

Emanuel Juliano

Ph.D. Student

24 years old
Belo Horizonte, MG, Brazil
✉ emanuelsilva@dcc.ufmg.br
🌐 [homepages.dcc.ufmg.br/ emanuelsilva/](http://homepages.dcc.ufmg.br/~emanuelsilva/)

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.

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.

2024 E Juliano. Forbidden subdivision in integral trees. arXiv: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)**