

SAROBIDY RAZAFIMAHATRA

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CW 307.25, 3737 Wacana parkway, University of Regina
Saskatchewan, Canada

RESEARCH INTERESTS

- **Extremal combinatorics:** generalization of the *Erdős-Ko-Rado theorem* for transitive permutation groups.
- **Symmetry breaking in graphs:** study of the *distinguishing number*, *determining number* and *metric dimension* of graphs.
- **Algebraic graph theory:** Weakly Hadamard diagonalizable graphs, perfect codes.
- **Logic of random graphs:** study of the *zero-one law* of certain logics of the first-order on the Erdős-Rényi random graph.

EDUCATION

University of Regina, Canada
Ph.D. in Mathematics
Department of Mathematics and Statistics

September 2018 - April 2022
GPA: 94.50

Moscow Institute of Physics and Technology, Russia
Masters of Science in Mathematics
Department of Discrete Mathematics

October 2016 - August 2018
Red diploma

African Institute for Mathematical Sciences, Ghana
Masters of Mathematical Sciences,
AIMS Ghana

August 2015- June 2016
with distinction

University of Antananarivo, Madagascar
Master 1 in Discrete Mathematics
Licence de mathématiques

May 2011-August 2015

TEACHING

- **Winter 2022:** Instructor for Modern Algebra I (Math 323) at the University of Regina.
- **Winter 2021:** Instructor for Introductory Abstract Algebra (Math 223) at the University of Regina.
- **Fall 2020:** Marker for Introductory Combinatorics (MATH 327) and Lab instructor for Linear Algebra I (Math 122) at the University of Regina.
- **Spring/Summer 2020:** Marker for Calculus III (MATH 213) at the University of Regina.
- **Winter 2020:** Lab assistant for Linear Algebra I (MATH 122), and Calculus II (MATH 111) at the University of Regina.
- **Fall 2019:** Lab assistant for Linear Algebra I (MATH 122), and Mathematical Modelling and Precalculus (MATH 102). Marker for Introductory Combinatorics (MATH 327).

- **Spring/Summer 2019:** marker for the course Mathematical Modelling and Precalculus (MATH 102) at the University of Regina.
- **Winter 2019:** Lab assistant for Applied Calculus I (MATH 103), Calculus I (MATH 110) and Calculus II (MATH 111).
- **Fall 2018:** Marker for Introductory Combinatorics (MATH 327).

PUBLICATIONS

1. Behajaina, Angelot, Roghayeh Maleki, and Andriaherimanana Sarobidy Razafimahatratra. "On the intersection density of the symmetric group acting on uniform subsets of small size." arXiv preprint arXiv:2201.09727 (2022).
 2. Maleki, Roghayeh, and Andriaherimanana Sarobidy Razafimahatratra. "No Hilton-Milner type results for linear groups of degree two." arXiv preprint arXiv:2111.03829 (2021).
 3. Razafimahatratra, Andriaherimanana Sarobidy. "On the intersection density of primitive groups of degree a product of two odd primes." arXiv preprint arXiv:2109.05392 (2021).
 4. Meagher, K., Razafimahatratra, A. S. Some Erdős-Ko-Rado results for linear and affine groups of degree two. *The Art of Discrete and Applied Mathematics* (2022).
 5. Meagher, K., Razafimahatratra, A. S. The Erdős-Ko-Rado Theorem for 2-Pointwise and 2-Setwise Intersecting Permutations. *The Electronic Journal of Combinatorics*, P4-10 (2021).
 6. A. Behajaina, R. Maleki, A. Rasoamanana and A.S. Razafimahatratra, "3-setwise intersecting families in the symmetric group", *Discrete Mathematics* 344.8 (2021): 112467.
 7. A. Behajaina, R. Maleki, and A.S. Razafimahatratra, "On non-normal subgroup perfect codes". *Australasian Journal of Combinatorics*, 81(3), 474-479
 8. A. S. Razafimahatratra, On multipartite derangement graphs, *Ars Math. Contemp.* (2021), <https://doi.org/10.26493/1855-3974.2554.856>.
 9. K. Meagher, A.S. Razafimahatratra and P. Spiga, "On triangles in derangement graphs." *Journal of Combinatorial Theory, Series A* 180 (2021): 105390.
 10. Discrete Mathematics Research Group at the University of Regina, "Weakly Hadamard diagonalizable graphs", *Linear Algebra and its Applications* 610 (2021): 86-119.
 11. Razafimahatratra, A. S., and M. Zhukovskii. "Zero-one laws for k-variable first-order logic of sparse random graphs." *Discrete Applied Mathematics* 276 (2020): 121-128.
 12. Zhukovskii, M. E., and Razafimahatratra A. S., "Zero-one laws for sentences with k variables" *Doklady Mathematics*. Vol. 486. No. 2. (2019).
- М. Е. Жуковский, А. С. Разафимахатратра, Законы нуля или единицы для формул с k переменными, *доклады академии наук* (2019)

SCHOLARSHIPS AND AWARDS

- The Saskatchewan Innovation and Excellence Graduate Scholarship (Fall 2021)
- Faculty of Graduate Study entrance scholarship, University of Regina (2019)
- Russian government scholarship for a master's degree at the Moscow Institute of Physics and Technology.
- F.K.A. Allotey Meritorious Award, AIMS Ghana.

- African Institute for Mathematical Sciences - Next Einstein Initiative(AIMS-NEI) master scholarship.

TECHNICAL SKILLS

- **Programming languages:** Python, C and C++,
- **Mathematical softwares:** Scilab, GAP and Sagemath,
- **Others:** familiar with GNU/linux OSs, html, css and L^AT_EX
- **Languages:** I am a native Malagasy speaker. I am fluent in both French and English.

TALKS, CONFERENCES AND SUMMER SCHOOLS

2021	“The Erdős-Ko-Rado theorem for transitive groups”, 28th British Combinatorial Conference
2021	“The Erdős-Ko-Rado theorem for transitive groups”, Canadian Mathematics Society, summer meeting 2021
2021	“On the transitive groups that do not have the Erdős-Ko-Rado property”, Ottawa Mathematics Conference 2021
2021	“On the transitive groups that do not have the Erdős-Ko-Rado property”, CANADAM 2021
2021	“Intersection density of finite transitive groups”, Workshop on Open problems in algebraic combinatorics
2021	“On the Erdős-Ko-Rado Theorem for transitive groups”, Graduate Student Combinatorics Conference (April)
2020	“2-intersecting permutations” at the Algebraic Graph Theory Seminar, University of Waterloo (online)
2020	Young Researchers in Combinatorics (online)
2019	“Erdős-Ko-Rado theorem for permutation groups" at the Summer meeting of the Canadian Mathematical Society, University of Regina, Canada
2018	The 8th International Conference on Network Analysis, Yandex Moscow,
2018	15th Workshop on Algorithms and Models for the Web Graph, MIPT.
2018	Workshop on graphs, networks, and their applications, MIPT.
2017	International mini-workshop "Extremal Combinatorics Yandex Moscow.
2017	Mini-conference "Diophantine problems" in the occasion of Prof. Nikolay Moshchevitin's 50th birthday, MIPT.
2017	First Russian-Hungarian Workshop in Discrete Mathematics, MIPT.
2016	CIMPA Antananarivo: Combinatorics and Algorithm.

SUPERVISION

In the Spring/Summer term 2021, I am supervising Cody Antal for a research project “ A catalogue of the EKR status for the transitive groups of degree up to 37” .

VOLUNTEERING

- Volunteered for the Math Camp hosted by the University of Regina (2019),
- Tutored students experiencing difficulty in Mathematics at the University of Antananarivo (2011-2015).
- Volunteered to tutor students to help pass the Baccalaureat. Tutored students experiencing difficulty in Mathematics (2011-2012).

REFERENCES

Prof. Karen Meagher

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Prof. Shaun Fallat

University of Regina

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Prof. Nancy Neudauer,

Pacific University,

Portland, USA

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Prof. Maksim Zhukovskii,

Moscow Institute of Physics and Technology,

Moscow Region, Russian Federation

zhukmax@gmail.com