Karthik Sellakumaran Latha

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Education

University of California, Los Angeles

Ph.D. Mathematics

University of Maryland

B.S. Mathematics (high honors), minor in Computer Science GPA: 4.0

Research Experience

Texas A&M University Mathematics Department	June 2023 – August 2023
REU Participant	College Station, TX
 Computed a central element of a Type D quantum group and generated a Marko Developed a one-hour talk explaining the research Wrote a research paper to appear in the Houston Journal of Mathematics 	ov process from this element
Texas State University Mathematics Department REU Participant Pessarch Advisor: Dr. Thomas M. Keller	June 2022 – August 2022 San Marcos, TX
 Investigated necessary and sufficient conditions classifying prime graphs of severa Developed a 20-minute talk as well as poster explaining the research conducted Wrote a research paper published in the Annali di Matematica Pura ed Applicata 	l classes of finite groups
University of Maryland Mathematics Department	January 2021 – December 2022
Undergraduate Research Assistant	College Park, MD
Research Advisor: Dr. Roohollah Ebrahimian	
 Read research papers on minimal additive complements of sets to get familiar wir Identified and worked on solving open problems using tecniques from abstract alg 	th topic gebra and number theory
FIRE: The First-Year Innovation & Research Experience Undergraduate Research Assistant	January 2021 – May 2022 College Park, MD
Research Advisor: Dr. Müge Karagöz	
 Analyzed performance of a novel particle physics detector for the CERN CMS ex Investigated the reconstruction of an electron's energy at different noise levels usin Presented findings to experts at a Fermilab meeting 	periment using simulated data g C++ with the ROOT package
FIRE: The First-Year Innovation & Research Experience	June 2021 – July 2021
Summer Scholar	College Park, MD
Research Advisor: Dr. Müge Karagöz	
 Read research papers to understand clustering algorithms for particle detection Collaborated with peers to create graphic on the CLUE clustering algorithm that v 	vas posted on FIRE social media
eaching and Grading	
University of California, Los Angeles Mathematics Department <i>Teaching Assistant</i>	September 2024 – Present Los Angeles. CA
- Worked as a teaching assistant for the following classes: Math 33A (Linear algeb	ra), Math 31B (Calculus II)

University of Maryland Mathematics Department

Strauss Teaching Assistant

Professor: Dr. Steven Chadwick

- Worked 20 hours weekly as a teaching assistant for Calculus I & II
- Led a discussion section of $25\ {\rm students}$ for $75\ {\rm minutes}$ twice a week
- Held two office hours a week, proctored exams, and graded exams and worksheets

2024 - 2029 (expected) Los Angeles, CA 2020 - 2024 College Park, MD

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September 2022 – May 2024 College Park, MD

 STIC: Student Initiated Course Student Facilitator Faculty Advisor: Dr. Niranjan Ramachandran Created a syllabus for the new class Mathematics and Art, featured in th Taught and graded a class of 21 students meeting once a week Explored connections between math and art in units like origami, knitting 	September 2022 – May 2023 College Park, MD nis article g, tiling, and fractals
FIRE: The First-Year Innovation & Research Experience Peer Research Mentor Professor: Dr. Müge Karagöz – Mentored upcoming students in their group research projects in particle	January 2022 – May 2022 College Park, MD physics
University of Maryland Mathematics Department <i>Undergraduate Grader</i> Professor: Dr. Roohollah Ebrahimian – Worked 10 hours weekly as a grader for Honors Calculus III	January 2022 – May 2022 College Park, MD
 University of Maryland Computer Science Department Undergraduate Teaching Assistant Professor: Dr. Fawzi Emad Worked 10 hours weekly as a teaching assistant for Object-Oriented Prog Held office hours twice a week Graded quizzes, exams, and projects on Gradescope 	September 2021 – May 2022 College Park, MD gramming I & II
Math and Science Tutor Personal Tutor – Tutored seven high-school and college students in algebra, calculus, com	September 2020 – May 2022 College Park, MD puter science, and physics
Academic Experience	
Independent Reading Course Advisor: Dr. Amin Gholampour – Studied infinity categories in preparation to write an honors thesis next s	September 2023 – December 2023 College Park, MD emester
Independent Reading Course Advisor: Dr. Amin Gholampour – Studied classical algebraic geometry	January 2023 – May 2023 College Park, MD
Independent Reading Course Advisor: Dr. Roohollah Ebrahimian – Worked through the proof of the Tits Alternative	September 2022 – December 2022 College Park, MD
DRP: Directed Reading Program	January 2022 – May 2022

Graduate Mentor: Arghya Sadhukhan

- Pursued an independent reading project on root systems and Weyl groups

- Created a 12-minute explanatory presentation using LaTeX and presented to the DRP committee

DRP: Directed Reading Program

Graduate Mentor: Chengze Duan

September 2021 – December 2021

College Park, MD

. College Park, MD

- Pursued an independent reading project on representation theory and Schur-Weyl duality
- Created a 12-minute explanatory presentation using LaTeX and presented to the DRP committee

Papers

T. J. Edwards, T. M. Keller, R. M. Pesak, and K. Sellakumaran Latha. The Prime Graphs of Groups with Arithmetically Small Composition Factors. *Annali di Matematica Pura ed Applicata*, **203**, 945–973 (2024). doi.org/10.1007/s10231-023-01388-x.

E. Rohr, K. Sellakumaran Latha, and A. Yin. A Type D Asymmetric Simple Exclusion Process Generated by an Explicit Central element of $U_q(\mathfrak{so}_{10})$. Houston Journal of Mathematics, 2024 (accepted). arxiv.org/abs/2307.15660.

Talks

Texas State University REU	San Marcos, TX
The Prime Graphs of Groups with Arithmetically Small Composition Factors	June 2023
University of Maryland Math Club	College Park, MD
Prime Graphs of Finite Groups	November 2022
Shenandoah Undergraduate Mathematics and Statistics Conference Prime Graphs of Groups with K_3 or Cyclic Composition Factors	Harrisonburg, VA October 2022
University of Maryland Math Department Directed Reading Program <i>Root Systems and Weyl Groups</i>	College Park, MD May 2022
European Organization for Nuclear Research and FermiLab Meeting	College Park, MD
Effects of Noise on HGCAL Electron Reconstruction	March 2022
University of Maryland Math Department Directed Reading Program	College Park, MD
Symmetric Groups and Schur-Weyl Duality	December 2021
University of Maryland First-Year Innovation and Research Experience Summit	College Park, MD
Effects of Noise on HGCAL Electron Reconstruction	November 2021

Awards

Abramowitz Award	2024
Senior Marshal	2024
Andrew Reisse Endowed Teaching Award	2023
Aziz Mathematics Scholarship	2023
Philip Merrill Presidential Scholars	2023
Strauss Teaching Assistantship	2022, 2023
President's Scholarship	2020

Skills

Programming Languages: GAP, R, Python, Mathematica, Java, C, C++, Ruby, OCaml, Rust, HTML/CSS **Tools:** LaTeX, Sage, ROOT, GitHub, Overleaf