Johanna N.Y. Franklin

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Employment

Hofstra University, Professor: 2023–present

Associate Professor: 2017–2023 Assistant Professor: 2014–2017

University of Connecticut, University Postdoctoral Fellow: 2011–2014

Dartmouth College, Visiting Assistant Professor: 2010–2011 University of Waterloo, Postdoctoral Fellow: Spring 2010

Fields Institute, Postdoctoral Fellow: Fall 2009

Participant in the Thematic Program on the Foundations of Computational Mathematics.

National University of Singapore, Visiting Fellow: 2007–2009

Visiting Positions

Victoria University of Wellington, Visiting Professor: September–December 2024

Victoria University of Wellington, Visiting Associate Professor: September-November 2019

Education

University of California, Berkeley. Berkeley, CA

Ph.D. in Logic, 2007

Advisor: Theodore A. Slaman

Thesis title: Aspects of Schnorr randomness

Carnegie Mellon University. Pittsburgh, PA

M.S. in Mathematical Sciences, 2001

Advisor: James Cummings

Thesis title: Algebras of elementary embeddings

B.S. in Mathematical Sciences with minors in Physics and Linguistics, 2001

Received University Honors and College Honors.

Grants and Honors

Research/Academic

NSF Conference Grant for CCR 2024, 2024 (\$32,630)

Simons Foundation Collaboration Grant for Mathematicians, 2016–2023

Hofstra University Faculty Research and Development Grants, 2016–2020, 2024–25

AWM Mathematics Travel Grants, February 2013, February 2015, and February 2024

NSF Graduate Research Fellowship, 2001–2003 and 2005–2006

Phi Beta Kappa, Phi Kappa Phi, Pi Mu Epsilon

Teaching

MAA Metro New York Section Award for Distinguished Teaching, 2018

Service

AWM Service Award, 2024

MAA Metro New York Section Award for Distinguished Service, 2022

Publications

Published/Accepted articles

- Computable classifications of continuous, transducer, and regular functions (with Rupert Hölzl, Alexander Melnikov, Keng Meng Ng, and Daniel Turetsky). Theoretical Computer Science, vol. 1032, Paper No. 115086, 2025.
- 2. Structural highness notions (with Wesley Calvert and Dan Turetsky). *Journal of Symbolic Logic*, 88(4), pp. 1692–1724, 2023.
- 3. A Church-Turing Thesis for Randomness? In L. De Mol et al., eds., *Lecture Notes in Computer Science 12813*, pp. 217-226. Springer, 2021.
- 4. Degrees of and lowness for isometric isomorphism (with Timothy H. McNicholl). *Journal of Logic and Analysis*, 12(6), pp. 1–23, 2020.
- 5. Key developments in algorithmic randomness (survey paper with Christopher P. Porter). In J. Franklin and C. Porter, eds., *Algorithmic Randomness: Progress and Prospects*, pp. 1–39. Cambridge University Press, 2020.
- 6. Relativization in randomness (survey paper). In J. Franklin and C. Porter, eds., *Algorithmic Randomness: Progress and Prospects*, pp. 134–174. Cambridge University Press, 2020.
- 7. Lowness for isomorphism, countable ideals, and computable traceability (with Reed Solomon). *Mathematical Logic Quarterly*, 66(1), pp. 104–114, 2020.
- 8. Taking the path computably traveled (with Dan Turetsky). *Journal of Logic and Computation*, 29(6), pp. 969–973, 2019.
- 9. Algorithmic randomness and Fourier analysis (with Timothy H. McNicholl and Jason Rute). *Theory of Computing Systems*, 63(3), pp. 567–586, 2019.
- 10. Lowness for isomorphism and degrees of genericity (with Dan Turetsky). *Computability*, 7(1), pp. 1–6, 2018.
- 11. Strength and weakness in computable structure theory (survey paper). In A. Day et al., eds., Lecture Notes in Computer Science 10010, pp. 302–323. Springer-Verlag, 2017.
- 12. Genericity and UD-random reals (with Wesley Calvert). *Journal of Logic and Analysis*, 7(4), pp. 1–10, 2015.
- 13. Randomness and non-ergodic systems (with Henry Towsner). *Moscow Mathematical Journal*, 14(4), pp. 711—744, 2014.
- 14. Degrees that are low for isomorphism (with Reed Solomon). *Computability*, 3(2), pp. 73–89, 2014.
- 15. ω -change randomness and weak Demuth randomness (with Keng Meng Ng). *Journal of Symbolic Logic*, 79(3), pp. 776-791, 2014.
- 16. Lowness for difference tests (with David Diamondstone). Notre Dame Journal of Formal Logic, 55(1), pp. 63–73, 2014.
- 17. Anti-complex sets and reducibilities with tiny use (with Noam Greenberg, Frank Stephan, and Guohua Wu). *Journal of Symbolic Logic*, 78(4), pp. 1307–1327, 2013.
- Local computability for ordinals (with Asher M. Kach, Russell Miller, and Reed Solomon).
 In P. Bonizzoni, V. Brattka, and B. Löwe, eds., Lecture Notes in Computer Science 7921,
 pp. 161–170. Springer-Verlag, 2013.
- 19. Degrees of categoricity and the hyperarithmetic hierarchy (with Barbara F. Csima and Richard A. Shore). Notre Dame Journal of Formal Logic, 54(2), pp. 215–231, 2013.
- Martin-Löf random points satisfy Birkhoff's ergodic theorem for effectively closed sets (with Noam Greenberg, Joseph S. Miller, and Keng Meng Ng). Proceedings of the AMS, 140(10), pp. 3623–3628, 2012.

Published/Accepted articles (continued)

- 21. Relativizations of randomness and genericity notions (with Frank Stephan and Liang Yu). Bulletin of the London Mathematical Society, 43(4), pp. 721–733, 2011.
- 22. Van Lambalgen's Theorem and high degrees (with Frank Stephan). Notre Dame Journal of Formal Logic, 52(2), pp. 173–185, 2011.
- 23. A superhigh diamond in the c.e. tt-degrees (with Douglas Cenzer, Jiang Liu, and Guohua Wu). Archive for Mathematical Logic, 50(1-2), pp. 33-44, 2011.
- 24. Difference randomness (with Keng Meng Ng). *Proceedings of the AMS*, 139(1), pp. 345–360, 2011.
- 25. Subclasses of the weakly random reals. *Notre Dame Journal of Formal Logic*, 51(4), pp. 417–426, 2010.
- 26. Schnorr trivial sets and truth-table reducibility (with Frank Stephan). *Journal of Symbolic Logic*, 75(2), pp. 501–521, 2010.
- 27. Lowness and highness properties for randomness notions (survey paper). In T. Arai et al., eds., *Proceedings of the 10th Asian Logic Conference*, pp. 124–151. World Scientific, 2010.
- 28. Schnorr triviality and genericity. Journal of Symbolic Logic, 75(1), pp. 191–207, 2010.
- 29. Hyperimmune-free degrees and Schnorr triviality. *Journal of Symbolic Logic*, 73(3), pp. 999–1008, 2008.
- 30. Schnorr trivial reals: A construction. Archive for Mathematical Logic, 46(7–8), pp. 665–678, 2008.

Other publications

- 31. Six papers on lowness and highness for randomness notions. *Bulletin of Symbolic Logic*, 19(1), pp. 115–118, 2013.
- 32. Greg Chaitin: Mathematics, Biology, and Metabiology. Fields Notes, 10(2), p. 8, 2010.

Books

Revolutions and Revelations in Computability (co-edited with Ulrich Berger, Florin Manea, and Arno Pauly). Springer, Lecture Notes in Computer Science, vol. 13359, 2022.

Algorithmic Randomness: Progress and Prospects (co-edited with Christopher P. Porter). Cambridge University Press, Lecture Notes in Logic, vol. 50, 2020.

Postgraduate Teaching Experience

Hofstra University

Mathematics of Elections (First-Year Seminar)

Elementary Mathematical Statistics

Mathematical Excursions

Logic, Sets, and Probability

Analytic Geometry and Calculus I & III

Financial Mathematics

Applications of Probability to Actuarial Problems

Introduction to Higher Mathematics

Elementary Differential Equations

Linear Algebra

Mathematical Probability and Statistics 1 & 2

Preparation for Exam FM/2

History of Mathematics

Real Analysis 1

Mathematical Logic

Dangerous Ideas (Philosophy Department, co-taught)

University of Connecticut

Honors Calculus I

Honors Multivariable Calculus

Applied Linear Algebra

Elementary Differential Equations

Transition to Advanced Mathematics

History of Mathematics

Probability

Algorithmic Randomness and Computability Theory (graduate topics course)

Dartmouth College

Introduction to Calculus

Calculus of Vector-valued Functions

Discrete Probability

University of Waterloo

Algebra for Honors Mathematics

National University of Singapore

Combinatorial Analysis

Set Theory

Reverse Mathematics (graduate short course)

Talks, 2014-present

Invited conference talks (plenaries noted by \star)

2025 Spring AMS Eastern Sectional Meeting (Hartford, CT), April 2025 (invited)

Joint Meeting of the NZMS, AustMS, and AMS (Auckland, NZ), December 2024 (invited)

Leeds Computability Days (Leeds, UK), July 2024

* Logic Colloquium 2024 (Gothenberg, Sweden), June 2024

2024 Spring AMS Eastern Sectional Meeting (Washington, DC), April 2024 (invited)

★ Mina Reese NY Women and Math Conference (New York, NY), March 2024

2024 Joint Mathematics Meetings (AMS special session) (San Francisco, CA), January 2024

Invited conference talks (continued)

- * Continuity, Computability, Constructivity (Kyoto, Japan), September 2023
- * International Conference on Computability, Complexity and Randomness (Kochel, Germany), July 2023
- * Logic Colloquium 2023 (Milan, Italy), June 2023 (withdrawn for ethical reasons)

MAMLS Spring Fling (New Brunswick, NJ), May 2023

2023 Joint Mathematics Meetings (AMS special session) (Boston, MA), January 2023

Center for Formal Epistemology Workshop on Learning, Randomness, and Complexity (Pittsburgh, PA), October 2023

International Conference on Computability, Complexity and Randomness (Cambridge, UK), June 2022

★ Logic Association of Malaysia Inaugural Conference (online), October 2021

Computability in Europe 2021 (HaPoC satellite workshop) (Ghent, Belgium), July 2021

* 2021 ASL North American Annual Meeting (South Bend, IN), June 2021

2021 Joint Mathematics Meetings (AMS special session) (Washington, DC), January 2021

Deutsche Mathematiker-Vereinigung Jahrestagung 2020 (online, Chemnitz, Germany), September 2020

Southeastern Logic Symposium 2020 (Gainesville, FL), March 2020

Workshop on Computability Theory (Leeds, UK), July 2019

2019 Spring AMS Eastern Sectional Meeting (Hartford, CT), April 2019

2019 Joint Mathematics Meetings (AMS special session) (Baltimore, MD), January 2019

2019 Joint Mathematics Meetings (AMS-ASL session) (Baltimore, MD), January 2019

* Computability in Europe 2018 (Kiel, Germany), July 2018

Logic Colloquium 2018 (Udine, Italy), July 2018

Workshop on Computability Theory and its Applications (Waterloo, Canada), June 2018 Manhattan Algebra Day (New York City, NY), December 2017

- \star Twelfth International Conference on Computability, Complexity and Randomness (Mysuru, India), July 2017
- * Groups and Computation: Interaction Between Geometric Group Theory, Computability, and Computer Science (Hoboken, NJ), June 2017

Computability and Complexity Symposium 2017 (Raumati, New Zealand), January 2017

Computability, Randomness, and Applications (Luminy, France), June 2016

New England Recursion and Definability Seminar (Springfield, MA), April 2016

2015 Fall AMS Central Sectional Meeting (Chicago, IL), October 2015

2015 ASL North American Annual Meeting (Urbana, IL), March 2015

Southeastern Logic Symposium 2015 (Gainesville, FL), February 2015

Shonan Seminar on Algorithmic Randomness and Complexity (Kanagawa, Japan), September 2014

* Eleventh International Conference on Computability and Complexity in Analysis (Darmstadt, Germany), July 2014

Logic Colloquium 2014 (Vienna, Austria), July 2014

Colloquium talks

Central Connecticut State University Mathematics Department Colloquium, February 2018 and May 2023

Talk Math With Your Friends, April 2020

Iowa Colloquium on Information, Complexity and Logic in Computation, November 2017 Vassar College Association for Women in Mathematics lecture, April 2015

Colloquium talks (continued)

Iowa State University Department of Mathematics colloquium, April 2015

UConn Logic Colloquium, April 2014

Southern Illinois University Department of Mathematics colloquium, March 2013

Dartmouth Mathematics Department colloquium, September 2010

University of Waterloo Pure Mathematics Department colloquium, September 2009

Seminar talks

CUNY Logic Workshop, December 2010, October 2013, March 2015, March 2020, February 2023, and April 2025

Stevens Institute of Technology Algebraic Cryptography Center Seminar, February 2018, April 2020, and November 2023

Leeds-Ghent Virtual Logic Seminar, February 2022

Xiamen University ICT Department, November 2021

Online Logic Seminar, December 2020

McMaster Women in Mathematics seminar, October 2020

Lógicos em Quarentena, July 2020

Victoria University of Wellington logic seminar, October 2019

National University of Singapore logic seminar, August 2019

Wisconsin Logic Seminar, April 2019

University of Pennsylvania Logic and Computation seminar, October 2015 and March 2019

Rutgers Logic Seminar, February 2019

Notre Dame Mathematical Logic Seminar, May 2010 and March 2018

George Washington University logic seminar, March 2006 and March 2016

Adelphi University mathematics and computer science seminar, March 2016

Fordham University analysis seminar, February 2016

Penn State logic seminar, April 2011 and April 2015

Other talks

Postgraduate seminar, Victoria University of Wellington, September-October 2024

QR Connections Series, Wellesley College, October 2022

Math National Honors Society, Bel Air High School (MD), February 2022

Undergraduate mathematics seminar, Bard College at Simon's Rock, November 2015

Undergraduate/High School Student Research

NYC Discrete Math REU

Project Mentor, 2024

Polymath Jr. Program

Project Mentor, 2021 and 2022 and Ethics Educator, 2022–present

Hofstra University Honors Theses

Joseph Ronzetti, "A Statistical Analysis of Mana-Positive Mana Rocks," 2021

Nicholas Bragman, "A Partial Classification of Singular Sign Pattern Matrices," 2019

Richard Myers, "On the Hierarchy of Algorithmic Randomness Definitions," 2017

Hofstra University Summer Science Research Program

Research Mentor, 2020 and 2015

Graduate Committees

Ph.D. thesis committees

Jason Block, CUNY, 2025

Ellen Hammatt, Victoria University of Wellington, 2025

Thomas Dickson, Lehigh University, 2021

Rose Weisshaar, University of Notre Dame, 2019

Master's thesis committees

Whitney Patton Turner, University of Connecticut, 2012

Clinton Loo, University of Waterloo, 2010

Service to the Profession

Mathematical Association of America

MAA Representative on the AMS-MAA Mathfest Joint Lecture Committee, 2022–2024 (Chair, 2023–2024)

Chair-Elect, Metro New York Section, 2018–2024

Secretary, Metro New York Section, 2018–2024

Section Representative, Metro New York Section, 2020–2023

Vice-Chair for Four-Year Colleges, Metro New York Section, 2015–2018

Association for Women in Mathematics

Education & Outreach Committee (Program Committee until 2022), 2019–present (Chair, 2022–2024)

Essay Contest Committee, 2015-present (Chair, 2018-present)

AWM-MAA Liaison Committee, 2019–2021

Association Computability in Europe

Executive Committee, Member-at-Large, 2020-present

Council Member, 2019-present

Editorial positions

Mathematics Magazine, Editor, 2024-present

Archive for Mathematical Logic, Editor, 2023-present

Bulletin of Symbolic Logic, Reviews Editor, 2023-present

Workshops organized

"A Convergence of Computable Structure Theory, Analysis, and Randomness" at BIRS, 2023 (with Timothy McNicholl and Linda Brown Westrick)

Program Committees

Computability and Complexity in Analysis 2025 and 2017

Computability, Complexity and Randomness 2024 (co-chair), 2019, and 2016

Computability in Europe 2022 (co-chair), 2019, and 2015

ASL North American Annual Meeting 2019

ASL Winter Meeting 2017

Service to the Profession (continued)

Sessions and panels organized

Special Session in "Computability Theory" for the ASL North American Annual Meeting, 2023 (with Matthew Harrison-Trainor)

Panel on "Mathematical Logic in the Pandemic Era" for the ASL North American Annual Meeting, 2022 (with Deirdre Haskell)

AMS Special Session in "Polymath Jr: Mentoring and Learning", Joint Mathematics Meetings, 2022 (with Kira Adaricheva, Zhanar Berikkyzy, Seoyoung Kim, Steven J. Miller, Adam Sheffer, and Yunus E. Zeytuncu), cancelled when the JMM was rescheduled

Special Session in "Lowness Notions in Computability" for Computability in Europe 2019 (with Joseph S. Miller)

Special Session in "Computability Theory: Pushing the Boundaries" for the Spring AMS Eastern Sectional Meeting, May 2017 (with Russell Miller)

AMS-ASL Special Session in "Logic and Probability" for the Joint Mathematics Meetings, January 2014 (with Wesley Calvert, Doug Cenzer, and Valentina Harizanov)

Special Session in "Computability Across Mathematics" for the Fall AMS Central Sectional Meeting, October 2013 (with Wesley Calvert)

Referee for the Proceedings of the AMS, the Pacific Journal of Mathematics, the Journal of Symbolic Logic, the Annals of Pure and Applied Logic, Information and Computation, the Notre Dame Journal of Formal Logic, the ACM Transactions on Computational Logic, Theory of Computing Systems, Computability, Information Processing Letters, the Journal of Logic and Computation, Philosophia Mathematica, the Journal of Mathematical Logic, the Journal of Mathematics and the Arts, Theoretical Computer Science, the Journal of Applied Logics, and various computer science conferences, including STACS, ISIT, and CiE

Reviewer for Mathematical Reviews, 2015–present

Hofstra University Service

Seminar organizer, Department of Mathematics, 2015–2019, 2020–2024, 2025–present

College Task Force on Diversity, Equity, and Inclusion, 2023–2024, 2025–present

Provost's Classroom Committee, 2022–2024

Stessin Prize Selection Committee, 2023

University Appeals Board, 2020–2022

First Year Common Reading Selection Committee, 2017 and 2018

HCLAS Standards and Review Committee, 2015–2018 (Chair, 2017–2018)

University Senate Committee on the Library, 2015–2017

Outreach Activities

Panelist on "How COVID has changed in-person instruction" for the Metro NY MAA Annual Meeting, April 2023

Panelist on "Know Your Lines: Gerrymandering U.S. Elections" for Hofstra Votes, October 2018 Invited panelist at the Nebraska Conference for Undergraduate Women in Mathematics, January 2016

Speaker in the Women in Computability Workshop at CiE 2015

Participant on the "Preparing for Math Graduate School" panel for the UConn Math Club, April 2012 and April 2013

Co-organizer of the "Conquering a Conference" discussion for UConn math graduate students, December 2012

Participant on the "Diversity in STEM Fields" panel for UConn REU students, July 2012

Instructor for "Logical Thinking" sessions in the Singapore Mathematical Society's Primary Mathematical Olympiad Programme, 2009

Workshop leader and closing speaker at Expanding Your Horizons Singapore, 2008

Actuarial Exams

Exam P/1: Passed November 2014. Exam FM/2: Passed December 2015.

Mathematical Art

"110/193," exhibited at the Mathematical Art Exhibition at the Joint Mathematics Meetings, January 15–18, 2020.

"A Borromean ring of Möbius strips," exhibited at the Joint Mathematics Meetings in association with the AMS Special Session on Mathematics and Mathematics Education in Fiber Arts, January 15–18, 2014.

"Möbius strips with a twist," exhibited at Lafayette College's Art Galleries as part of the "Sticks, Hooks, and the Möbius: Knit and Crochet Goes Cerebral" exhibit, January 8–February 5, 2012.