.*, 56 (2024) 1587-1604, arXiv:2309.05931
17. Curve classes on conic bundle threefolds and applications to rationality (with S. Frei, L. Ji, S. Sankar, and B. Viray), *Algebraic Geometry*, 11 (3) (2024) 421–459, arXiv:2207.07093
16. Computing nonsurjective primes associated to Galois representations of genus 2 curves (with B. Banwait, A. Brumer, H.J. Kim, Z. Klagsbrun, J. Mayle, and P. Srinivasan), *LuCaNT: LMFDB, computation, and number theory*, Contemporary Mathematics, 796 (2024) 129–163, arXiv:2301.02222
15. The normal bundle of a general canonical curve of genus at least 7 is semistable (with I. Coskun and E. Larson), *J. Eur. Math. Soc. (JEMS)*, forthcoming, 20 pp., arXiv:2203.13211
14. Global Brill–Noether theory over the Hurwitz space (with E. Larson and H. Larson), *Geom. Topol.*, forthcoming, 50 pp., arXiv:2008.10765

[1]The standard in mathematics is that authors are listed alphabetically and all authors are presumed to have made equal contributions.

13. Interpolation for Brill–Noether curves (with E. Larson), *Forum of Math. Pi* **11**:e25 (2023), 90 pp., arXiv:2201.09445
12. Stability of Tschirnhausen bundles (with I. Coskun and E. Larson), *Int. Math. Res. Not.*, rnad075 (2023), 16 pp., arXiv:2207.07257
11. A transcendental Brauer–Manin obstruction to weak approximation on a Calabi–Yau threefold (with S. Hashimoto, K. Honigs, and A. Lamarche), *Res. Number Theory* **8** (2022), no. 1, 23 pp., arXiv:2009.05862
10. Stability of normal bundles of space curves (with I. Coskun and E. Larson), *Algebra Number Theory* **16** (2022), no. 4, 919-953, arXiv:2003.02964
9. Low degree points on curves (with G. Smith), *Int. Math. Res. Not.* (2022), no. 1, 422-445, arXiv:1906.02328
8. An enriched count of the bitangents to a smooth plane quartic curve (with H. Larson), *Res. Math. Sci.* **8** (2021), no. 2, 21 pp., arXiv:1909.05945
7. A local-global principle for isogenies of composite degree, *Proc. Lond. Math. Soc.*, (3) **121** (2020), no. 6, 1496-1530, arXiv:1801.05355
6. Interpolation for Brill–Noether curves in $\mathbb{P}^4$ (with E. Larson), *Eur. J. Math.* **7** (2020), no. 1, 235-271 arXiv:1708.00028
5. Constants in Titchmarsh divisor problems for elliptic curves (with R. Bell, C. Blakestad, A.C. Cojocaru, A. Cowan, N. Jones, V. Matei, and G. Smith), *Res. Number Theory*, **6** (2020), no. 1, 24 pp., arXiv:1706.03422
4. Abelian varieties isogenous to a power of an elliptic curve over a Galois extension, *J. Théor. Nombres Bordeaux*, **31** (2019), no, 1, 205-213, arXiv:1706.04963v1
3. Elliptic fibrations on covers of the elliptic modular surface of level 5 (with F. Balastrieri, J. Desjardins, A. Garbagnati, C. Maistret, and C. Salgado.) *Women in Numbers Europe II: Contributions to Number Theory and Arithmetic Geometry*, Assoc. Women Math. Ser., vol. 11, Springer, 2018, 159-197, arXiv:1705.03527v1
2. Interpolation for Brill–Noether space curves. *Manuscripta Math.*, **156** (2018), no. 1-2, 137-147, arXiv:1611.00081v2
1. Powers in Lucas sequences via Galois representations. (with J. Silliman.) *Proc. Amer. Math. Soc.* **143** (2015), no. 3, 1027-1041, arXiv:1307.5078v2

Computer Programs

2. Computing nonsurjective primes in genus 2, with B. Banwait, A. Brumer, H.J. Kim, Z. Klagsbrun, J. Mayle, and P. Srinivasan.
   https://github.com/ivogt161/abeliansurfaces
1. Binary Recurrence Sequences, Sage release 5.13
   https://doc.sagemath.org/html/en/reference/combinat/sage/combinat/binary_recurrence_sequences.html

Expository articles

6. The interpolation problem: When can you pass a curve of a given type through N random points in space? (with E. Larson and R. Vakil.) *Bull. Amer. Math. Soc.*, forthcoming.
5. Making accesible documents using LaTeX (with E. Larson.) *Notices Amer. Math. Soc.*, 70(1):68-71, 2023.
4. Practical suggestions for mathematical writing, (with R. Bell, B. Kadets, P. Srinivasan, and N. Triantafillou.) *Notices Amer. Math. Soc.*, 68(6):930-934, 2021.
3. A Guide to Organizing a Virtual Conference, (with J. Alper and D. Litt.) *Notices Amer. Math. Soc.*, 67(8):1135-1138, 2020.
2. How to organize a graduate workshop, (with R. Ramadas.) *Notices Amer. Math. Soc.*, 66(11):1823-1827, 2019.
1. Thinking positive: arithmetic geometry in characteristic p, (with R. Bell, J. Hartmann, V. Karemaker, and P. Srinivasan.) *Notices Amer. Math. Soc.*, 66(2):239-241, 2019.

Invited Lecture Series

2023 VBAC 2023: Recent applications to the geometry of moduli spaces, Essen, Germany
Applications of vector bundles to moduli of curves (4 lectures)
2023 Geométrie Algébrique en Liberté XXX, University of Warwick
Geometry of curves via specialization and deformation (4 lectures)
2022 Combinatorial Methods in Algebraic Geometry, Cambridge University
Brill–Noether Theory via Degeneration (4 lectures)

Invited Conference Talks

2025 *(upcoming)* Summer Research Institute in Algebraic Geometry, *plenary talk*
(upcoming) Arithmetic, Geometry, Cryptography and Coding Theory, Luminy, *plenary talk*
(upcoming) Georgia Algebraic Geometry Symposium (GAGS), UGA
2024 *(upcoming)* Joint Meeting of NZMS, AustMS, and AMS, Arithmetic geometry session, NZ
(upcoming) Moduli of Varieties, University of Utah
Moduli Spaces and Arithmetic, Nagoya University, Japan
Connecticut Summer School in Number Theory
Graduate Student Conference in Algebra, Geometry, and Topology, *keynote speaker*
Boston Algebraic Geometry Day
Degree d points on surfaces, AIM
2023 Binghamton Graduate Combinatorics, Algebra, and Topology Conference, *keynote speaker*
Algebra and Number Theory Day, University of Maryland
AGNES, University of Pennsylvannia
Curves: Algebraic, Tropical, and Logarithmic, Banff International Research Station
Rational Points, Schney, Germany
Recent trends in algebraic geometry, Oberwolfach, Germany
Arithmetic, Birational Geometry, and Moduli Spaces, Brown University
Connections Workshop: Diophantine Geometry, MSRI
2022 Palmetto Number Theory Series, University of South Carolina, *invited speaker*

Young Mathematicians Conference, Ohio State, *keynote speaker*
Number theory informed by computation, Park City Math Institute
Recent Advances in Classical Algebraic Geometry, ICM satellite conference (contributed talk)
Modern Breakthroughs in Diophantine Equations, Banff International Research Station
Workshop on Specialization Techniques, University of Illinois, Chicago
Explicit Methods for Modularity, online workshop
Rational Points 2022, Franken-Akademie Schloss Schney, Germany
AMS Special Session on Moduli in Algebraic and Tropical Geometry

2021 Geometry via Arithmetic, Banff International Research Station
Mathematical Congress of the Americas, special session on moduli spaces
Curves over finite fields: past, present and future, Benasque, Spain
Degeneracy loci and applications, Ohio State University
Rational points and Galois representations, University of Pittsburgh
JMM, AMS special session on Galois cohomology in arithmetic geometry

2020 Monodromy and Galois groups in enumerative geometry, ICERM
ANTS-XIV, University of Auckland, *plenary talk*
(*cancelled*) CNTA XVI, Fields Institute Toronto
(*cancelled*) Texas Algebraic Geometry Symposium (TAGS), Rice University
Arithmetic Geometry Online in Zoom, Everyone (AGONIZE)
(*cancelled*) Shanks workshop on "Real enumeratrive geometry and beyond", Vanderbilt
JMM, Denver, AMS special session on arithmetic Galois actions
JMM, Denver, AMS special session on rational points on algebraic varieties
JMM, Denver, AMS special session on singularities and characteristic classes

2019 Stability, moduli spaces and applications, U. Illinois – Chicago
Western Algebraic Geometry Symposium (WAGS), University of Utah
Modular forms, arithmetic and women in mathematics, Emory University
New Facets, Facets of Algebraic Geometry, University of Michigan
Rational points on irrational varieties, Institute Henri Poincaré
Arithmetic of low-dimensional abelian varieties, ICERM
Barrett Lectures at University of Tennessee at Knoxville
AMS Sectional Meeting, U. Hawaii, special session on arithmetic geometry
Hawai'i Number Theory Conference, session on arithmetic geometry
Arithmetic and Geometry of Surfaces, U. Wisconsin – Madison
JMM, Baltimore, AMS special session on arithmetic statistics

2018 Explicit methods in number theory, Oberwolfach
Biannual algebraic and tropical meetings of Brown and Yale
AMS Sectional Meeting, Northeastern, special session on geometry of moduli spaces

2017 AMS Sectional Meeting, U. Central Florida, special session on algebraic curves
Brown University, AMS graduate student conference in algebra and number theory

Colloquia and Named Talks

2024 *(upcoming)* McDougal Lecture, Lawrence University
Dartmouth University

2023 Rice University
AMS Arnold Ross Lecture

Pauline Sperry Undergraduate Lecture, UC Berkeley
2022 Distinguished Colloquium Series of the Turkish Mathematical Society
Center for Communications Research – Princeton
Virgina Tech
Rutgers University
ICERM, Brown University
University of Michigan
2020 Brown University
2019 UW Seattle
2018 University of Illinois at Chicago

Invited Seminar Talks

2024 *(upcoming)* University of Wisconsin Madison, Number theory seminar
Stanford University, Number theory seminar
Dartmouth University, Algebra and number theory seminar
Quebec-Vermont Number Theory Seminar (QVNTS), McGill University
2023 Columbia University, Algebraic geometry seminar
Number theory web seminar
University of Basel, Switzerland
University of Tübingen, Germany
Southern California Algebraic Geometry Seminar, UC San Diego
University of Oregon, Algebraic geometry seminar
Stanford University, Algebraic geometry seminar
2022 Tufts University, Algebra, Geometry, and Number Theory seminar
Princeton University, Algebraic geometry seminar
University of Virginia, Number theory seminar
Stony Brook University, Algebraic geometry seminar
Valley Geometry Seminar, UMass Amherst
University of Maryland, Algebra and number theory seminar
Harvard/MIT, Algebraic geometry seminar
University of Utah, Algebraic geometry seminar
University of Illinois, Chicago, Algebraic geometry seminar
2021 Simon Fraser, Number Theory and Algebraic Geometry seminar online
UC Santa Barbara, Geometry and Arithmetic seminar online
2020 Warwick, Algebraic geometry seminar online
Front Range Algebraic Geometry and Number Theory seminar
National algebraic geometry seminar of Mexico, online
Zoom Algebraic Geometry Seminar
Northwestern, UIC, Chicago, Online algebraic geometry seminar
UC San Diego, Online algebraic geometry seminar
UC Davis, Algebraic geometry seminar
2019 University of Georgia, Number theory seminar
University of Michigan, Number theory seminar
Stanford University, Number theory seminar
Duke University, Algebraic geometry seminar

Stanford University, Algebraic geometry seminar
University of Oregon, Algebra seminar
Brown University, Algebraic geometry seminar
UC San Diego, Number theory seminar
UC Irvine, Number theory seminar
UCLA, Number theory seminar
Pennsylvania State University, Number theory seminar
2018 Georgia Tech, Algebra seminar
Rice University, Algebraic geometry and number theory seminar
Rutgers University, Algebra seminar
NYU Courant Institute, Algebraic geometry seminar
University of Pennsylvania, Algebra seminar
UW Seattle, Number theory seminar
UC Berkeley, Arithmetic geometry seminar
SF State, Geometry and topology seminar
UC Davis, Algebraic geometry seminar
Stanford University, Algebraic geometry seminar
2017 SUNY Stony Brook, Algebraic geometry seminar
Georgia Tech, Algebra seminar
University of Chicago, Algebraic geometry seminar
Boston University, Number theory seminar
Yale University, SUMRY colloquium
2016 University of Illinois, Chicago, Algebraic geometry seminar
University of Illinois, Chicago, Number theory seminar

Teaching

Brown University, Professor

Spring 2024 Math 1580: Cryptography (enrollment: 89, overall instructor evaluation score 4.91/5)
Fall 2023 Math 1560: Number Theory (enrollment: 34, overall instructor evaluation score 4.94/5)
Fall 2022 Math 1530: Abstract Algebra (enrollment: 52, overall instructor evaluation score 4.88/5)
Fall 2021 Math 540: Honors Linear Algebra (enrollment: 45, overall instructor evaluation score 4.84/5)

University of Washington, Professor

Winter 2021 Math 308: Matrix Algebra with Applications (overall evaluation score 4.7/5)

Advising and mentoring at Brown University

Postdocs supervised

2023 – 2026 Sachi Hashimoto, Tamarkin Assistant Professor

Graduate students supervised

2023 – now Daksh Aggarwal

Undergraduate senior honors theses supervised

2023 Jessica Bennett, *Supersingular Isogeny Key Encapsulation*

Undergraduate Independent studies supervised

2024 Edwin Lu (Lie algebras)

2024 Semir Mujevic (intersection theory)
2022 Semir Mujevic (representation theory of finite groups)
2022 Jessica Bennett and Jonah Mendel (heights in diophantine geometry)

Dissertation Committees

2022 Tangli Ge, Veronica Arena

Topics Exam Committees

2023 Megan Chang-Lee, Eric Zhu, Kaiwen Lu

Department Service at Brown University

2022 – now Co-Director of Undergraduate Studies (with C. Breiner, R. Schwartz, B. Tshishiku)
2021 – now First and second year advisor
- 2024-2025: 6 second year advisees
- 2023-2024: 6 first year advisees and 4 second year advisees
- 2022-2023: 6 first year advisees and 5 second year advisees
- 2021-2022: 5 first year advisees

2021 – now Algebraic Geometry seminar organizer (with D. Abramovich, B. Hassett, and E. Larson)
2021 – 2023 Ad hoc committee on Undergraduate Concentrator Advising

Service to the Profession

Conference Organizer

2025 *(upcoming)* Summer Research Institute in Algebraic Geometry Graduate Student Bootcamp
Co-organizers: I. Coskun, A. Gibney, E. Macri, A. Perry, K. Tucker
2025 *(upcoming)* ICERM topical workshop "Algebraic points on curves"
Co-organizers: A. Bourdon, R. Lemke-Oliver, A. Schnidman, D. Zureick-Brown
2024 MSRI/SLMath Graduate Summer School on "Algebraic Curves"
Co-organizers: I. Coskun, E. Larson, H. Larson
2024 Arizona Winter School "Abelian Varieties"
Co-organizers: B. Levin, H. Xue, and D. Zureick-Brown
2023 AGNES Summer School on Intersection Theory on Moduli Spaces
Co-organizers: D. Abramovich, M. Chan, E. Larson
2022 Preliminary Arizona Winter School "Heights and Model Theory"
Co-organizers: R. Bell, B. Levin, and H. Xue
2022 AGNES Summer School on Higher Dimensional Moduli
Co-organizers: D. Abramovich, M. Chan, B. Hassett, E. Larson
2022 JMM AWM Workshop for Women in Algebraic Geometry
Co-organizer: J. Rana
2021 Western Algebraic Geometry Symposium (online)
Co-organizers: J. Bruce and K. DeVleming
2020 Women in Algebraic Geometry Research Collaboration Conference, ICERM
Co-organizers: M. Chan, A. Grassi, R. Ramadas, and J. Rana
2020 Western Algebraic Geometry Online (WAGON)
Co-organizers: J. Alper and D. Litt
2019 AMS MRC: "Explicit Methods in Arithmetic Geometry in Characteristic p",
Co-organizers: R. Bell, J. Hartmann, V. Karemaker, and P. Srinivasan

2018 Grad Workshop in Algebraic Geometry for Women and Mathematicians of Minority Genders, Co-organizer: R. Ramadas

Program Committee

2024 Sixteenth Algorithmic Number Theory Symposium (ANTS XVI)

Project Group Leader

2020 Research team leader, Women in Algebraic Geometry at ICERM (with B. Viray)
2020 Research team leader, Workshop on arithmetic geometry, number theory and computation, ICERM (with P. Srinivasan)
2020 Problem session leader, Arizona Winter School, *Geometry and arithmetic of low genus curves*
2018 Problem session teaching assistant, Graduate Workshop in Algebraic Geometry

Reviewer

2021 – now NSF Panel Member
2015 – now Peer review for: Journal de l'École polytechnique, IMRN, Mathematische Zeitschrift, Compositio Mathematica, Advances in Math, Research in Number Theory, Indagationes Mathematicae, Advances in Geometry, Indiana University Math Journal, Research in the Mathematical Sciences, International Journal of Number Theory, Proceedings of the AMS

Professional Service

2021 – 2023 Association for Women in Mathematics, JMM Meeting committee member

Professional Memberships

American Mathematical Society, Association for Women in Mathematics

Outreach and Service to the Community

2023 Guest speaker, Interschool Le Blanc League for Girls Online Conference
2023 Mentor, IAS Women and Mathematics Job Market Mentorship program
2023 Guest speaker, Girls' Angle Math Club
2022 – 2023 Panelist, Brown University "Graduate school panel"
2022 Guest speaker, Brown University Undergraduate Colloquium
2021 Guest speaker, University of Michigan Undergraduate Math Club
2018 – 2019 Mentor, Stanford Women in Math Mentoring Program
2014 – 2017 Panelist, Harvard Undergraduate Math Table "Graduate school panel"
2011 – 2017 Mentor, Girls' Angle Math Club
2016 Guest speaker, MIT Science and Engineering Program for Teachers
2016 Institute-wide public lecture at MIT Centennial Open House
2016 Guest speaker, Harvard Undergraduate Math Table
2015 Representative for MIT PRIMES, NSF STEM Forum, Washington DC
2015 Guest speaker, MIT MathROOTS
2015 Guest speaker, MIT Science and Engineering Program for Teachers
2012 – 2014 Mentor, MIT PRIMES Circle