Farhad Babaee

Curriculum Vitae for Prob-AI

Peronal Information

Full name	Farhad Babaee Ghasemabadi
Email	farhad.babaee@bristol.ac.uk
Homepage	bristol.ac.uk/maths/people/farhad-babaee
Nationality	Iranian–British

Present Appointment

2018 – Present **Lecturer** $\simeq$ **US Assistant Professor**, *School of Mathematics, University of Bristol*, Bristol, UK

2020 – 2022 **Extenuating Circumstances**

Research Interests

Tropical Geometry, Complex Dynamics, Intersection Theory, Matroid Theory, Stratified Morse Theory

Previous Appointments

2016 – 2018 **Postdoctoral Research Fellow**, *Département de Mathématiques, Université de Fribourg*, Fribourg, Switzerland

2015 – 2016 **Postdoctoral Research Fellow**, *Département de Mathématiques et applications, Ecole Normale Supérieure*, Paris, France.

2014 – 2015 **Postdoc / Research Assistant Professor**, *Department of Mathematics and Statistics, Concordia University*, Montréal, Canada

Academic Qualifications

2011 – 2014 **Ph.D. in Pure Mathematics**, *Université de Bordeaux, France – Università di Padova, Italy*

- Dissertation Title: Complex Tropical Currents
- Supervisors: Prof. Alain Yger (Bordeaux), Prof. Andrea D'Agnolo (Padova)
- Note: Très Honorable

2008 – 2010 **M.Sc. in Mathematics**, *Universiteit Leiden, Holland – Università di Padova, Italy*,

- Thesis Title: Integral Transforms of Constructible Functions
- Note: 110/110 cum laude

2004 – 2007 **M.Sc. in Mathematics**, *Sharif University of Technology, Iran*
Thesis Title: Global Dynamics of Certain ODE Models in Population Biology

2000 – 2004 **Bachelor of Mathematics**, *University of Tehran, Iran*

Diplomas & Certificates

06-06-2023 **CREATE HEA Fellowship (FHEA)**, *Advance HE*, Fellowship reference PR264648

October 2021 **MIT Schwarzman College of Computing**, *Online certificate on* Data Science and Machine Learning: Making Data-Driven decisions

Fall 2017 **InnoSuisse (CTI) Entrepreneurship & Start-Up Training**, *Fribourg, Switzerland*
Organized by Ecole Polytechnique Fédérale de Lausanne (EPFL)

Research Grants and Awards

2024 Heilbronn Focused Research Workshop, Awarded £6,500 (September 2024)

2023 London Mathematical Society, Research in Pairs Grant, Awarded £1200

2021 Heilbronn Focused Research Workshop, Awarded £4,500

2019 Heilbronn Focused Research Workshop, Awarded £10,000

2015–2016 Postdoctoral Exellence Grant from the Laboratory of of Paris Sciences & Lettres

2008–2010 ALGANT Masters Scholarship, Erasmus Mundus Scholarship, Awarded 42,000 EUR

August 2003 Honorable Mention, International Mathematics Competitions, Cluj-Napoca, Romania. (IMC 2003)

Publications and Preprints

2025 *Continuity of Slices of Currents and Applications in Tropical Geometry* (with Tien Cuong Dinh). arXiv:2506.09828. [arXiv]

2025 *Extremal Decompositions of Tropical Varieties and Relations with Rigidity Theory* (with Sean Dewar and James Maxwell). *Journal of Symbolic Computation*. [arXiv], [journal]

2023 *Dynamical Tropicalisation. Journal of Geometric Analysis*, A special Issue in Memory of Nessim Sibony. [arXiv], [journal]

2018 *Convexity of Complements of Tropical Varieties and Approximations of Currents* (with Karim Adiprasito). **Mathematische Annalen**, 1–15. [arXiv], [journal]

2017 *A Tropical Approach to a Generalized Hodge Conjecture for Positive Currents* (with June Huh). **Duke Mathematical Journal**, **166** (14): 2749–2813. [arXiv], [journal]

2014 *Complex Tropical Currents, Extremality and Approximations.* arXiv:1403.7456. *Never submitted.* [arXiv]

Theses

2014 *Complex Tropical Currents.* PhD Thesis, Universities of Bordeaux and Padova, July 2014. Supervisors: Alain Yger, Andrea D'Agnolo. [link]

2010 *Integral Transforms of Constructible Functions.* Master's Thesis, University of Padova, September 2010. Supervisor: Andrea D'Agnolo. [link]

Professional Activities

Referee Transactions of AMS, Proc. of the London Mathematical Society, Math. Zeitschrift, Commentarii Mathematici Helvetici

Reviewer zbMATH, Mathematical Reviews (MathSciNet)

Grant Revewer The Dutch Research Council (NWO)

UKRI: Future Leaders Fellowships, Round 9

Ongoing projects

2024- Leading a Focused Research Group with Drs. Enrica Mazzon (Paris), Nguyen-Bac Dang (Paris), Roberto Gualdi (Barcelona), and Danielle Turchetti (Durham). The group aims to extend my work with Prof. Tien-Cuong Dinh to the setting of Berkovich spaces. The project is expected to yield significant advances in Algebraic Geometry.

2025- Collaboration with Prof. Karim Adiprasito (University of Copenhagen & CNRS) Matroid Theory and the Theory of Currents.

2024- Collaboration with Tien Cuong Dinh (National University of Singapore), Tropical Geometry and Dynamics

Co-organizer with James Maxwell, Tropical Days in Bristol (LMS meeting)

Cohomology of toric arrangement complement III, Heilbronn Focused Research Workshop, July 2022

Cohomology of toric arrangement complement II, Focused Research Workshop, Queen Mary University of London

with Kevin Grace, Cohomology of toric arrangement complements I, Heilbronn Focused Research Workshop (September 2019)

Supervision

PhD Daniel Green Tripp — started September 2022, expected completion 2026.

MSc in Data Science Shashwat Upadhyay — *Empirical Analysis of Forecasting Techniques for Prices of Tradable Financial Assets*. Department of Mathematical Engineering. Co-supervised with Tobias Kley (University of Göttingen), Summer 2022.

Sneha Ramesh — *COVID-19 Spread: Comparative Study of Forecasting Techniques from Traditional Time Series Models to Machine Learning Models*. Department of Mathematical Engineering. Co-supervised with Tobias Kley (University of Göttingen), Summer 2022.

Administative Duties

2024 – PhD Admission Tutor

2019 – Library Representative for the School of Mathematics

Teaching Experience

2025 – **Unit Co-Director**, *Topics in Geometry and Discrete Mathematics*, Third and Fourth Year Unit, University of Bristol

2022–2025 **Designer, Unit Director and Lecturer**, *Algebraic Geometry*, Fourth Year Unit

2018–2022 **Lecturer** , *Linear Algebra TB2*, First Year Unit, University of Bristol

2018–2025 Subject Tutor, Linear Algebra, Analysis, Intro. to Proofs, University of Bristol. Total of ≈ 440 students.

2020–2022 Lecturer of Mathematical Investigations, University of Bristol

2016–2018 Teaching Assistant (in English and French) Analysis III, IV Université de Fribourg, Switzerland. Course content included Complex Analysis, Analysis in several variables, Integration on Manifolds, Total of ≈60 students.

2014–2015 Instructor of Math 208: An introductory course on Linear Algebra and Finance, University of Concordia, Montreal, Canada. Total of ≈120 students.

Relevant Skills

Languages:
- Farsi: Native
- English: Fluent
- French: Upper Intermediate, B1-B2 (European Framework)
- Italian: Basic, A1-A2 (European Framework)

Outreach

July 2025 RSA Cryptography for Year 10 students from underrepresented backgrounds

Feb 2025 Active Outreach Staff Training Event, 26 February 2025. Participated in outreach preparation and engagement training

October 2016 (Volunteer) Teaching basic mathematics to refugees, Switzerland.

Recent Talks/Invitations

Sept 2025 *LMS - Tropical Geometry Network*, University of Durham, UK

Sept 2025 *Complex Geometry & Dynamics*, Lille, France

July 2025 *Complex Geometry, Complex Analysis and Dynamics / Géométrie Complexe, Analyse et Dynamique Complexe*, CIRM, Luminy (Marseille).

March 2024 *Dynamical tropicalisation*, Queen Mary University of London, UK

October 2023 *Dynamical tropicalisation*, University of Warwick, UK

August 2023 *Tropical Geometry from Complex Dynamics Standpoint*, Conference on Recent Developments in Algebraic Geometry, Arithmetic and Dynamics, National University of Singapore, Singapore

May 2023 *Dynamical tropicalisation*, University of Bristol, UK

March 2023 *Dynamical tropicalisation*, University of King's College of London, UK

August 2022 *Dynamical tropicalisation*, National University of Singapore, Singapore

May 2022 *Dynamical tropicalisation*, Tropical Mathematics & its Applications/London Mathematical Society meetings, Durham, UK

March 2022 *Dynamical tropicalisation*, Bristol's Ergodic Theory and Dynamical Systems Seminars, Bristol, UK

March 2022 *Dynamical tropicalisation*, Latin American Geometria Algebraica Real y TrOpical Seminar (LAGARTOS), Online Seminars, Recording on BlueJeans

October 2021 *Tropical currents*, Quantitative aspects in complex analysis, geometry and dynamics, University of Lille (Hybrid), France