István Kolossváry

Curriculum Vitae

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Jan. 1. 2024 – Marie Skłodowska-Curie Actions Postdoctoral Fellow, Alfréd Rényi Institute of Mathematics.
Sep. 1. 2019 – Dec. 28. 2023, Research Fellow in Analysis, University of St Andrews
Feb. 1. 2019 – July 31. 2019, Assistant Lecturer, Budapest University of Technology and Economics.
Sept. 1. 2015 – Jan. 31. 2019, Assistant Research Fellow, MTA-Alfréd Rényi Institute of Mathematics.

Education

2019 **Doctoral School of Mathematics and Computer Science**, *Budapest University of Technology and Economics (BME)*, Supervisor: Dr. Károly Simon.
Thesis title: Fractals in dimension theory and complex networks

2012 **Masters of Applied Mathematics**, *BME*, *highest honours*, Specialized in Stochastics.

2009 **Bachelor of Mathematics**, *BME, Faculty of Natural Sciences*.

Professional activities

Publications

Preprints
- **Multifractal analysis of Gatzouras–Lalley measures**, *T. Jordan, I. K., A. Rutar*, *arXiv2609.35092 link*, 2026.
- **Projections of self-affine sets onto lines**, *B. Bárány, A. Käenmäki, I. K.*, *arXiv2607.14740 link*, 2026.
- **On exponential separation of analytic self-conformal sets on the real line**, *B. Bárány, I. K., S. Trocheit*, *arXiv2509.07888 link*, 2025.

Accepted
- **Recent Progress on Fractal Percolation**,
I. K., S. Trocheit, *Proceedings of FGS7*, 2026, *arXiv2508.08150 link*.

Published
- **Assouad spectrum of Gatzouras-Lalley carpets**,
A. Banaji, J.M. Fraser, I. K., A. Rutar, *Adv. Math.*, Vol. 484, 110707, 2026.
- **Intermediate dimensions of Bedford-McMullen carpets with applications to Lipschitz equivalence**,
A. Banaji, I. K., *Adv. Math.*, Vol. 449, 109735, 2024.
- **The L^q spectrum of self-affine measures on sponges**,
I. K., *J. London Math. Soc.*, Vol. 108(2), 666-701, 2023.
- **The Assouad dimension of self-affine measures on sponges**,
J. M. Fraser, I. K., *Ergodic Theory Dynam. Systems*, Vol. 43(9), 2974-2998, 2023.
- **On the convergence rate of the chaos game**,
B. Bárány, N. Jurga, I. K., *Int. Math. Res. Not.* Vol. 2023(5), 4456–4500, 2023.
- **An upper bound for the intermediate dimensions of Bedford-McMullen carpets**,
I. K., *J. Fractal Geom.* Vol. 9(1), 151-169, 2022. arXiv link to extended version
- **Distance between natural numbers based on their prime signature**,
I. K., I. B. Kolossváry, *J. Number Theory*, Vol. 234, 120-139, 2022.

- **Hausdorff measure and Assouad dimension of generic self-conformal IFS on $\mathbb{R}$**, *B. Bárány, M. Rams, I. K., K. Simon*, *Proc. Roy. Soc. Edinburgh Sect. A*, Vol. 151(6), 2051-2081, 2021.
- **Triangular Gatzouras-Lalley-type planar carpets with overlaps**, *I. K., Károly Simon*, *Nonlinearity*, Vol. 32(9), 3294-3341, 2019.
- **Pointwise regularity of parameterized affine zipper fractal curves**, *B. Bárány, G. Kiss, I. K.*, *Nonlinearity*, Vol. 31(5), 1705-1733, 2018.
- **Degrees and distances in random and evolving Apollonian networks**, *I. K., J. Komjáthy, L. Vágó*, *Adv. in Appl. Probab.*, Vol. 48(3), 865-902, 2016.
- **On the absolute continuity of the Blackwell measure**, *B. Bárány, I. K., J. Stat. Phys.*, Vol. 159(1), 158-171, 2015.
- **First Passage Percolation on Inhomogeneous Random Graphs**, *I. K., J. Komjáthy*, *Adv. in Appl. Probab.*, Vol. 47(2), 589-610, 2015.
- **Multigraph limits and exchangeability**, *I. K., B. Ráth*, *Acta Math. Hungar.*, Vol. 130, 1-34, 2011.

Proceedings
- **Explicit Evaluation of ME(3) Membership**, *I. K., Miklós Telek*, *8th Int. Conf. on Quantitative Evaluation of SysTems (QEST), fast abstract*, pages 11-12, CTIT University of Twente, 2011

Invited (I) and contributed (C) conference talks

2026 July **The dual IFS and exponentially separated analytic IFSs on $\mathbb{R}$** (I), *Focused Workshop on dimension drop for analytic Iterated Function Systems*, Budapest, HU.

2026 June **Verifying exponential separation for analytic self-conformal sets** (C), *Fractals and Related Fields V*, Porquerolles, FR.

2024 Sept. **Dimension interpolation on planar carpets** (C), *Fractal Geometry and Stochastics 7*, Chemnitz, DE.

2024 July **Assouad spectrum of Gatzouras-Lalley carpets** (C), *Workshop on Ergodic Theory and Fractal Geometry*, Loughborough University, UK.

2023 July **The Assouad spectrum of Lalley-Gatzouras carpets** (C), *Fractal Geometry Workshop*, ICMS Edinburgh, UK.

2023 May **A variational principle for box counting quantities** (C), *Thermodynamic Formalism: Non-additive Aspects and Related Topics*, Bedlewo, Poland.

2022 Sept. **Various dimensions of self-affine measures on sponges** (C), *Fractals and Related Fields IV (FARF)* , Porquerolles, France.

2022 June **On the Convergence Rate of the Chaos Game** (C), *7th Cornell Conference on Analysis, Probability, and Mathematical Physics on Fractals* , Ithaca, USA.

2022 May **The L^q spectrum of self-affine measures on sponges** (I), *Workshop on affine and overlapping iterated function systems 2022* , Bristol, UK.

2022 Mar. **Intermediate dimensions of Bedford-McMullen carpets** (I), *Junior Ergodic Theory Meeting* , ICMS, Edinburgh, UK.

2018 Oct. **Triangular Gatzouras–Lalley-type planar carpets with overlaps**, *Fractal Geometry and Stochastics 6*, Bad Herrenalb, Germany.

2017 Dec. **Triangular Gatzouras–Lalley-type planar carpets**, *Workshop "Fractals and Dimensions"*, Institut Mittag–Leffler, Stockholm, Sweden.

2016 Apr. **Local Regularity of Affine Zipper Fractal Curves**, *Wandering Seminar Ergodic Theory and Dynamical Systems*, IMPAN Warsaw, Poland.

2016 Mar. **Small world phenomena for Random Apollonian Networks**, *British Mathematical Colloquium, speed talk*, Bristol, UK.

2015 Oct. **On the local Hölder exponent of de-Rham like fractal curves**, *Fractal Geometry and Dynamics*, Bedlewo, Poland.

2013 Aug. **Distances in random Apollonian networks**, *16th Int'l Conference on Random Structures and Algorithms*, Adam Mickiewicz University, Poznan, Poland.

2011 Oct. **Explicit identification of the class of order 3 matrix exponential distributions**, *Young European Queueing Theorists (YEQT V) Workshop on "Stochastic Networks and Optimization"*, Eurandom, Eindhoven, Netherlands.

Seminars Talks given at BME Fractal Geometry Seminar, Rényi Analysis Seminar, Uppsala Universitet, KTH (Royal Institute of Technology), Jagiellonian University in Cracow, Universität Bremen, Universität Wien, University of Bristol, University of Manchester, University of St Andrews, University of Warwick.

Further conferences, workshops, research visits

2026 *Interactions between fractal geometry, harmonic analysis, and dynamical systems* , Institut Mittag–Leffler, SE; *Ergodic theory, fractal geometry and Diophantine approximation* , IMPAN, PL;

2025 *Perspectives on Ergodic Theory and its Interactions* , IMPAN, PL

2024 *Fractals and Hyperbolic Dynamical Systems* , Alfréd Rényi Institute of Mathematics, HU; *XLIV Dynamics Days Europe* , Constructor University, DE; *Geometry and Fractals Under the Midnight Sun* , University of Oulu, FI

2023 One day ergodic theory meeting University of Warwick, UK; Research visit Loughborough University; *Dynamics and asymptotics in algebra and number theory* Bielefeld, GER; Recent advances in ergodic theory and dynamics Loughborough University, UK; *Multifractal analysis and self-similarity* CIRM, FR; Simons Semester at IMPAN, PL

2022 *Rényi 100* poster, HUN; *Geometry of Deterministic and Random Fractals* member of Scientific Organizing Committee and editor of the conference special issue at MCA, HUN

2020 *Fractals and Dynamics* , Bar-Ilan University IL

2019 *Dynamics, measures and dimensions* poster, PL; Research School in Thermodynamic Formalism, CIRM, FR

2018 *Geometric Measure Theory and its Connections* poster, FIN; *FGS 6*, GER

2017 *5th Heidelberg Laureate Forum*, DE; *Arbeitsgemeinschaft: Additive Comb., Entropy, and Fractal Geom.*, Oberwohlfach; *Fractals and Dimensions*, Institut Mittag–Leffler, SE

2016 *University of Warwick* (UK) 3 month visit, also at St. Andrews, Bristol; *Brown University/ICERM* (USA) workshop, poster; *IMPAN* (PL) Wandering seminar

2015 Summer school and a two week study trip at *IMPA*, Brazil; *Fractals and Related Fields III.* conference poster, France; one month visit (Simons Semester) to *IMPAN*, Poland

2014 *Workshop on Fractals*, Israel; Conference on *Fractal Geometry and Stochastics V*, Germany; *Workshop Probability and Graphs* poster, Eindhoven

2013 *Int'l Conference on Fractals and Wavelets*, India; study trip to *Universiteit Leiden*

2012 study trip to *University of Warwick* and *Technische Universiteit Eindhoven*

Event organisation

2026 Focused Workshop on dimension drop for analytic Iterated Function Systems; 6-9 July.

2024 Workshop on the Geometry of Deterministic and Random Fractals II; 2-6 September. School on Dimension Theory of Fractals; 26-30 August

Teaching

Lectures and practical courses for various BSc and MSc engineer students in linear algebra, calculus, (partial) DEs, probability and stochastic processes in English and Hungarian.

Grants

2024–2025 Marie Sklodowska-Curie Actions Postdoctoral Fellowship ID 101109013 (141 782 EUR)

2026– Hungarian NRDI Office grant STARTING152587 (98 522 000 HUF)

Awards

2025 János Bolyai Research Scholarship of the Hungarian Academy of Science

2017 Scholarship of the New National Excellence Program

2016 Gyula Kőnig Young Researcher Award

2015 Hungarian National Eötvös Scholarship; BM*e* Research Grant I. Prize

2011 Fellowship of the Republic of Hungary; BME "Good student, good athlete" I. Prize; II. Prize, I. Prize and special prize at the Scientific Students' Associations Conference

2010 17th Int'l Mathematics Competition for University Students, Third Prize, Bulgaria

2006 Trefort Memorial Award, given to the best overall achievement by a high school senior

Languages

English **Advanced type C state accredited exam** *excellent, fluent*

German **Intermediate type C state accredited exam** *out of practice*

Miscellaneous

- Athletics: former member of the national team, podium placings at national championships, awarded "Good student, good athlete" of Hungary in 2010.
- Other interests include hiking, teaching, playing bridge, west coast swing, photography.

Budapest, October 2026.