

Alexander Elzenaar

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RESEARCH AND TEACHING POSITIONS

Ministry of Business, Innovation, and Employment, Wellington, New Zealand

- Research and data analyst 2023–2024
 - Mathematical modelling and statistics

Max-Planck-Institut für Mathematik in den Naturwissenschaften, Leipzig, Germany 2022–2023

The University of Auckland, New Zealand

- Research assistant (Professional Casual Staff) 2020–2021
 - Construction and symmetry properties of spherical (t, t) -designs
 - Supervisor: Dr. Shayne Waldron
- Graduate Teaching Assistant (GTA) in the Dept. of Mathematics 2019–2022
 - Tutoring and marking: single- and multi-variate calculus; complex calculus; linear algebra; logic and proofwriting; mathematics for computer science; computational mathematics; mathematics for non-mathematicians (infinities, topology, fractals); real analysis

EDUCATION

School of Mathematics, **Monash University**, Australia

- PhD, Geometry and topology 2024–Ongoing
 - Supervised by Prof. Jessica Purcell

The University of Auckland, New Zealand

- Master of Science with First Class Honours in mathematics 2021–2022
 - Thesis: *Deformation spaces of Kleinian groups* (https://aelzenaar.github.io/msc_thesis.pdf)
 - Advisors: Dist. Prof. Gaven Martin (NZ Inst. of Adv. Study, Massey Uni.), Dr. Jeroen Schillewaert
- Bachelor of Science (Hons) with First Class Honours in mathematics 2020
 - Dissertation: *Toric varieties* (<https://aelzenaar.github.io/hons/dissertation.pdf>)
 - Advisor: Dr. Jeroen Schillewaert
- Certificate in Languages awarded 2020
 - Russian and Ancient Egyptian
- Bachelor of Science, major in mathematics 2017–2019
 - Between 2016 and early 2019, I was enrolled in a conjoint Mathematics (BA)/Physics (BSc) degree
 - Exchange student at the University of Toronto, 2018 fall semester

The University of Canterbury, New Zealand

- STAR programme 2016
 - First year university mathematics program for secondary school students

AWARDS & SCHOLARSHIPS

- Clay Mathematics Institute Early Career Researcher Support 2023
 - for attendance of NZMRI Summer School on Groups and Dynamics in Nelson
- University of Auckland Department of Mathematics Student Research Conference prize 2021
- University of Auckland Postgraduate Honours / PG Diploma Scholarship 2020
- University of Auckland Summer Research Scholarship 2019–2020
 - Project: Numerical construction of spherical (t, t) -designs
 - Advisor: Dr. Shayne Waldron
- University of Auckland Faculty of Arts Deans List 2017
- NZQA Outstanding Scholar Award 2016
 - Limited to top 40–60 secondary school students in New Zealand
- Royal Society of New Zealand scholarship 2016
 - to attend XVI Summer Research School in Mathematics and Informatics, Blagoevgrad, Bulgaria

PUBLICATIONS AND PREPRINTS

- [5] [A. Elzenaar](#), J. Gong, G. Martin, and J. Schillewaert, “Bounding deformation spaces of 2-generator Kleinian groups” (preprint).
[arXiv: 2405.15970 \[math.CV\]](#), 2024.
- [4] [A. Elzenaar](#) and S. Waldron, “Putatively optimal projective spherical designs with little apparent symmetry” (preprint).
[arXiv: 2405.19353 \[math.CO\]](#), 2024.
- [3] [A. Elzenaar](#), G. Martin, and J. Schillewaert, “Concrete one complex dimensional moduli spaces of hyperbolic manifolds and orbifolds”. In: *2021-22 MATRIX annals*. Ed. by David R. Wood, Jan de Gier, and Cheryl E. Prager. MATRIX Book Series 5. Springer, 2024, pp. 31–74.
DOI: 10.1007/978-3-031-47417-0_2. [arXiv: 2204.11422 \[math.GT\]](#), 2022.
- [2] [A. Elzenaar](#), G. Martin, and J. Schillewaert, “The combinatorics of the Farey words and their traces”. In: *Groups, Geometry and Dynamics* (accepted, to appear).
[arXiv: 2204.08076 \[math.GT\]](#), 2022.

- [1] A. Elzenaar, G. Martin, and J. Schillewaert, “Approximations of the Riley slice”. In: *Expositiones Mathematicae* **41.1** (2023), pp.20–54.
DOI: 10.1016/j.exmath.2022.12.002. arXiv: 2111.03230 [math.GT], 2021

**PROFESSIONAL
AFFILIATIONS**

New Zealand Mathematical Society, Student member

[2024-06-28]