

# Dániel Garamvölgyi

## Curriculum Vitae

### Personal Information

**Nationality:** Hungarian

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

### Research Interests

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

### Professional Experience

Jan 2025 – **Semester Postdoc**

May 2025 *ICERM, Providence*

Jan 2025 – **Research Fellow**

Aug 2025 *Alfréd Rényi Institute of Mathematics, Budapest*

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\(1\)](#)

## Preprints

- 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](#)
- 2024 **Towards the Proximity Conjecture on Group-Labeled Matroids**  
*with Ryuhei Mizutani, Taihei Oki, Tamás Schwarcz and Yutaro Yamaguchi*  
submitted. [arxiv:2411.06771](#)
- 2024 **Rigidity and reconstruction in matroids of highly connected graphs**  
submitted. [arxiv:2410.23431](#)
- 2023 **Stress-linked pairs of vertices and the generic stress matroid**  
submitted. [arxiv:2308.16851](#)

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## Talks

- 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

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## Workshops and Conferences Attended

- 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

<p>Refereed for:</p> <ul style="list-style-type: none"> <li>Discrete Applied Mathematics</li> <li>Discrete Mathematics</li> <li>Journal of Graph Theory</li> </ul>	<ul style="list-style-type: none"> <li>Discrete &amp; Computational Geometry</li> <li>Graphs and Combinatorics</li> <li>ACM-SIAM Symposium on Discrete Algorithms (SODA)</li> </ul>
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