

Shefali Ramakrishna

Ph.D. Candidate in Operations Research at Cornell University
B.A., M.A. in Mathematics

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Education

Aug 2022 – May 2027 (expected)	Cornell University <i>Ph.D. in Operations Research and Information Engineering</i> <ul style="list-style-type: none">Working with Prof. Ziv Scully in queueing theoryRecipient of Operations Research FellowshipCoursework: Applied Stochastic Processes, Mathematical Programming, Structure of Information Networks, Computational Methods in Operations Research, Probability Models and Inference
Aug 2020 – May 2022	Bryn Mawr College <i>M.A. in Mathematics, magna cum laude</i> <ul style="list-style-type: none">M.A. Thesis: Numerical Methods in Sustainability, advised by Prof. Victor Donnay <i>Winner of the 2022 Mathematical Association of America Outstanding Student Mathematical Paper Prize</i>GPA: 4.0/4.0Coursework: Graduate Complex Analysis, Graduate Analysis I, Graduate Analysis II, Graduate General Topology
Aug 2018 – May 2022	Bryn Mawr College <i>B.A. in Mathematics, Honors, magna cum laude</i> <ul style="list-style-type: none">Relevant Coursework: Information and Coding Theory, Game Theory, Harmonic Analysis Reading Group, Differential Equations, Numerical Linear Algebra, Math Modeling and Simulation, Abstract Algebra, Elementary Number Theory, Scientific Computing, Economic Statistics with Calculus, Real Analysis, Linear Optimization, Multivariable Calculus

Awards

May 2022	MAA EPaDel Outstanding Student Mathematical Paper Prize <i>Mathematical Association of America, Eastern Pennsylvania and Delaware Section</i> <ul style="list-style-type: none">Awarded for master's thesis, Numerical Methods in Sustainability. The EPaDel Student Mathematical Papers Prize recognizes one outstanding paper written by an undergraduate student at an institution in the section that year.
May 2022	Anna Pell Wheeler Prize in Mathematics <i>Bryn Mawr College</i> <ul style="list-style-type: none">Awarded annually to an undergraduate on the recommendation of the Department of Mathematics, given solely on the basis of academic distinction and achievement.
May 2022	Mary Louise Cookson Prize in Mathematics <i>Bryn Mawr College</i> <ul style="list-style-type: none">Awarded to a mathematics major in recognition of exceptional service that has contributed to the life of the department.
May 2022, May 2021	Community Building Honor Roll <i>Bryn Mawr College</i> <ul style="list-style-type: none">Awarded to students who invest time and energy to create a sense of belonging, inclusiveness and community on campus through leadership activities.
May 2019	Summer Science Research Awardee <i>Bryn Mawr College</i> <ul style="list-style-type: none">One of a select few students awarded a \$5000 grant for STEM research over the summer.

Work and Research Experience

Jun 2021 - Aug 2021	Undergraduate Researcher in Mathematics <i>SMALL REU – Williams College</i> <ul style="list-style-type: none">Participated in the Chip-Firing group at NSF-funded math REU at Williams College.Worked under Prof. Ralph Morrison in the field of algebraic geometry.Developed computational tool in Python with SageMath that can find the gonality of any finite graph.Presented work on gonality computation with a live talk at the 2021 Young Mathematicians Conference.
May 2021 - Jun 2021	Undergraduate Researcher in Mathematical Biology <i>University of Utah</i> <ul style="list-style-type: none">Participated in an interdisciplinary research project in the field of Mathematical Biology.Presented work on modeling adhesion of T-Cells to antigen-presenting cells.
May 2020 - Aug 2020	Operational Analytics Intern <i>Air Methods Corporation</i> <ul style="list-style-type: none">Used mixed-integer programming with Branch and Cut solver (over 1000 variables) to create a schedule generator in Python, using PANDAS and MIP packages.Implemented customizability based on employee preferences to schedule generator.Runtime of schedule generator reduced by a factor of 100 compared to previous process.Schedule generator now used for nurses and medics at over 140 medical air transport bases across the U.S.
May 2019 - Aug 2019	Undergraduate Researcher in Mathematics and Sustainability/Energy Analyst Intern <i>Bryn Mawr College/Philadelphia Office of Sustainability</i> <ul style="list-style-type: none">Worked with Professor Victor Donnay and the Philadelphia Office of Sustainability.Used linear optimization to help office budget for future energy-saving initiatives funded by the Greenworks Sustainability Fund.Helped draft lesson plans for the upcoming Math and Sustainability course in Fall 2019.Presented poster on work in optimization at Bryn Mawr College in October 2019.

Papers

Aug 2023	Cenek, L., Ferguson, L., Gebre, E., Marcussen, C., Meintjes, J., Morrison, R., Ostermeyer, L., & Ramakrishna, S. (2023, August). <i>Uniform scrambles on graphs</i> . Australasian Journal of Combinatorics. (paper)
Sep 2022	Cenek, L., Ferguson, L., Gebre, E., Marcussen, C., Meintjes, J., Morrison, R., Ostermeyer, L., & Ramakrishna, S. (2022, September 6). <i>Scramble number and tree-cut decompositions</i> . arXiv.org. (paper)
Jun 2022	Cenek, L., Ferguson, L., Gebre, E., Marcussen, C., Meintjes, J., Morrison, R., Ostermeyer, L., & Ramakrishna, S. (2022, June 14). <i>Bounds on higher graph gonality</i> . arXiv.org. (paper)
Aug 2021, in progress	Cenek, L., Ferguson, L., Gebre, E., Marcussen, C., Meintjes, J., Morrison, R., Ostermeyer, L., & Ramakrishna, S. (2021, August). <i>The gonality of circulant graphs</i> . Manuscript in preparation.
Aug 2021, in progress	Cenek, L., Ferguson, L., Gebre, E., Marcussen, C., Meintjes, J., Morrison, R., Ostermeyer, L., & Ramakrishna, S. (2021, August). <i>A handbook of graph gonality and graph operations</i> . Manuscript in preparation.

Talks

Sep 2023	Cornell ORIE PhD Colloquium , Cornell University Talk: Preemption-sensitive Queuing Systems (slides)
May 2022	Masters Thesis Defense , Bryn Mawr College Talk: Design of Queuing Simulation for Electric Car Chargers (recording) (thesis)
Feb 2022	Distressing Math Collective , Bryn Mawr College Talk: An introduction to chip-firing games and gonality computation (abstract)
Oct 2021	GROW 2021 (Graduate Opportunities for Women in Mathematics), University of Illinois, Chicago
Aug 2021	Young Mathematicians Conference , Ohio State University Conference Talk: Speeding up gonality computation (recording)
May 2021	Bio-Mathematics Research Group , University of Utah Talk: Modeling Adhesion of T-cells to Antigen-Presenting Cells (slides)

Teaching Experience

Aug 2023 - Present	ORIE Course Assistant, Cornell University <i>Reinforcement Learning, Prof. Soroosh Shafiee</i> <ul style="list-style-type: none">Tutored students at weekly office hours, graded student work, and designed course assignments.
Jan 2022 - May 2022, Jan 2021 - May 2021, Aug 2019 - Dec 2019	Mathematics Course Assistant, Bryn Mawr College and Haverford College <i>Differential Equations, Prof. Victor Donnay</i> <i>Linear Optimization, Prof. Robert Manning</i> <i>Multivariable Calculus, Prof. David Lippel</i> <ul style="list-style-type: none">Tutored students during weekly labs and at weekly office hours and graded student assignments.

Other Activities

Jan 2023 - Current	Operations Research Graduate Assembly Treasurer <ul style="list-style-type: none">Organized Spring and Fall 2023 picnics for department.Restarted INFORMS student chapter for Cornell, serving as current treasurer.Managing budget and organizing fundraisers for graduate student activities in the department.Organizing "Women in ORIE" events for women in the department.Organizing the 2024 graduate visit days for Cornell's Operations Research department.
May 2021 - May 2022	Distressing Math Collective Student Coordinator <ul style="list-style-type: none">Organized and promoted weekly talks within the Bryn Mawr College Math Department.
Jan 2021 - May 2022	Student Mathematics Antiracism Reading and Praxis Founder and Organizer <ul style="list-style-type: none">Founded and organized antiracism self-education reading group for students in the Math Department.Collected media and readings focused on antiracist efforts in mathematics for bimonthly discussions.
Aug 2020 - May 2022	Math Major Representative <ul style="list-style-type: none">Started and held office hours for current students to talk to Major Representatives.Personally organized four Math Department events.Took notes at monthly department meetings, which were then released to students.