Felix Weilacher
CV
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Education

- PhD in Mathematics, Carnegie Mellon University, 2019 - Present
- B.Sc. in Mathematics, California Institute of Technology, 2015 - 2019

Research Employment

- At Carnegie Mellon University:
    - Graduate student, 2019 - Present
    - Co-advisor, SEMS 2022 (Undergraduate research mentoring)
- At California Institute of Technology:
    - Undergraduate researcher, 2018
    - SURF (Summer Undergraduate Research Fellowship) student, 2017
- Project Assistant, Laboratory for Laser Energetics at the University of Rochester, 2014 - 2016

Teaching Employment

- At Carnegie Mellon University:
    - Teaching assistant for 21-637: Probabilistic Combinatorics, 2023.
    - Teaching assistant for 21-127: Concepts of Mathematics, 2019 - 2020, 2022
    - Teaching assistant for 21-373: Algebraic Structures, 2021
- At California Institute of Technology:
    - Teaching assistant for Ma5: Introduction to Abstract Algebra, 2017 - 2018

- Teaching assistant for CS21: Decidability and Tractability, 2017
- Dean's office tutor, 2016 - 2017
- MATHCOUNTS Instructor, Walter Reed Middle School, 2016 - 2018

Honors and Achievements

- CMU Department of Mathematical Sciences Outstanding Graduate Research Prize, 2022
- ARCS Scholarship, 2019 - 2022
- Eric Temple Bell Undergraduate Mathematics Research Prize, 2019
- H.J. Ryser Scholarship, 2018
- Putnam Competition: Top 500, 2016

Service and Other Activities

- Referee, *Annales Henri Lebesgue*
- Co-Organizer, Caltech Undergraduate Math Club, 2017 - 2019
- Problem Writer, Caltech-Harvey Mudd Math Competition, 2016 - 2018

Publications and Preprints

1. (With Anton Bernshteyn) *Borel versions of the Local Lemma and LOCAL algorithms for graphs of finite asymptotic separation index*, preprint (2023)

2. *Computable vs descriptive combinatorics of local problems on trees*, Journal of Symbolic Logic, 2023, pp. 1–15., doi:10.1017/jsl.2023.47

3. (With Long Qian) *Descriptive combinatorics, computable combinatorics, and ASI algorithms*, preprint (2022).

4. (With Matt Bowen) *Definable König theorems*, Proceedings of the AMS (to appear).

5. *Borel edge colorings for finite dimensional groups*, Israel Journal of Mathematics (to appear).

6. *Descriptive chromatic numbers of locally finite and everywhere two-ended graphs*, Groups, Geometry, and Dynamics, 16 (2022), no.1, 141-152.

7. *Marked groups with isomorphic Cayley graphs but different Borel combinatorics*, Fundamenta Mathematicae, 251 (2020), no. 1, 69-86.

8. (with P.B. Radha and C. Forrest) *Three-dimensional modeling of the neutron spectrum to infer plasma conditions in cryogenic inertial confinement fusion implosions*, Physics of Plasmas, 25, 042704 (2018).

9. (with P. B. Radha, T. J. B. Collins, and J. A. Marozas) *The effect of laser spot shapes on polar-direct-drive implosions on the National Ignition Facility*, Physics of Plasmas, 22, 032701 (2015).

Talks

1. University of Warsaw STRUCTURES semester, workshop on descriptive set theory and dynamics, August 2023.

2. AMS sectional meeting, Special Session on Logic, Combinatorics, and their Interactions, March 2023.

3. Centre de Recherches Mathématiques workshop on Measured Group Theory, March 2023.

4. Rutgers Logic Seminar, October 2022.

5. American Institute of Mathematics workshop on descriptive graph combinatorics, June 2022.

6. Georgia Tech Combinatorics Seminar, April 2022.

7. South Eastern Logic Symposium, March 2022.

8. Cornell Logic Seminar, September 2021.

9. CMU Logic Seminar, August 2021.

10. UCSD Group Actions Seminar, January 2021.

11. CMS Winter Meeting special session on Logic and Applications, December 2020.

12. Caltech Logic Seminar, June 2020.

13. CMU Logic Seminar, March 2020.

14. Caltech Logic Seminar, October 2018.