Curriculum Vitae

Bálint Vető

Personal data:

Nationality:	Hungarian
Born:	9th Feb, 1983, Budapest, Hungary
Family:	married, three children: Helga (2015), Bettina (2017), Kristóf (2017)

Contact information:

Address:	Institute of Mathematics, Budapest University of Technology and Economics (BME) Egry J. u. 1., 1111 Budapest, Hungary
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E-mail:	vetob@math.bme.hu
Web:	http://www.math.bme.hu/~vetob

Education:

2011	PhD in Mathematics and Computer Science, Budapest University of Technology, summa cum laude
Advisor:	prof. Bálint Tóth
Title of thesis:	Asymptotic behaviour of random walks with long memory
2006	MSc in Mathematics, Budapest University of Technology, diploma with honours

Research interest:

probability theory, KPZ universality class, random growth models, interacting particle systems, non-intersecting random walks and processes, determinantal processes, random matrix theory self-interacting random walks and processes, random walks with long memory, "true" self-avoiding walk stochastic modelling in financial mathematics

Employment and appointments:

Jul 2025–	part time researcher, HUN–REN Rényi Institute
Feb–Jun 2025	visiting researcher, HUN–REN Rényi Institute
Jan 2023–	deputy head of department, Department of Stochastics, BME
Sep 2018–	associate professor, Department of Stochastics, BME (on unpaid leave between Feb–Jun 2025)
Jul 2012–Aug 2018	assistant professor, Department of Stochastics, BME (on unpaid leave between Jul 2012–Aug 2016)
Oct 2013–Aug 2016	Postdoctoral fellow of the Hungarian Academy of Sciences hosted at the MTA–BME Stochastics Research Group
Nov 2012–Sep 2013	Humboldt postdoctoral fellow, Bonn University (mentor: prof. Patrik Ferrari)
Oct 2011–Oct 2012	postdoctoral fellow, Hausdorff Center for Mathematics, Bonn (mentor: prof. Patrik Ferrari)
Jan–Sep 2011	research assistant, MTA–BME Stochastics Research Group
Jan–Aug 2010	research assistant, MTA–BME Stochastics Research Group

Other professional activity:

- participant of the Morgan Stanley – BME Financial Innovation Centre project *Weighted Monte Carlo Methods for Finance*, 2010–2011

Honours and scholarships:

- Outstanding Teacher of the Faculty, BME Faculty of Natural Sciences, 2023
- Bolyai+ Research Scholarship of the New National Excellence Program, 2020-2023
- János Bolyai Research Scholarship of the Hungarian Academy of Sciences, 2020–2023
- Bolyai+ Research Scholarship of the New National Excellence Program, 2018–2019
- Postdoctoral Scholarship of the New National Excellence Program, 2016–2017
- János Bolyai Research Scholarship of the Hungarian Academy of Sciences, 2015–2019 (suspended for 10 months in 2016–2017)
- Paul Erdős Scholarship for Young Researchers, 2014
- Postdoctoral Fellowship of the Hungarian Academy of Sciences, awarded twice: 2013–2015 and 2015–2016
- Humboldt Research Fellowship for Postdoctoral Researchers, 2012–2013
- Junior Research Fellowship, Erwin Schrödinger Institute, Vienna, 2008
- Outstanding Student of the Faculty, BME Faculty of Natural Sciences, 2005
- Scholarship of the Hungarian Republic, awarded twice: 2004 and 2005
- First Prize, National Conference of Student Research Societies, Hungary, 2005
- Dennis Gábor Award of Student Research Societies, Novofer Foundation, Hungary, 2004

Grants:

- NKFI ADVANCED 150474 (Scaling of correlated stochastic systems), investigator, 2025–2028, 61.3 M HUF
- NKFI FK142124 (Random graphs and interacting particle systems), investigator, 2022–2026, 32.9 M HUF
- NKFI FK123962 (Large-scale behavior of random spatial processes and interacting particle systems), investigator, 2017–2022, 11.5 M HUF
- NKFI PD123994 (Interacting particle systems and non-intersecting paths), principal investigator, 2017–2020, 15.2 M HUF
- OTKA K100473 (Scaling Limits of Interacting Particle Systems: Fluctuations, Limit Distributions, Hydrodynamic Limits), investigator, 2012–2016, 20.7 M HUF

Conference and seminar talks:

- invited speaker, Algebraic and combinatorial structures in exactly solvable models, AIM, Pasadena, CA, June 2026
- invited speaker, Recent Progress on Self-Interacting Processes and Non-Reversible Monte Carlo, Paris, May 2026
- Budapest–Vienna Probability Seminar, ISTA Austria, Oct 2025
- invited speaker, Large Scale Stochastic Dynamics, Oberwolfach, Sep 2025
- Toronto Probability Seminar, Toronto, Feb 2025
- Al-Khwarizmi Applied Mathematics Webinar, online, Nov 2024
- Durhem Probability Seminar, Durham University, Oct 2023
- 43rd Conference on Stochastic Processes and their Applications, Lisbon, July 2023
- Budapest–Vienna Probability Seminar, Rényi Institute, Budapest, Sep 2021
- 10th World Congress in Probability and Statistics, online, July 2021
- Bernoulli–IMS One World Symposium, online, Aug 2020
- Large Scale Stochastic Dynamics, Oberwolfach, Nov 2016
- Stochastic seminar, Institute of Science and Technology, IST Austria, May 2015
- Department seminar, Central European University, Budapest, Jan 2015
- 37th Conference on Stochastic Processes and their Applications, Buenos Aires, July 2014
- 11th German Probability and Statistics Days, Ulm, Mar 2014

- invited speaker, Advanced School and Workshop on Random Matrices and Growth Models, Trieste, Sep 2013
- invited speaker, 36th Conference on Stochastic Processes and their Applications, Boulder, CO, July 2013
- European Meeting of Statisticians, Budapest, July 2013
- Stochastics seminar, University of Wisconsin, Madison, WI, May 2013
- Stochastics seminar, Leiden University, Nov 2012
- Analysis seminar, Leuven University, Oct 2012
- Workshop on Scaling Limits in Models of Statistical Mechanics, Oberwolfach, Sep 2012
- Stochastics seminar, Technical University Munich, Nov 2011
- Stochastics seminar, Bonn University, January 2011 and Nov 2011
- poster, Workshop on Combinatorics and Analysis in Spatial Probability, EURANDOM, Eindhoven, Dec 2010
- Stochastics seminar, Tübingen University, Jan 2010
- Berlin–Zürich Summer School, Chorin, Sep 2009
- invited speaker, 27th European Meeting of Statisticians, Toulouse, July 2009
- Workshop on Combinatorics and Statistical Physics, Erwin Schrödinger Institute, Vienna, May 2008

Conferences, visits:

- Quantum many body system and interacting particles, Münster, Germany, 2022
- Qualitative Methods in KPZ Universality, CIRM, Marseille, France, 2017
- Beta Ensembles: Universality, Integrability, and Asymptotics, Banff, Canada, 2016
- Probability and asymptotic analysis in strongly coupled systems, Bonn, Germany, 2016
- Random Interfaces and Integrable Probability, Florence, Italy, 2015
- Advances in Probability: Integrability, Universality and Beyond, Oxford, UK, 2014
- Laplacians, Random Walks, Bose Gas, Quantum Spin Systems, Leverhulme workshop, Bristol, UK, 2014
- Probability, Analysis and Dynamics, Bristol, UK, 2014
- Random Walks: Crossroads and Perspectives, Budapest, Hungary, 2013
- Random Matrices Workshop, Bonn, Germany, 2012
- Interacting particle systems, growth models and random matrices workshop, Warwick, UK, 2012
- teaching assistant, 2011 School on Mathematical Statistical Physics, Prague, Czech Republic, 2 weeks, 2011
- La Pietra Meeting, Florence, Italy, 2011
- research visit, Tübingen, Germany, 2 weeks, 2010
- New random geometries, workshop, Bath, UK, 2009
- teaching assistant, Zürich–Berlin Summer School, Chorin, Germany, 1 week, 2009
- junior research fellow, Erwin Schrödinger Institute, Vienna, Austria, 5 months, 2008
- IAS/Park City Mathematics Institute Summer Session in statistical physics, Park City, UT, USA, 3 weeks, 2007
- Random Graphs and Complex Networks, EURANDOM workshop, Eindhoven, Netherlands, 2007
- French–Hungarian student exchange program, École Normale Supérieure, Paris, France, 2 weeks, 2005
- CEEPUS Summer School, Hradec Králové, Czech Republic, 2 weeks, 2003

Organization activity:

- organizer of the Focused workshop on the Brownian web, the Brownian net and their geometry, Erdős Center, Budapest, Apr 2025
- co-organizer of the School and Workshop on stochastic interacting particle systems and random matrices as well as of the Stochastics and influences workshop, Erdős Center, Budapest, June 2025
- organizer of the contributed session Interacting systems and KPZ universality on the 43rd Conference on Stochastic Processes and their Applications, Lisbon, July 2023
- co-organizer of the conference Stochastics and Interactions, Budapest, July 2015
- organizer of the contributed session Interacting particle systems on the 29th European Meeting of Statisticians, Budapest, July 2013

Referee:

- journals: Invent. Math., Forum Math. Pi, Ann. Probab., Ann. Appl. Probab., Probab. Theory Related Fields, Electron. J. Probab., Comm. Math. Phys., Stochastic Process. Appl., J. Stat. Phys., ALEA – Lat. Am. J. Probab. Math. Stat., J. Theoret. Probab., Random Structures Algorithms, Combinatorica, SIGMA Symmetry Integrability Geom. Methods Appl., Indag. Math.
- AMS Mathematical Reviews – reviewer (2012–2025)
- grant proposal for the National Research, Development and Innovation Office (NKFIH)

Teaching experience:

- Stochastic processes for BSc students in mathematics since 2021
- Markov processes and martingales for MSc students in mathematics since 2018
- Extreme value theory for MSc students in mathematics since 2014
- Calculus lecture for architecture students since 2014
- Problem Solving Seminar for first year undergraduate students in mathematics (compulsory course) since 2006 for 10 semesters
- co-organizer of the student seminars for MSc students in mathematics for 2 semesters (2008 and 2009): choosing course material and supervising the preparation of students to the seminar talks (renewal theory, the continuum random tree)
- problem solving courses for undergraduate students in civil engineering, architecture, informatics, electrical engineering and physics since 2002 for more than 10 semesters for the courses: Calculus, Linear Algebra, Multivariate Calculus, Probability Theory, Discrete Mathematics, Theory of Algorithms

Supervision of students:

- Norbert Oroszki, MSc, 2026
- Waqar Ali Soomro, MSc, 2026
- Zsolt Szabó, PhD, 2025–
- Edrine Krasniqi, BSc, 2025
- Marleen Annique Buitenhuis, BSc, 2024
- Bori Anna Mészáros, Student Research Societies (First Prize, Special Prize of the Faculty of Natural Sciences and Special Prize of Morgan Stanley at BME) and BSc, 2024
- Csaba Kiss, Student Research Societies (First Prize at ELTE), 2023 and MSc, 2024
- Zsolt Bartis, MSc, 2023
- Csaba Kiss, BSc and Student Research Societies (Second Prize at BME and Second Prize at the national conference OTDK), 2022
- Ádám Márk Balog, BSc, 2021
- József Kiss, Student Research Societies (honourable mention at BME), 2020 and MSc, 2021
- László Mikolás, Student Research Societies (honourable mention at BME), 2019
- Gábor Fehér, BSc, 2019
- Zsófia Talyigás, Student Research Societies (Second Prize at BME), 2017 and MSc, 2018
- Réka Szabó, Student Research Societies (Third Prize at BME and Second Prize at the national conference OTDK), 2014 and MSc, 2015
- Zsófia Talyigás, BSc, 2015
- Ákos Somogyi, BSc, 2014
- István Rédl, Student Research Societies (First Prize at BME and participation on the national conference OTDK) and BSc (jointly with Bálint Tóth), 2009

Foreign languages:

German	fluent
English	fluent
Italian	intermediate

Publications:

- B. A. Mészáros, B. Vető: Stabilization time of finite configurations with a second class particle in discrete TASEP *preprint*, arXiv:2603.28170
- B. Vető, B. Virág: The geometry of coalescing random walks, the Brownian web distance and KPZ universality, *Ann. Probab.* **54** (2026), no. 2, 567–596
- Cs. Kiss, L. Németh, B. Vető: Modelling the age distribution of longevity leaders, *Sci. Rep.* **14** (2024), no. 20592
- B. Vető: Fluctuations around the diagonal in Bernoulli-Exponential first passage percolation, *Electron. Commun. Probab.* **29** (2024), no. 31, 1–14
- J. Kiss, B. Vető: Moments of the superdiffusive elephant random walk with general step distribution, *Electron. Commun. Probab.* **27** (2022), no. 44, 1–12
- B. Vető: Asymptotic fluctuations of geometric q-TASEP, geometric q-PushTASEP and q-PushASEP, *Stochastic Process. Appl.* **148** (2022), 227–266
- P. L. Ferrari, B. Vető: Upper tail decay of KPZ models with Brownian initial conditions, *Electron. Commun. Probab.* **26** (2021), no. 15, 1–14
- P. L. Ferrari, B. Vető: Fluctuations of the Arctic curve in the tilings of the Aztec diamond on restricted domains, *Ann. Appl. Probab.* **31** (2021), no. 1, 284–320
- Zs. Talyigás, B. Vető: Borodin–Péché fluctuations of the free energy in directed random polymer models, *J. Theoret. Probab.* **33** (2020), no. 3, 1426–1444
- P. L. Ferrari, B. Vető: The hard-edge tacnode process for Brownian motion, *Electron. J. Probab.* **22** (2017), no. 79, 1–32
- R. Szabó, B. Vető: Ages of records in random walks, *J. Stat. Phys.* **165** (2016), no. 6, 1086–1101
- S. Delvaux, B. Vető: The hard edge tacnode process and the hard edge Pearcey process with non-intersecting squared Bessel paths, *Random Matrices Theory Appl.* **4** (2015), no. 2, 1550008
- A. Borodin, I. Corwin, P. Ferrari, B. Vető: Height fluctuations for the stationary KPZ equation, *Math. Phys. Anal. Geom.* **18** (2015), no. 1, 1–95
- B. Vető: Tracy–Widom limit of q-Hahn TASEP, *Electron. J. Probab.* **20** (2015), no. 102, 1–22
- P. Ferrari, B. Vető: Tracy–Widom asymptotics for q-TASEP, *Ann. Inst. Henri Poincaré Probab. Stat.* **51** (2015), no. 4, 1465–1485
- I. Horváth, B. Tóth, B. Vető: Relaxed sector condition, *Special Issue Bull. Inst. Math. Acad. Sin. (N.S.)* **7** (2012), no. 4, 463–476
- P. Ferrari, B. Vető: Non-colliding Brownian bridges and the asymmetric tacnode process, *Electron. J. Probab.* **17** (2012), no. 44, 1–17
- M. Stippinger, B. Vető, É. Rácz, Zs. Bihary: Analytic results and weighted Monte Carlo simulations for CDO pricing, *Eur. Phys. J. B* **85** (2012), no. 2, 51
- I. Horváth, B. Tóth, B. Vető: Diffusive limits for "true" (or myopic) self-avoiding random walks and self-repellent Brownian polymers in $d \geq 3$, *Probab. Theory Related Fields* **153** (2012), no. 3–4, 691–726
- B. Tóth, B. Vető: Continuous time 'true' self-avoiding random walk on $\mathbb{Z}$, *ALEA – Lat. Am. J. Probab. Math. Stat.* **8** (2011), 59–75
- B. Vető: The "True" Self-Avoiding Random Walk in $\mathbb{Z}$, *Wolfram Demonstration Project* (2009)
- B. Tóth, B. Vető: Self-repelling random walk with directed edges on $\mathbb{Z}$, *Electr. J. Probab.* **13** (2008), no. 62, 1909–1926
- B. Tóth, B. Vető: Skorohod-reflection of Brownian Paths and BES^3, *Acta Sci. Math. (Szeged)* **73** (2007), no. 3–4, 781–788
- B. Vető: The time evolution of permutations under random stirring, *Acta Sci. Math. (Szeged)* **72** (2006), no. 3–4, 891–906

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