

Emanuel Juliano

Ph.D. Student

24 years old

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Education

- 2023 - Current **m** **Ph.D. in Computer Science**, *Federal University of Minas Gerais*
Research Interests: Algebraic Graph Theory, Quantum Information Theory, Graph Theory.
Supervisor: Gabriel Coutinho **Expected Conclusion:** Jul 2027
- 2025 - Current **TU/e** **Ph.D. Visitor at the Combinatorial Optimization Group**, *Eindhoven University of Technology*
Supervisor: Aida Abiad
- 2019 - 2023 **m** **B.S. in Computer Science**, *Federal University of Minas Gerais*
Coursework: Quantum Information Theory; Graph Theory; Semidefinite Programming.
GPA: 93/100 **Final Project:** Quantum Walks in Subdivided Trees

Publications

Published

- 2025 PMS Fialho, E Juliano, A Procacci. A remark on the Whitney Broken Circuit Theorem. *Computational and Applied Mathematics* Volume 44, Issue 6, p.298.
- 2025 G Coutinho, E Juliano, TJ Spier. The spectrum of symmetric decorated paths. *Linear Algebra and its Applications* Volume 711, P17-39.
- 2025 T Assis, G Coutinho, E Juliano. Spectral upper bounds for the Grundy number of a graph. *Discrete Mathematics* Volume 348, Issue 3 (2025), Article 114326.
- 2024 GCM Gomes, E Juliano, G Martins, VF dos Santos. Matching (Multi)Cut: Algorithms, Complexity, and Enumeration. *19th International Symposium on Parameterized and Exact Computation (IPEC 2024), Leibniz International Proceedings in Informatics (LIPIcs)* Volume 321 (2024). p. 25:1-25:15
- 2024 G Coutinho, E Juliano, TJ Spier. No perfect state transfer in trees with more than 3 vertices. *Journal of Combinatorial Theory, Series B* Volume 168, P68-85.
- 2023 G Coutinho, E Juliano, TJ Spier. Strong cospectrality in trees. *Algebraic Combinatorics* Volume 6, Issue 4 (2023), P955-963.
- 2022 G Coutinho, C Godsil, E Juliano, CM van Bommel. Quantum walks do not like bridges. *Linear Algebra and its Applications* Volume 652, P155-172.

In Submission

- 2025 A Abiad, G Coutinho, E Juliano, L Reijnders. A graph energy conjecture through the lenses of semidefinite programming. [arxiv:2509.05814](https://arxiv.org/abs/2509.05814).
- 2024 PMS Fialho, E Juliano, A Procacci. On the zero-free region for the chromatic polynomial of graphs with maximum degree Δ and girth g . [arXiv:2409.13892](https://arxiv.org/abs/2409.13892).
- 2024 E Juliano. Forbidden subdivision in integral trees. [arXiv:2405.08028](https://arxiv.org/abs/2405.08028).

Teaching

- 2024/2 **Teaching Assistant**, *Discrete Math*, UFMG.
- 2024/1 **Teaching Assistant**, *Operational Research*, UFMG.
- 2021 - 2023 **Instructor / Problem Setter**, *International Olympics of Informatics - Brazilian Finals*.
- 2022/2 **Teaching Assistant**, *Graph Theory*, UFMG.
- 2022/1 **Teaching Assistant**, *Samsung Software Development Training*, UFMG.
- 2020 - 2021 **Course in Algorithms**, *Competitive Programming YouTube Channel*, UFMG.

Presentations

- Sep 2025 **A graph energy conjecture through the lenses of semidefinite programming**, *12th PhD Summer School in Discrete Mathematics*.
- Jun 2025 **Spectral upper bounds for the Grundy number of a graph**, *The 26th Conference of the International Linear Algebra Society*
- Jun 2025 **Computing Fixed Point Free Automorphisms of Graph Classes**, *5th Pythagorean Conference*.
- May 2025 **Computing Fixed Point Free Automorphisms of Graph Classes**, *CO seminar, Eindhoven University of Technology*.
- Apr 2025 **Grundy number and the matching polynomial**, *DMQI Seminar, University of Amsterdam*.
- Mar 2025 **Matching (Multi)Cut**, *Dutch Days of Combinatorics*.

- Jun 2024 **Rainbow Stacking of Random Edge-Colorings**, *1st Brazilian Workshop of Combinatorics*.
- Oct 2023 **Forbidden structures in integral trees**, *Workshop on Spectral Graph Theory*.
- Sep 2023 **Spectral bounds for the Grundy number**, *1st Brazilian School of Combinatorics*, Poster.
- Jan 2022 **Quantum walks do not like bridges**, *Algebraic Graph Theory Seminar*, University of Waterloo.
- Oct 2021 **Strongly Cospectral Vertices in Trees**, *Algebraic Graph Theory Seminar*, University of Waterloo.
- Aug 2021 **Strongly Cospectral Vertices in Trees**, *Workshop on Algebraic Graph Theory and Quantum Information*, The Fields Institute.

Experiences

- Jun, Oct 2024 **Ph.D. Visitor - Combinatorics Group**, IMPA, Rio de Janeiro
Supervised by Professor Robert Morris. Subjects: Random Graphs and Probabilistic Method.
- 2023 **Intern - Computer and Information Research Scientists**, Most, Belo Horizonte
Worked in MostQI to apply analytical research in the extraction of information from documents.
- 2020 - 2022 **Undergraduate Researcher**, *Federal University of Minas Gerais*, Belo Horizonte
Supervised by Professor Gabriel Coutinho. Subjects: Spectral Graph Theory and Quantum State Transfer.
- 2019 **Undergraduate Researcher**, *Federal University of Minas Gerais*, Belo Horizonte
Supervised by Professor Wagner Meira Junior. Subjects: Data Analysis and Natural Language Processing.

Awards

- 2023 - 2024 **Latin America Champion**, *ICPC 2024*, Team: UFMG - teambrbr002
Brazilian Subregionals: **rank 1/726** Brazilian Finals: **rank 4/64** Latin America Finals: **rank 1/40**
World Finals (Astana): rank 73/141
- 2022 - 2023 **Gold Medal**, *ICPC 2023 (regionals)*, Team: UFMG - Humuhumunukunukuapua'a
Brazilian Subregionals: **rank 2/524** Brazilian Finals: **rank 2/60** **World Finals (Luxor)**: rank 98/130
- 2021 - 2022 **Gold Medal**, *ICPC 2022 (regionals)*, Team: UFMG - Summergimurne?
Brazilian Subregionals: **rank 2/513** Brazilian Finals: **rank 2/55** **Qualified to World Finals (Luxor)**