

Nika Salia

CONTACT INFORMATION
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RESEARCH INTERESTS
Extremal Combinatorics, Structural Graph Theory, Planar Graphs, Ramsey Theory.

RESEARCH POSITION
2018 – 2022
Alfréd Rényi Institute of Mathematics, Budapest, Hungary.
Assistant research fellow.

- Research Area: *Extremal Combinatorics, Extremal Set.*
- Advisor: Ervin Győri.

EDUCATION
Central European University, Budapest, Hungary.
Department of Mathematics and its Applications.

Ph.D. **2015 – (2021, May)**

- Research Area: *Extremal Combinatorics, Graph Theory.*
- Advisor: Ervin Győri.

M.Sc. **2013 – 2015**

- Thesis Title: *Graphs with Isomorphic DFS Spanning Trees.*
- Advisor: Ervin Győri.

Tbilisi State University, Tbilisi, Georgia.

B.Sc., Exact and Natural Sciences. **2009 – 2013**

- Thesis Title: *Numerical Comparison of Different Algorithms for Construction of Wavelet Matrices.*
- Advisor: Lasha Ephremidze.

TEACHING

Asian University for Women.

Lecturer **2021-2022**

- Probability and Statistics.

Budapest Semester in Mathematics.

Online Lecturer **Winter, 2020**

- Combinatorics of finite set systems.

Tutor **2018 – 2020**

- Graph Theory.
- Combinatorics 1.
- Combinatorics of Finite Sets.
- Extremal Combinatorics.

Central European University

Teaching Assistant

- Topics in Combinatorics. **Winter, 2019**
- Quantitative Methodology. **Autumn, 2018**

Budapest Metropolitan University

Co/Lecturer **2017 – 2019**

- Calculus for Business and Economics I.
- Calculus for Business and Economics II,
Probability and Statistics.

Milestone Institute, Budapest, Hungary.

Module Leader. **Summer, 2019**

- Advanced Graph Theory.

V. Komarovi Tbilisi School of Physics and Mathematics 199

Chair of Mathematics 'Circle'. **2009 – 2013**

- Training students for international mathematical Olympiad.
- Teaching recreational mathematics.

FELLOWSHIPS,
AWARDS,
GRANTS

- The Award for Advanced Doctoral Students. **2021**
- Doctoral Research Support Grant, CEUBPF, *Research at Institute of Pure and Applied Mathematics, Rio de Janeiro, Brazil.*
Nov. 2019 – Feb. 2020
- Rustaveli National Science Foundation Grant, Project No. FR-18-2499 *New approaches in modern analysis on metric spaces, multidimensional and Applied Harmonic Analysis. Applications to PDEs.* **2019 – 2021**
- Rustaveli National Science Foundation Grant, Project No. DI-18-118 *Integral Operators in Non-standard Function Spaces; New Aspects of Fourier Analysis and Wavelet Theory.* **2019 – 2021**
- Fellowship for Doctoral students, *Central European University.*
2013 – 2015.
- First place at the seventy-second student scientific conference, *I. Javakhishvili Tbilisi State University Georgia.* **2012.**
- Bronze medal, *International Zhautykov Olympiad, Kazakhstan.* **2009.**

- Honorable mention, *International Mathematical Olympiad, (IMO), Spain.*

2008

PUBLICATIONS

1. E. Győri, N. Salia, O. Zamora. Connected Hypergraphs without long Berge paths. *arXiv:1910.01322*, (2019), (Accepted: European Journal of Combinatorics).
2. E. Győri, N. Salia, C. Tompkins, O. Zamora. Inverse Turán numbers. *arXiv:2007.07042*, (2020), (Accepted: *Discrete Mathematics*).
3. D. Gosh, E. Győri, O. Janzer, A. Paulos, N. Salia, O. Zamora. The maximum number of induced C_5 's in a planar graph. *arXiv:2004.01162*, (Accepted: *Journal of Graph Theory*).
4. D. Ghosh, E. Győri, A. Paulos, N. Salia, O. Zamora. The Maximum wiener index of maximal planar graphs. *Journal of Combinatorial Optimization*, DOI: 10.1007/s10878-020-00655-4, (2020).
5. E. Győri, N. Lemons, N. Salia, O. Zamora. The Structure of Hypergraphs without long Berge cycles. *Journal of Combinatorial Theory, Series B*, DOI: 10.1016/j.jctb.2020.04.007, (2020).
6. B. Ergemlidze, E. Győri, A. Methuku, N. Salia, C. Tompkins, O. Zamora. Avoiding long Berge cycles, the missing cases $k = r + 1$ and $k = r + 2$. *Combinatorics, Probability and Computing*, DOI: 10.1017/S0963548319000415, 1–13, (2019).
7. N. Salia, C. Tompkins, Z. Wang, O. Zamora. Ramsey numbers of Berge-hypergraphs and related structures. *Electronic Journal of Combinatorics*, Volume 26, Issue 4, P4.40, (2019).
8. E. Győri, N. Salia, C. Tompkins, O. Zamora. The maximum number of P_ℓ copies in P_k -free graphs. *Discrete Mathematics and Theoretical Computer Science* 21, 14, (2019).
9. N. Salia, C. Tompkins, O. Zamora. An Erdős-Gallai type theorem for vertex colored graphs. *Graphs and Combinatorics*, DOI: 10.1007/s00373-019-02026-1, (2019).
10. L. Ephremidze, N.Salia, I. Spitkovsky. On a parametrization of non-compact Wavelet matreces by Wiener-Hopf factorisation. *Transactions A. Razmadze Mathematical Institute* Vol. 173 issue 3, 1 (2019).
11. E. Győri, A. Methuku, N. Salia, C. Tompkins, M. Vizer. On the maximum size of connected hypergraphs without a path of given length. *Journal of Discrete Mathematics*, 341(9): 26022605, (2018).
12. B. Ergemlidze, E. Győri, A. Methuku, N. Salia. A note on the maximum number of triangles in a C_5 -free graph. *Journal of Graph Theory*, 14, (2018).

13. L. Ephremidze, N. Salia, I. Spitkovsky. Some Aspects of a Novel Matrix Spectral Factorization Algorithm. *Proceedings of A. Razmadze Mathematical Institute 166: 49-60, (2014).*

PREPRINTS

My arXiv identifier: https://arxiv.org/a/salia_n_1.html.

SELECTED
CONFERENCE
TALKS

1. The Structure of Hypergraphs Without Long Berge Cycles. EUROCOMB 2019, European Conference on Combinatorics, Graph Theory and Applications.
2. The Structure of Connected Hypergraphs without Long Berge Paths. BCC 2019, 27th British Combinatorial Conference.
3. On the Maximum Size of Connected Hypergraphs without a Berge-Cycle of Given Length. ICGT 2018, 10th international colloquium on graph theory and combinatorics.
4. Maximum Number of Triangles in a C_5 -Free Graph. EUROCOMB 2017, European Conference on Combinatorics, Graph Theory and Applications.

CONFERENCE
PUBLICATIONS,
PROCEEDINGS

1. N. Salia, C. Tompkins, Z. Wang, O. Zamora. Ramsey numbers of Berge-hypergraphs and related structures. *Acta Mathematica Universitatis Comenianae, Vol. LXXXVIII, 3, pp. 1035-1042, (2019).*
2. E. Györi, N. Lemons, N. Salia, O. Zamora. The structure of hypergraphs without long Berge cycles. *Acta Mathematica Universitatis Comenianae, Vol. LXXXVIII, 3, pp. 767-771, (2019).*
3. E. Györi, N. Salia, C. Tompkins, O. Zamora. The maximum number of P_l copies in P_k -free graphs. *Acta Mathematica Universitatis Comenianae, Vol. LXXXVIII, 3, pp. 773-778, (2019).*
4. B. Ergemlidze, E. Györi, A. Methuku, N. Salia. A note on the maximum number of triangles in a C_5 -free graph. *Electronic Notes in Discrete Mathematics, 61, pp. 395-398. ISSN 1571-0653 June, (2018).*
5. L. Ephremidze, A. Gamkrelidze, N. Salia. Numerical Comparison of Different Algorithms for Construction of Wavelet Matrices, *IEEE First International Black Sea Conference on Communications and Networking, Proceedings, pp. 177 - 180, (2013).*

INVITED TALKS

1. Survey of Recent Generalisations of ErdősGallai Theorems for Berge Hypergraphs.
Open University Discrete Mathematics Seminar Series. **Nov. 2021**
2. Ramsey numbers of Berge-Hypergraphs and Related Structures.
Which Hypergraphs are Extremal?
Combinatorics Seminar, IMPA - Institute of Pure and Applied Mathematics. **Dec. 2019 & Jan. 2020**

3. Erdős-Gallai Type Theorems for Uniform Hypergraphs The Institute of Mathematics and Statistics, the University of Sao Paulo. **Jan. 2020**
4. Which Hypergraphs are Extremal? Young Researchers' Symposium, Alfréd Rényi Institute of Mathematics. **Nov. 2019**
5. Erdős-Gallai Type Theorems for Hypergraphs. Combinatorics Seminar, Karlsruhe Institute of Technology, KIT. **Dec. 2018**