

# István Kolossváry

## Curriculum Vitae

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Sep. 1. 2019 – 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

- 2012–2019 **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
- 2009–2012 **Masters of Applied Mathematics**, *BME*, *highest honours*, Specialized in Stochastics.
- 2006–2009 **Bachelor of Mathematics**, *BME*, *Faculty of Natural Sciences*.

## Professional activities

### Publications

- Preprints ○ **Intermediate dimensions of Bedford-McMullen carpets with applications to Lipschitz equivalence**, A. Banaji, I. K., *arXiv2111.05625 link*, 2021.
- Published ○ **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

- 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.

#### Further conferences, workshops, study trips

- 2023 *Dynamics and asymptotics in algebra and number theory* Bielefeld, GER; *Fractal Geometry Workshop* lightning talk, ICMS, 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.*, Oberwolfach; *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*

### 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.

### Awards

- 2023 recipient of Marie Skłodowska-Curie Actions Postdoctoral Fellowship
- 2017 Scholarship of the New National Excellence Program
- 2016 Gyula König Young Researcher Award
- 2015 Hungarian National Eötvös Scholarship; BME 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	<b>Advanced type C state accredited exam</b>	<i>excellent, fluent</i>
German	<b>Intermediate type C state accredited exam</b>	<i>out of practice</i>

### 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.

St Andrews, September 2023.