

# Dániel Garamvölgyi

## Curriculum Vitae

### Personal Information

**Nationality:** Hungarian

**ORCID identifier:** [0000-0002-8468-6585](https://orcid.org/0000-0002-8468-6585)

**Email:** [daniel.garamvolgyi@ttk.elte.hu](mailto:daniel.garamvolgyi@ttk.elte.hu)

**Website:** <https://danielgaramvolgyi.github.io>

### Research Interests

Combinatorial rigidity theory, structural graph theory, matroid theory, discrete geometry, (applied) algebraic geometry.

### Professional Experience

- Sep 2025 – **Research Fellow**  
*HUN-REN Egerváry Research Group on Combinatorial Optimization, Budapest*
- Jan 2025 – **Research Fellow**  
Aug 2025 *Alfréd Rényi Institute of Mathematics, Budapest*
- Jan 2025 – **Semester Postdoctoral Fellow**  
May 2025 *ICERM, Brown University, Providence*
- Sep 2024 – **Research Associate**  
Aug 2025 *MTA-ELTE Matroid Optimization Research Group, Budapest*
- Sep 2023 – **Predoctoral Fellow**  
Dec 2024 *Alfréd Rényi Institute of Mathematics, Budapest*
- Sep 2020 – **Research Assistant**  
Mar 2024 *HUN-REN Egerváry Research Group on Combinatorial Optimization, Budapest*

### Education

- 2025 **Ph.D. in mathematics** (*summa cum laude*), Eötvös Loránd University, Budapest.  
Advisor: Tibor Jordán    Thesis: *Unique reconstruction problems in rigidity theory*
- 2019 **M.Sc. in mathematics**, Eötvös Loránd University, Budapest.  
GPA: 5.0/5.0, graduated with honors
- 2016 **B.Sc. in mathematics**, Eötvös Loránd University, Budapest.  
GPA: 4.8/5.0, graduated with honors

### Awards and Grants

- 2024 **HUN-REN Mobility Program** travel grant  
630 000 HUF (approx. 1600 EUR at time of receipt)
- 2023 **Géza Grünwald Commemorative Prize** of the János Bolyai Mathematical Society  
90 000 HUF (approx. 230 EUR at time of receipt)
- 2023 **Focus Program on Geometric Constraint Systems** travel grant  
3 000 CAD (approx. 2000 EUR at time of receipt)
- 2019 – 2022 **New National Excellence Programme (ÚNKP)** research grant  
*Awarded three times, 3 600 000 HUF in total (approx. 9000 EUR)*

2018 – 2021 **Human Resources Development Operational Programme (EFOP) scholarship**  
3 982 000 HUF in total (approx. 10 000 EUR)

## Publications

- 2025 **Highly connected orientations from edge-disjoint rigid subgraphs**  
*with Csaba Király, Tibor Jordán and Soma Villányi*  
[Forum of Mathematics, Pi 13](#) [arxiv:2401.12670](#)
- 2024 **Partial reflections and globally linked pairs in rigid graphs**  
*with Tibor Jordán*  
[SIAM Journal on Discrete Mathematics 38\(3\)](#) [arxiv:2305.03412](#)
- 2024 **Count and cofactor matroids of highly connected graphs**  
*with Csaba Király and Tibor Jordán*  
[Journal of Combinatorial Theory, Series B 166](#) [arxiv:2202.11617](#)
- 2023 **Minimally globally rigid graphs**  
*with Tibor Jordán*  
[European Journal of Combinatorics 108](#) [arxiv:2202.11617](#)
- 2022 **Global rigidity of (quasi-)injective frameworks on the line**  
[Discrete Mathematics 345\(2\)](#)
- 2022 **Globally rigid graphs are fully reconstructible**  
*with Steven Gortler and Tibor Jordán*  
[Forum of Mathematics, Sigma 10](#) [arxiv:2105.04363](#)
- 2021 **On the global rigidity of tensegrity graphs**  
[Discrete Applied Mathematics 302](#)
- 2021 **Graph reconstruction from unlabeled edge lengths**  
*with Tibor Jordán*  
[Discrete & Computational Geometry 66](#)
- 2020 **Global Rigidity of Unit Ball Graphs**  
*with Tibor Jordán*  
[SIAM Journal on Discrete Mathematics 34\(1\)](#)

## Refereed conference proceedings

- 2025 **On the Rigidity Matroid of Highly Connected Graphs**  
Proceedings of the 13th Hungarian-Japanese Symposium on Discrete Mathematics and Its Applications
- 2025 **Towards the Proximity Conjecture on Group-Labeled Matroids**  
*with Ryuhei Mizutani, Taihei Oki, Tamás Schwarcz and Yutaro Yamaguchi*  
[ICALP 2025, Leibniz International Proceedings in Informatics 334](#) [arxiv:2411.06771](#)
- 2023 **Algebraic realizations of pairs of closure operators**  
Proceedings of the 12th Japanese-Hungarian Symposium on Discrete Mathematics and Its Applications
- 2022 **Globally linked pairs in braced maximal outerplanar graphs**  
*with Tibor Jordán*  
Proceedings of the 34th Canadian Conference on Computational Geometry (CCCCG 2022)

## Preprints

- 2025 **Sufficient conditions for bipartite rigidity, symmetric completability and hyperconnectivity of graphs**  
*with Bill Jackson, Tibor Jordán and Soma Villányi*  
submitted. [arxiv:2509.00298](#)

- 2025 **Sparsity, stress-independence and globally linked pairs in graph rigidity theory**  
with Bill Jackson and Tibor Jordán  
submitted. [arxiv:2509.03150](https://arxiv.org/abs/2509.03150)
- 2024 **Stable cuts, NAC-colourings and flexible realisations of graphs**  
with Katie Clinch, John Haslegrave, Tony Huynh, Jan Leigerský and Anthony Nixon  
submitted. [arxiv:2412.16018](https://arxiv.org/abs/2412.16018)
- 2024 **Rigidity and reconstruction in matroids of highly connected graphs**  
submitted. [arxiv:2410.23431](https://arxiv.org/abs/2410.23431)
- 2023 **Stress-linked pairs of vertices and the generic stress matroid**  
submitted. [arxiv:2308.16851v2](https://arxiv.org/abs/2308.16851v2)

## Talks

- Oct 2025 *Vertex-connectivity, rigidity and sparsity*, research seminar of the Egerváry Research Group on Combinatorial Optimization, Budapest, Hungary
- Jun 2025 *Stable cuts, planar rigidity, and global rigidity on the line*, Minisymposium on Kinematics, Flexibility and Rigidity at the 10th Conference on Geometry: Theory and Applications, Sopron, Hungary
- May 2025 *On the rigidity matroid of highly connected graphs*, 13th Hungarian-Japanese Symposium on Discrete Mathematics and Its Applications, Tokyo, Japan
- Mar 2025 *What is... the measurement variety?*, Workshop on Matroids, Rigidity, and Algebraic Statistics, Providence, Rhode Island
- Mar 2025 *Algebraic matroids*, ICERM Postdoc Seminar, Providence, Rhode Island
- Oct 2024 *Rigidity and reconstruction in matroids of highly connected graphs*, research seminar of the Egerváry Research Group on Combinatorial Optimization, Budapest, Hungary
- Sep 2024 *Stress-linked pairs of vertices*, NII Shonan Meeting on Theory and Algorithms in Graph Rigidity and Algebraic Statistics, Shonan, Japan
- Aug 2024 *Rigidity and reconstruction in matroids of highly connected graphs*, 2024 Workshop on (Mostly) Matroids, Daejeon, South Korea
- Aug 2023 *Partial reflections and globally linked pairs in rigid graphs*, Workshop on Constraint Systems: Distance Geometry, Structured Polynomials, Matrix Completion and Kinematics, Toronto, Canada
- Jul 2023 *Minimally globally rigid graphs*, Workshop on Geometric Constraints: Materials, Graphs and Matroids, Rigidity and Packings, Toronto, Canada
- Mar 2023 *Algebraic realizations of pairs of closure operators*, 12th Japanese-Hungarian Symposium on Discrete Mathematics and Its Applications, Budapest, Hungary
- Nov 2021 *Graph rigidity and the maximum likelihood threshold*, research seminar of the Egerváry Research Group on Combinatorial Optimization, Budapest, Hungary
- Jun 2021 *Globally rigid graphs are fully reconstructible*, Research Seminar of the Thematic Program on Geometric Constraint Systems, Framework Rigidity, and Distance Geometry, Toronto, Canada (*online*)
- Sep 2020 *The unlabeled reconstruction problem in one dimension*, research seminar of the Egerváry Research Group on Combinatorial Optimization, Budapest, Hungary (*online*)
- Jun 2019 *Global rigidity of unit ball graphs*, Geometric constraint systems: rigidity, flexibility and applications, Lancaster, United Kingdom
- Nov 2018 *Global rigidity of unit ball graphs*, research seminar of the Egerváry Research Group on Combinatorial Optimization, Budapest, Hungary

## Workshops and Conferences Attended

- Nov 2025 *Conference on Combinatorial Geometries and Geometric Combinatorics*  
Centre de Recerca Matemàtica, Barcelona, Spain
- Jun 2025 *10th Conference on Geometry: Theory and Applications (CGTA 2025)*  
University of Sopron, Sopron, Hungary
- May 2025 *13th Hungarian-Japanese Symposium on Discrete Mathematics and Its Applications*  
Institute of Science Tokyo, Tokyo, Japan
- Mar 2025 *Workshop on Matroids, Rigidity, and Algebraic Statistics*  
ICERM, Providence, Rhode Island
- Feb 2025 *Workshop on Circle Packings, Minimal Surfaces, and Discrete Differential Geometry, ICERM,*  
*Providence, Rhode Island*
- Sep 2024 *NII Shonan Meeting on Theory and Algorithms in Graph Rigidity and Algebraic Statistics*  
Shonan Village Center, Shonan, Japan
- Aug 2024 *2024 Workshop on (Mostly) Matroids*  
Institute of Basic Science, Daejeon, South Korea
- Jul 2024 *16th Emléktábla Workshop*  
Vác, Hungary
- Apr 2024 *Rigidity in Action*  
RICAM, Linz, Austria
- Mar 2024 *Code of rigidity*  
RICAM, Linz, Austria
- Mar 2024 *Landscapes of rigidity*  
RICAM, Linz, Austria
- Aug 2023 *Workshop on Constraint Systems: Distance Geometry, Structured Polynomials, Matrix Completion and Kinematics*  
Fields Institute, Toronto, Canada
- Jul 2023 *Workshop on Geometric Constraints: Materials, Graphs and Matroids, Rigidity and Packings*  
Fields Institute, Toronto, Canada
- Mar 2023 *12th Japanese-Hungarian Symposium on Discrete Mathematics and Its Applications*  
Eötvös Loránd University, Budapest, Hungary
- Jul 2022 *12th Emléktábla Workshop*  
Gárdony, Hungary
- Jan 2020 *Discrete Structures 2020*  
Lancaster University, Lancaster, United Kingdom
- Jun 2019 *Geometric constraint systems: rigidity, flexibility and applications*  
Lancaster University, Lancaster, United Kingdom

## Teaching

**Teaching assistant** at Eötvös Loránd University, Budapest  
*Operations Research* (Fall 2021 & Fall 2022)  
*Linear algebra* (Fall 2015 & Fall 2016)

## Service

Refereed for:	Discrete Applied Mathematics	Discrete & Computational Geometry
	Discrete Mathematics	Graphs and Combinatorics
	Journal of Graph Theory	J. London Math. Soc.
	SIAM Journal on Discrete Mathematics	ACM-SIAM Symposium on Discrete Algorithms (SODA)