

# SAMUEL ANTHONY MELLICK – CURRICULUM VITAE

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Position: Adiunkt (Assistant professor) at Jagiellonian University

Previous positions: Post-doc at McGill University (2022-2023) and École normale supérieure de Lyon (2020-2022)

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Nationality: Australian *Eligible for E-3 visa in lieu of H-1B*

## EDUCATION

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- PhD in Mathematics (Summa cum laude), *Central European University*, Budapest, Hungary 2019  
Thesis title: *Point processes on locally compact groups and their cost.*
- BSc. Honours (First Class) Mathematics, *University of Queensland*, Brisbane, Australia
- BSc. Mathematics, *University of Queensland*, Brisbane, Australia

## PAPERS

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- *Poisson-Voronoi Tessellations and fixed price for higher rank lattices* (Joint with Mikolaj Fraczyk and Amanda Wilkens), to appear in **Annals of Mathematics**
- *Exactness and the topology of the space of invariant random equivalence relations* (joint with Héctor Jardón-Sánchez, Antoine Poulin, and Konrad Wróbel), to appear in Proceedings of the London Mathematical Society
- *Unimodular random graphs with Property (T) have cost one* (Joint with Lukasz Grabowski and Hector Jardon-Sánchez), submitted
- *Indistinguishability of cells for the ideal Poisson Voronoi tessellation* (to appear in Proceedings of the AMS)
- *Gaboriau's criterion and fixed price one for locally compact groups* (to appear in Transactions of the AMS)
- *On the Existence of Balancing Allocations and Factor Point Processes* (Joint with Ali Khezeli), to appear in ALEA
- *The cost of point processes* (Joint with Miklós Abért) (published in *Israel Journal of Mathematics*)
- *The Palm groupoid of a point process and factor graphs on amenable and Property (T) groups*, preprint (in progress being reworked as a survey article on measure equivalence)

## TEACHING EXPERIENCE

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### INSTITUT DES HAUTES ÉTUDES SCIENTIFIQUES

- Minicourse instructor for “*Poisson Voronoi tessellations and fixed price in higher rank*” 2025  
Five lectures, joint with Amanda Wilkens. Minicourse as part of the 2025 IHES Summer School - Discrete Subgroups of Lie Groups: Dynamics, Actions, Rigidity. Recordings available online.

### DEPARTMENT OF MATHEMATICS, JAGIELLONIAN UNIVERSITY

- Course instructor of “*Topics in Measured Group Theory*”, joint with Konrad Wróbel (Graduate course) 2025

### DEPARTMENT OF MATHEMATICS AND STATISTICS, MCGILL UNIVERSITY

- Course instructor of *MATH140 (Calculus 1)* 2022 Lecturing a section of 350 students, devising assessment.

## DEPARTMENT OF MATHEMATICS, UNIVERSITY OF QUEENSLAND

- Mathematics Tutor and Contact Lecturer for numerous courses  
Two classes/semester, duties similar to a graduate teaching assistant in the US.

## ORGANISATION

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### PERSPECTIVES IN ERGODIC THEORY RANDOMNESS AND GEOMETRY (PIEROGY)

- Co-organiser for a conference to be held at Jagiellonian University, Krakow 2026  
Organised jointly with Patrycia Bien, Mikolaj Fraczy, Hector Jardon-Sanchez, and Bharath Choudhury

## SELECTED TALKS GIVEN

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- “Hutchcroft-Pete redux”, invited speaker at conference “Orbit equivalence and topological and measurable dynamics” at Centre International de Rencontres Mathématiques 8/2025
- “Rank gradient via cost”, invited speaker at IMJ-PRG summer school 2025 - Groupoids from a measurable, topological and geometric perspective 06/2025
- “The ideal Poisson Voronoi tessellation of  $H^2 \times H^2$ ”, invited speaker at conference “Probability, Dynamics, and the Geometry of Groups” at the University of Münster 09/2024
- “Cost, rank gradient, and fixed price in higher rank”, invited speaker of Focused Workshop on Volume and Complexity in Non-Positive Curvature at Erdős Center (Rényi Institute) 07/2024
- “An introduction to rank gradient and cost”, talk at Dynamics seminar of Jagiellonian University 11/2023
- “Fixed price one for higher rank Lie groups and some products of groups”, talk at research group seminar “Actions!” of École normale supérieure de Lyon 10/2023
- “Higher rank groups have fixed price one”, invited speaker at “Séminaire d’Algèbres d’Opérateurs” of Mathematics Institute of Jussieu–Paris Rive Gauche 06/2023
- “Higher rank groups have fixed price one”, for the conference “Measured Group Theory, Stochastic Processes on Groups and Borel Combinatorics” at Centre International de Rencontres Mathématiques 5/2023
- “Higher rank groups have fixed price one”, four-part series for research group seminar “Descriptive Dynamics and Combinatorics” of McGill University 4/2023
- “Kazhdan groups have cost one, after Hutchcroft-Pete”, two-part series for research group seminar “Descriptive Dynamics and Combinatorics” of McGill University 10/2022
- “Computing the cost on nondiscrete groups with factors of IID”, research group seminar “Groups and Dynamics online” of University of Texas at Austin 4/2022
- “Visualising actions, computing cost, and fixed price for  $G \times \mathbb{Z}$ ”, research group seminar “Descriptive Dynamics and Combinatorics” of McGill University 2/2022
- “The cost of point processes”, invited guest of “DYGENE Project” of Centre Inria de Paris 2/2022
- “Point processes on groups, their cost, and fixed price for  $G \times \mathbb{Z}$ ”, talk at research group seminar “Ergodic and Geometric Group Theory” of École Polytechnique Fédérale de Lausanne 5/2021
- “Point processes on groups, their cost, and fixed price for  $G \times \mathbb{Z}$ ”, talk at research group seminar “Group actions” of UC San Diego 3/2021
- “Point processes on groups, their cost, and fixed price for  $G \times \mathbb{Z}$ ”, at Institut de Mathématiques de Jussieu-Paris Rive Gauche as part of the Séminaire d’Algèbres d’Opérateurs 9/2020
- “The cost of point processes”, at Alfréd Rényi Institute of Mathematics as part of the Kutszem (weekly seminar of the *Groups and Graph Limits* research group) 3/2019
- “Point processes on nondiscrete groups as pmp actions”, at Instituto de Ciencias Matemáticas (Madrid, Spain) as part of thematic program *L<sub>2</sub>-invariants and their analogues in positive characteristic* 3/2018