Steppan Konoplev
euler@udel.edu

EDUCATION

2022-Present Math PhD at University of Delaware (UD)

- Completed all coursework, currently working on candidacy exam and thesis
- Current research interests: algebraic geometry, number theory, graph theory

2022-2023 Masters of Science in Mathematics at UD

- Finished in 1st year of PhD by acing qualifying exams and satisfying credits requirement

2019-2022 University of Maryland College Park (UMD) math major

- B.S. in Mathematics with High Honors, also CS minor
- Science, Discovery, and the Universe Scholars Program

PUBLICATIONS AND PREPRINTS

- Ghandehari, M., Janssen, J., & Konoplev, S. Seriation of Samples of Regular Graphons. Waiting on collaborators to submit.
- Konoplev, S., Medel, J., & Russell, V. (2024). Non-Kahler C-Y 3-Folds Arising from Singular K3 Surfaces. *Note Di Matematica*
- Konoplev, S., Medel, J., & Russell, V. (2022). Cohomology of K3 surfaces. Technical report for AMRPU 2022
- Konoplev, S. (2019). On Alphatrion's Conjecture about Hamiltonian Paths in Hypercubes. arXiv. Retrieved from https://arxiv.org/abs/2002.02285
- Konoplev, S. (2019). Convergence of General Alternating Series. *CHS Math Journal*, 30–32.
    - drive.google.com/file/d/1dsfzjESEndIhoFnpD2aDSLmhU5w9qisb

PRESENTATIONS

- Talk, Hallenbeck Graduate Student Seminar (HGSS), UD, Fall 2024 TBD, *Potpourri of Independent Results in Classical Analysis*
- Talk Series, Operator Algebras Seminar, UD, November – December 2023, *Classification of von Neumann Algebras* (and prerequisite results)
- Talk, HGSS, UD, 20 September 2023, *Seriation of Samples of Graphons*
- Talk, GTA Philadelphia Conference, Temple University, 28 May 2023, *Calculating Cohomology of singular K3 surfaces*
- Invited Talk, Graduate Student Intercollegiate Mathematics Seminar, Lehigh University, 25 April 2023, *Probabilistic Method for solving Discrete Math Problems*
- Poster, UD Winter Research Symposium, University of Delaware, 3 March 2023, *Cohomology of Singular K3 surfaces*
- Talk, HGSS, UD, 20 February 2023, *Induction on the Real Numbers*
- Talk, HGSS, UD, 19 October 2022, *Probabilistic Method*

COMPETITIONS AND AWARDS

- 1st place in spring 2024 UD Bocce Tournament
- 1st place in 2023 & 2024 George Mason University Calculus Olympiad
- Winner of 2024 HenHacks Lego Competition
- UD 2024 Table Tennis Intramural Tournament Champion
- UD 2023 Winter Research Symposium Winning Poster
- 1st place in 2022 New Jersey Undergraduate Math Competition
- Top 200 in 2021 Putnam Math Competition

- UMD comprehensive math honors exam all time high score
- 2021 IMC (International Math Competition) first prize, highest ranked U.S. student, 32nd/589
- 2021-2022 Maryland District 9 Senatorial Scholarship
- Top 50 in 2020 Putnam Math Competition (based on score of 68/120 and 39 for top 100)
- 2020 IMC first prize
- 1st place in 2019 Virginia Tech Regional Mathematics Competition
- Top 200 in 2019 Putnam Math Competition
- Lockheed Martin Challenge Box: Won Voyager Golden Record replica for solving challenging computer science problems

RESEARCH AND PROJECTS

May 2024-ongoing Candidacy and Thesis with Mokshay Madiman

- Research work and thesis TBD
- Candidacy exam planned for December 2024
    - Covering the paper *Introduction to Combinatorial Atlas*

January 2023-September 2023 Graph Limits with Mahya Ghandehari

- Read chapters 7-11 of Lovasz's textbook *Large Networks and Graph Limits* in spring 2023 and presented proofs of multiple major results in informal graphons seminar
- Collaborated with Mahya and Jeannette Janssen to generalize *A Spectral Algorithm for Seriation* (1998) to graphons, resulting in a new paper
    - Awaiting collaborator feedback and final editing before submission

February 2023-April 2023 Projective geometry with Robert Coulter

- Worked on open problem: projective plane having linear planar ternary ring implies transitive elation or transitive homology group
- Positive answer implies significant simplification of Lenz-Barlotti classification
- Disproved claim by prominent projective geometers that the answer was found in Pickert's book *Projektive Ebenen*, explained why problem still open and out of reach of coordinatization methods

May 2022-July 2022 Florida International University REU

- Researched complex algebraic geometry with Gueo Grantcharov and Anna Fino
- Completed commutative algebra worksheets, learned basic material on K3 surfaces, and read papers on weighted projective space
- Extended Iano-Fletcher's paper *Working with Weighted Complete Intersections* by calculating the cohomology of all K3 surfaces with A_n-type singularities

TEACHING AND RELATED JOBS

Aug 2022-May 2024 University of Delaware Calculus TA

- Run discussion section, hold office hours every week, grade quizzes & exams
- MATH 241 (Calc 1) in fall '22, 242 (Calc 2) in 2023, 243 (Multivariate) in spring '24

Aug 2021-May 2022 Gossett Student Athletic Center Tutor

- Tutored student athletes in upper-level undergraduate math courses including linear algebra and introduction to real analysis

Nov 2020-Feb 2022 Office of Multi-ethnic Student Education Tutor

- Tutored OMSE students in any 100 or 200 level math or computer science course
- Managed GroupMe group for efficient sharing of information during tutoring sessions

Aug 2021-Dec 2021 University of Maryland MATH 410 grader

- Graded assignments for a real analysis class and gave feedback on proof writing

Jan 2021-May 2021 University of Maryland MATH 310 grader

- Graded assignments in an introduction to proofs class and gave feedback on proof writing

OTHER PROFESSIONAL ACTIVITIES

- Quora math writer (2017-2021): Volunteered hundreds of hours of time to answer math questions on Quora, with 263 answers and 560k views (including content collapsed by bots)
  - https://www.quora.com/profile/Steppan-Konoplev-1
- Student organizer at UD (2022-Present): President and founder of card games club, social events organizer for competitive programming club, quizbowl club tournament director, recruited dozens of players to Hen Zone table tennis