

Rudolf Dániel Prokaj

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Education

2024 **PhD in Mathematics**, *Budapest University of Technology and Economics*, Doctoral School of Mathematics and Computer Science.

Subject: Fractal Geometry, Supervisor: Prof. Károly Simon

2018 **M.Sc. in Applied Mathematics**, *Budapest University of Technology and Economics*, Stochastics specialization, excellent diploma.

M.Sc. thesis: The dimension theory of some families of non-conformal iterated function systems
Supervisor: Prof. Károly Simon

2016 **B.Sc. in Mathematics**, *Budapest University of Technology and Economics*, Applied Mathematics specialization, I graduated with highest honors.

B.Sc. Thesis: The Ledrappier-Young formula for self-affine iterated function systems
Supervisor: Prof. Károly Simon

Experience

2024 – **Visiting Assistant Professor**, *University of North Texas*.

2022–2024 **Young Researcher**, *Alfréd Rényi Institute of Mathematics*.

2021 fall **Lecturer**, *Budapest University of Technology and Economics*.

I held the Probability Theory 1 course for math majors.

2018–2024 **Instructor**, *Budapest University of Technology and Economics*.

I held and prepared several mathematics tutorials for engineering and math majors.

Conference talks

14-15. **AMS Fall Central Sectional Meeting**,

09.2024 *University of Texas, San Antonio, TX, USA*, (20 min invited talk),

Title: On the level sets of Okamoto's function.

03-07. **Fractal Geometry Workshop**,

07.2023. *ICMS, Bayes center, Edinburgh, UK*, (5 min talk),

Title: On continuous piecewise linear iterated function systems.

14-19. **Thermodynamic Formalism: Non-additive Aspects and Related Topics**,

05.2023. *Conference center, Będlewo, Poland*, (30 min talk),

Title: On the attractor of piecewise linear iterated function systems.

- 12-13. **Interdisciplinary Doctoral Conference**,
 11.2021. *University of Pécs, Pécs, Hungary*, (15 min talk),
 Title: A survey on piecewise linear iterated function systems on the line.
- 22-26. **Ergodic Theory and Related Fields**,
 07.2019. *IMAR, Bucharest, Romania*, (30 min talk),
 Title: Piecewise linear iterated function systems on the line.

Seminar talks and Posters

- 10.04. **Dynamical Systems Seminar**,
 2024. *University of North Texas, Denton, TX, USA*, (50 min talk),
 Title: Self-similar sets, dimension drop and Okamoto's function.
- 05.06. **DAGGER seminar**,
 2023. *Warwick University, Coventry, UK*, (50 min talk),
 Title: Fractal dimensions of continuous piecewise linear iterated function systems on the line.
- 17.03. **BudWiSer Seminar**,
 2023. *University of Vienna, Vienna, Austria*, (50 min talk),
 Title: Continuous piecewise linear iterated function systems on the line.
- 15-19. **On geometric complexity of Julia sets—IV**,
 08.2022. *Conference center, Będlewo, Poland*, (Poster),
 Title: Continuous piecewise linear iterated function systems on the line.
- 10-12. **Workshop on affine and overlapping iterated function systems**,
 05.2022. *University of Bristol, Bristol, UK*, (Poster),
 Title: Continuous piecewise linear iterated function systems on the line.
- 03-04. **Fractal Talks**,
 06.2021. *online, University of Bristol*, (30 min talk),
 Title: Continuous piecewise linear iterated function systems on the line.

Organizing activity

- 27.06-01.07 **Geometry of Deterministic and Random Fractals**,
 2021. *BUTE, Budapest, Hungary*, (Local Organizer).
- 24-28. **Visegrád Conference on Dynamical Systems 8**,
 06.2019. *Rényi Institute, Budapest, Hungary*, (Local Organizer).

Publications

- 2025 **On the level sets of Okamoto's function**, *R.D. Prokaj, B. Bárány*, arXiv preprint arXiv:2501.10584.
- 2024 **Continuity of the natural dimension of piecewise linear iterated function systems**, *R.D. Prokaj, P. Raith*, arXiv preprint arXiv:2402.05695.
- 2023 **Fractal dimensions of continuous piecewise linear iterated function systems**, *R.D. Prokaj, P. Raith, K. Simon*, *Proceedings of the American Mathematical Society*, **151.11**: 4703-4719.

- 2023 **Special families of piecewise linear iterated function systems**,
R.D. Prokaj, K. Simon, Dynamic Systems and Applications, Accepted for publication.
- 2022 **A survey on piecewise linear iterated function systems on the line**,
R.D. Prokaj, Conference Book of the Interdisciplinary Doctoral Conference, Pécs.
- 2021 **Piecewise linear iterated function systems on the line of overlapping construction**, *R.D. Prokaj, K. Simon*, Nonlinearity, **35.1**: 245.
- 2020 **Climate change in a conceptual atmosphere-plankton model**, *G. Károlyi, R.D. Prokaj, T. Tél, I. Scheuring*, Earth System Dynamics, **11.3**: 603-615.

Skills

Languages **Hungarian**—Native, **English**—Fluent
 Programming Python, R, \LaTeX , MS Excel, HTML