Curriculum Vitae

Kiss Gergely

1. Personal information

- E-mail address: kigergo57@gmail.com
- Webpage: `https://users.renyi.hu/~kigergo/`
- MTMT: `https://m2.mtmt.hu/gui2/?type=authors&mode=browse&sel=10035987`
- Language skills: English (fluent), French (intermediate), German (beginner)

2. Education

- 2015: PhD at the Eötvös Loránd University, Doctoral School of Mathematics.
  Superviser: Dr. Miklós Laczkovich
  Title of the thesis: Linear Funcional Equations
  The grade of the degree: summa cum laude
- 2009: MSc in Mathematics at Eötvös Loránd University
- 2002- 2004: Studies in Applied Mathematics at Eötvös Loránd University

3. Academic positions

- 2025 - present: Research Fellow at Alfréd Rényi Institute of Mathematics (part time)
- 2024 - present: Associate Professor at Corvinus University of Budapest
- 2024 spring: External Teaching Fellow at Corvinus University of Budapest
- 2022 - 2024: Research Fellow at Alfréd Rényi Institute of Mathematics
- 2021 - 2023: External Lecturer, Eötvös Loránd University
- 2022 fall: External Teaching Fellow, Budapest University of Technology and Economics
- 2019 - 2022: Premium Postdoctoral Research Fellow, Alfréd Rényi Institute of Mathematics
- 2019 spring: Research Associate, Alfréd Rényi Institute of Mathematics
- 2015 - 2018: Postdoctoral Research Fellow at University of Luxembourg
- 2013 - 2015: Teaching Assistant, Budapest University of Technology and Economics
- 2013 - 2015: Research Assistant, MTA-BME Stochastics Research Group
- 2013 spring: Research Assistant, Alfréd Rényi Institute of Mathematics

4. Awards and honors

- 2025-2028: Principal Investigator of Grant from the Hungarian National Research, Development and Innovation Office (NKFIH, Starting 150576)
- 2024: **Erdős prize** of the Hungarian Academy of Sciences
- 2022-2026: Principal Investigator of Grant from the Hungarian National Research, Development and Innovation Office (NKFIH, FK 142993)
- 2022-2025: **János Bolyai Research Fellowship** of the Hungarian Academy of Sciences
- 2022-2024: Bolyai+ Scholarship for Young Higher Education Teachers and Researchers - New National Excellence Programme
- 2019-2022: **Premium Postdoctoral Fellowship** of the Hungarian Academy of Sciences
- 2015-2018: Postdoctoral fellowship given by the University of Luxembourg
- 2015: ISFE Medal

5. Scientific activities

- organizer of **Simons Semester in Analysis and Geometry on Complex Manifolds** thematic semester at Erdös Center, 2025 fall
  Main events:
  - Summer Shcool: Invitation to complex geometry, August 04-08, 2025
  - Simons School on singular Kählerian metrics and Hermitian geometry, August 11-15, 2025
  - Workshop on Singular canonical Kähler metrics on compact and non-compact manifolds, September 01-05, 2025
- member of the **Editorial Board of Annales Mathematicae Silesianae** , 2024-
- member of the American Mathematical Society, 2024-
- organizer of **Fourier Analysis and Additive Problems** thematic semester at Erdös Center, 2024 spring
  Main events:
  - Winter workshop: Fourier Analysis and its applications, Jan 29-Feb 2, 2024
  - Summer School: Additive Combinatorics, June 10-14, 2024
  - Summer workshop: Additive Combinatorics, June 17-21, 2024
- member of the **commitee of Rényi Kató prize**, 2021-
- member of the **Editorial Board of Periodica Mathematica Hungarica**, 2019-
- member of the János Bolyai Mathematical Society, 2021-
- member of the Public body of the Hungarian Academy of Sciences, 2020-
- organizer of the Analysis Seminar of Alfréd Rényi Institute of Mathematics, 2021 autumn
- organizer of Harmonic and Spectral Analysis (HSA) online minisymposium, 2020, 2021, 2025

- organizer of International symposium on Aggregation and Structures (ISAS), 2016
- Referee for Journals (Aequationes mathematicae, Combinatorica, Discrete Mathematics, Discrete and Computational Geometry, Journal of Geometry and Analysis, Forum of Mathematics Pi, Journal of Mathematical Analysis and Applications, Journal of London Math. Society, Monatshefte für Mathematik)
- Reviewer: AMS Mathematical Reviews, Zentralblatt MATH

6. Participation in scientific grants/projects

- 01/2025 - 12/2028
  OTKA Grant Starting 150576 (National Research, Development and Innovation Office)
  Title: A harmonikus analízis összefüggései az algebrával és a geometriával, role: PI
- 01/2024 - 12/2027
  OTKA Grant K146922 (National Research, Development and Innovation Office)
  Title: Valós analízis, PI: Laczkovich Miklós, role: Research Fellow
- 09/2023-08/2024
  UNKP-23-5-ELTE-1275 (Bolyai+ Scholarship for Higher Education Teachers and Researchers),
  Title: Fuglede sejtés ciklikus csoportokon, role: PI
- 12/2022 - 11/2026
  OTKA Grant FK142993 (National Research, Development and Innovation Office)
  Title: Harmonikus analízis és diszkrét geometriai problémák, role: PI
- 09/2022-08/2023
  UNKP-22-5-ELTE-1154 (Bolyai+ Scholarship for Higher Education Teachers and Researchers),
  Title: Exponential Riesz basis, role: PI
- 09/2022-08/2025
  BO/00343/22, János Bolyai Research Scholarship of the Hungarian Academy of Sciences,
  Title: Harmonic analysis, functional equations and discrete geometry, role: PI
- 09/2019- 08/2022
  Premium Postdoctoral Fellowship PREMIUM-2019-355 (Hungarian Academy of Sciences)
  Title: Discrete Spectral Theory and Its Applications, role: PI
- 12/2017-06/2024
  OTKA Grant K124749 (National Research, Development and Innovation Office)
  Title: Valós Analízis, Principal Investigator: Miklós Laczkovich, role: Reserch Fellow
- 09/2013 - 08/2015
  MTA-BME Stochastics Research Group (by the Hungarian Academy of Sciences)
  PI: Bálint Tóth, role: Research Assistant,
- 02/2013 - 01/2018
  OTKA Grant K104178 (National Research, Development and Innovation Office)
  PI: Miklós Laczkovich, role: Assistant Researcher
- 02/2013- 07/2013
  MTA "Lendület" ("Momentum") Groups and Graphs Reserach group
  PI: Abért Miklós, role: Assistant Researcher

- 01/2013 - 01/2014
  OTKA Grant K72655 (National Research, Development and Innovation Office)
  PI: Tamás Keleti, role: Assistant Researcher

10. Teaching experiences

Lectures:

1. 2023 - 2024: Lecturer of Mathematics (in English) for MSc students of Computational Neuroscience at Eötvös Loránd University (ELTE)
2. 2020 - 2023: Lecturer of Mathematics I and II. (in English) for Students of Economics and International Studies at Eötvös Loránd University
3. 2015 - 2018: Lecturer of Basics of Discrete Mathematics for students in Mathematics at the University of Luxembourg

Exercise courses:

- 2024-2025: Mathematics I. and II. for Data Scientists at Corvinus University of Budapest
- 2024: Linear Algebra at Corvinus University of Budapest
- 2021: Analysis for engineering students at Budapest University of Technology and Economics (BUTE)
- 2006 - 2015: Exercise courses as a Teaching Assistant at BUTE:
  - Analysis I.-IV. for Architect students,
  - Analysis for Civil Engineering students,
  - Differential Equations for Civil Engineering students,
  - Probability Theory and Statistics for students in Electrical Engineering,
  - Probability Theory and Problem solving Seminar for students in Mathematics,
  - Introduction to Computer Science 1-2 for students in Informatics,
  - Algorithm Theory for students in Software Engineering
- 2009 - 2012: Exercise courses as PhD student at Eötvös Loránd University :
  - Analysis I-IV. for students in Mathematics,
  - Probability Theory for students in Software Engineering

Supervision of BSc Thesis:

- 2021: Áron Ambrus, Math BSc - Title: Properties of inscribed and circumscribed isosceles triangles (in Hungarian)
- 2021: Soma Villányi, Math BSc - Divisibility of sets (in Hungarian)
- 2018: Julia Kerch, Math BSc, Univerity of Luxembourg - Title: Fibonacci and Catalan Numbers (in English)
- 2017: Alexander Biró, Math BSc, Budapest University of Technology and Economics - Title: The Frog Model in $\mathbb{Z}^d$ (in Hungarian)

Other mentoring - Student projects:

- 2023: Ádám Markó, PhD student at ELTE, Polynomials of small range sum in $\mathbb{Z}_p$. `https://arxiv.org/pdf/2311.06136.pdf`
- 2018: Jimmy Devillet, PhD student at University of Luxembourg: Biselective operations Appeared at Acta Mathematica Hungarica
- 2016 - 2018: MSc students at University of Luxembourg:
  - Julie Kersch: Szemerédi Regularity Lemma and its applications.
  - Ralf Greis: Expander and Ramanujan Graphs
  - Theodoros-Christos Nikolaidis: Undecidability of Peano Arithmetic
  - Margita Rika: Hadamard conjecture
  - Fa Zhu: Hall's Theorem for hypergraphs, Squaring the square
  - Monika Zlopasa: Coding Theory

8. Research interests

Harmonic analysis, Functional equations, Discrete and Metric Geometry, Algebraic Combinatorics

- Harmonic analysis – Fourier Analysis on locally compact groups, exponential Riesz bases, spectral theory, Fuglede's conjecture
- Functional equations – Algebraic and analytic Functional Equations, Levi-Civita type equations, higher ordered derivations, quasi-arithmetic means, associativity and bisymmetry
- Discrete geometry – Discrete Pompeiu problem, finite Steinhaus tiling problem, problems of decomposition of subfields and subsets of $\mathbb{R}^n$
- Metric geometry – Optimal transport in metric spaces and the isometries of their Wasserstein spaces. Particular interest on geodesic spaces, graph metric and discrete spaces; n-distances in metric spaces
- Algebraic combinatorics – Geometry in vector spaces over finite fields, number of equidistributed directions, Cyclindrical Set Conjecture

9. Selected list of scientific talks as invited speaker

- 2025 Dec: Talks at Functional Equations and Inequalities Seminar, University of Silesia, Katowice, Poland
  Title I: Quasi-arithmetic means and quasi-sums vs. bisymmetry and associativity with and without regularity assumption
  Title II: Polynomial equations of additive functions
- 2025 Sept: International Conference on Tiling and Fourier Bases, Xidian University, China
  Title: New approaches to cyclotomic divisors in integer and functional weak tilings
- 2025 June: Discrete and Applied Fourier Analysis Conference, University of Thessaloniki, Greece
  Title: The discrete Pompeiu problem in $\mathbb{R}^k$ and its consequences

– 2025 May: Combinatorial and Additive Number Theory conference, New York, USA
Title: Weak tiling and the Coven-Meyerowitz conjecture from an analytic point of view

– 2024 April: Colloquium talk at the University of Bern, Switzerland
Title: Recent progress in the discrete Pompieu problem on the plane

– 2023 Nov: Talk at Analysis Seminar of the University of Graz, Austria
Title: Quasiarthmetic means and Bisymmetry

– 2023 May: Combinatorial and Additive Number Theory conference, New York, USA
Title of the talk: Recent progress on Fuglede's conjecture on $\mathbb{Z}_p^3$

– 2022 June: Special session speaker at ISFE conference, Innsbruck, Austria,
Title: Bisymmetry and continuity

– 2021 June: Talk at 8th European Congress of Mathematics, Portoroz, Slovenia
Title: Discrete Fuglede conjecture on cyclic groups

– 2020 Oct: Harmonic Analysis and PDE, City University of New York, USA
Title: On the Fuglede conjecture for the product of elementary abelian groups

– 2019 Sept: Keynote speaker at Conference on Dynamics, equations and applications (DEA 2019), Krakow, Poland,
Title: Functional equations, field homomorphisms and derivations in the light of spectral theory

– 2018 Febr: Invited speaker at Analysis Seminar at University of Silesia in Katowice,
Title: Pexiderized Functional Equations and Spectral Theory

– 2018 Jan: Invited speaker in Séminaire Cristolien d'Analyse Multifractale at University Paris-Est - Créteil, France,
Title: Multifractal analysis of affine zippers

– 2017 Dec: Talk at Discrete and Computational Geometry Seminar at EPFL, Switzerland
Title: The discrete Pompeiu problem on the plane

10. Selected publications

Here I collect my most valuable articles from all of my 48 scientific papers. I added also Scimago classification.

1. G. Kiss, I. Londner, M. Matolcsi, G. Somlai, Functional tilings and the Coven-Meyerowitz tiling conditions, Published online at *Discrete Analysis* 20 p., 2025. (D1)
2. Z. M. Balogh, G. Kiss, T. Titkos, D. Virosztek, Isometric rigidity of the Wasserstein space over the plane with the maximum metric Published online at *Canadian Journal of Mathematics*, 30 p. (2025). (Q1)
3. G. Kiss, G. Somlai, T. Terpai, Tamás, Decompositions of the positive real numbers into disjoint sets closed under addition and multiplication, *Journal of Algebra* 664, pp. 511–533, (2025). (Q1)
4. G. Kiss, G. Somlai, Special directions on the finite affine plane, *Designs, Codes and Cryptography* 92, pp. 2587–2597, (2024). (Q1)
5. E. Gselmann, G. Kiss, Polynomial equations for additive functions II., The mixed parameter case, Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales. Serie A. Matemáticas 118:112, (2024). (Q1)
6. E. Gselmann, G. Kiss, Polynomial equations for additive functions I., The inner parameter case, *Result in Mathematics* 79:63, (2024). (Q1).

7. G. Kiss, D. Matolcsi, M. Matolcsi, G. Somlai, Tiling and weak tiling in $\mathbb{Z}_p^d$, published online at *Sampling Theory, Signal Processing, and Data Analysis*, (2023). (Q2)
8. P. Burai, G. Kiss, P. Szokol, A dichotomy result for strictly increasing bisymmetric maps, *Journal of Mathematical Analysis and Applications* **526**(2), 127269, (2023).(Q1)
9. G. Kiss, R.D. Malikiosis, G. Somlai, M. Vizer, Fuglede's conjecture holds for cyclic groups of order pqrs, *Journal of Fourier Analysis and Applications*, 28:79, (2022). (Q1)
10. T. Fallon, G. Kiss, G. Somlai, Spectral sets and tiles in $\mathbb{Z}_p^2 \times \mathbb{Z}_q^2$, *Journal of Functional Analysis* **282** (12), 109472, (2022). (D1)
11. G. Kiss, T. Titkos, Isometric rigidity of Wasserstein spaces: the graph metric case, *Proc. Amer. Math. Soc.* **150**, 4083–4097, (2022). (Q1)
12. G. Kiss, G. Somlai, Fuglede's conjecture holds on $(\mathbb{Z}_p)^2 \times \mathbb{Z}_q$, *Proc. Amer. Math. Soc.* **149**, 4181–4188, (2021). (Q1)
13. P. Burai, G. Kiss, P. Szokol, Characterization of quasi-arithmetic means without regularity condition, *Acta Math. Hung.* **165**, 474–485, (2021).(Q2)
14. G. Kiss, R.D. Malikiosis, G. Somlai, M. Vizer, On the discrete Fuglede and Pompeiu problems, *Analysis & PDE* **13** (3), 765-788, (2020). (D1)
15. G. Kiss, Visual characterization of associative quasitrivial nondecreasing functions on finite chains, *Fuzzy Sets and Systems* **395**, 71-92, (2020). (D1)
16. J. Devillet, G. Kiss, J-L. Marichal, Characterizations of quasitrivial symmetric nondecreasing associative operations, *Semigroup Forum* **98** (1), 154-171, (2019). (Q2)
17. G. Kiss, G. Somlai, Associative idempotent nondecreasing functions are reducible, *Semigroup Forum* **98** (1), 140-153, (2019). (Q2)
18. G. Kiss, M. Laczkovich, Cs. Vincze, The discrete Pompeiu problem on the plane, *Monatshefte fur Matematik* **186** (2), 299-314, (2018). (Q2)
19. B. Bárány, G. Kiss, I. Kolossváry, Pointwise regularity of parameterized affine zipper fractal curves, *Nonlinearity* **31** (5), 1705-1733, (2018). (D1)
20. E. Gselmann, G. Kiss, Cs. Vincze, On functional equations characterizing derivations: methods and examples, *Results in Mathematics* 73: 74 (2018). (Q2)
21. G. Kiss, G. Somlai, Decomposition of balls in $\mathbb{R}^d$, *Mathematika* **62** (2), 378-405, (2016). (Q1)
22. G. Kiss, M. Laczkovich, Linear functional equations, differential operators and spectral synthesis, *Aequationes Mathematicae* **89** (2), 301-328, (2015).(Q1)
23. G. Kiss, M. Laczkovich, Decomposition of balls into finitely many pieces, *Mathematika* **57** (1), 89-107, (2011). (Q2)