Paolo Marimon

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My research is in model theory, a branch of mathematical logic, and constraint satisfaction problems (CSPs), a topic in theoretical computer science. In model theory, I work in interactions between model theory, combinatorics, and the study of probabilistic symmetries. On CSPs, I study computational problems which are naturally represented on well-behaved infinite structures.

Positions

2023-2026 **Postdoc**, Institut für Diskrete Mathematik & Geometrie. TU Wien. Vienna.
Funded by POCOCOP, ERC Synergy Grant No. 101071674.

Education

2019-2023 **PhD in Pure Mathematics**, Imperial College London.
Admin Roth Scholarship. Supervisors: Prof. David Evans, Dr. Charlotte Kestner.
Thesis: Measures and amalgamation properties in ω-categorical structures.

2018 **Summer Research Project**, University of Oxford.
Topic: The Separation of Right Angled Artin Groups (geometric group theory); with Dr. Richard Wade.

2015-2019 **Master of Mathematics and Philosophy**, University of Oxford, Worcester College.
Parts A & B: First Class. Part C: First Class. (Parts A & B correspond to my undergraduate studies).
Dissertation in mathematics: Categoricity for totally transcendental theories; with Prof. Ehud Hrushovski.
Thesis in philosophy: The metaontology of thin objects; with Prof. James Studd.

Articles

2025 **Binary symmetries of tractable non-rigid structures**.
Joint with Michael Pinsker. Fortieth Annual ACM/IEEE Symposium on Logic in Computer Science (LICS). Accepted. This is a conference version of "Minimal operations over permutation groups".

2025 **Invariant Keisler measures for ω-categorical structures**.
The Journal of Symbolic Logic. Volume 90 , Issue 2. pp. 791-807.

2025 **On the non-measurability of ω-categorical Hrushovski constructions**.
Archive for Mathematical Logic. Volume 64, pp. 351–386.

Preprints

2024 **Minimal operations over permutation groups**.
Joint with Michael Pinsker. ArXiv:2410.22060. The conference version of this paper, "Binary symmetries of tractable non-rigid structures" was accepted to LICS 2025.

2024 **When invariance implies exchangeability (and applications to invariant Keisler measures)**.
Joint with Samuel Braunfeld and Colin Jahel. ArXiv:2408.08370. Submitted.

Papers in preparation

2025 **Topology reconstruction on endomorphism monoids and polymorphism clones: a survey**.
Joint with Michael Pinsker. To be submitted in October 2025 for the volume in honour of Mai Gehrke in Springer's series Outstanding Contributions to Logic.

2025 **Topologies on the endomorphism monoids of countable structures**.
Joint with J de la Nuez Gonzales, Zaniar Ghadernezhad, and Michael Pinsker. In preparation.

2025 **When invariance implies exchangeability II**.
Joint with Samuel Braunfeld, Artem Chernikov, and Colin Jahel. In preparation.

2025 **Constraint satisfaction problems on stable finitely homogenisable structures**.
Joint with Manuel Bodirsky and Bertalan Bodor. In preparation.

Selected talks and posters ($\star$:=invited talks in person)

$\star$ Sep 2025 **Minimal operations over permutation groups**. 63rd Summer School on General Algebra and Ordered Sets (SSAOS). Blansko, Czech Republic.

Jul 2025 **When invariance implies exchangeability**. Logic Colloquium 2025. TU Wien.

$\star$ Jun 2025 **Binary Symmetries of tractable non-rigid structures**. 40th Annual ACM/IEEE Symposium on Logic in Computer Science (LICS). Singapore.

Nov 2024 **Minimal operations over permutation groups**. PALS, Panglobal Algebra and Logic Seminar. University of Colorado.

Oct 2024 **When invariance implies exchangeability**. Peking University Model Theory seminar.

Sep 2024 Poster: **When Invariance Implies Exchangeability.** Model Theory and Applications to Groups and Combinatorics. CIRM, Luminy.

Jul 2024 **Exchangeability of consistent random expansions.** Midsummer Combinatorial Workshop XXIX, Prague.

May 2024 **Minimal operations over permutation groups.** AAA105, Prague.

$\star$ Mar 2024 **Minimal operations over permutation groups.** Algebra seminar. Korean Institute of Advanced Studies.

$\star$ Mar 2024 **When measures don't care about structure (and when they do).** Logic seminar. Yonsei University.

$\star$ Sep 2023 **Measures in homogeneous 3-hypergraphs.** Model Theory Workshop. Wroclaw.

Jun 2023 **Measures in ternary homogeneous structures**. SEEMOD. University of Oxford.

Jan 2023 **Invariant Keisler measures in simple ω-categorical structures**. Logic seminar. Carnegie Mellon University.

$\star$ Nov 2022 **Universally measure zero non-forking formulas in simple omega-categorical Hrushovski constructions.** 7th French-Kazakh Colloquium in Model Theory. Institut Camille Jordan. Lyon.

Jul-Aug 2022 Poster: **Invariant Keisler Measures in ω-categorical Hrushovski Constructions**. UNIMOD 2022. I also contributed by typing the exercises for the problem classes.

Mar 2022 **Non-measurability of omega-categorical Hrushovski constructions.** European Conference on Interdisciplinary Model Theory - ECIMT. Münster.

$\star$ Dec 2021 **Non-MS-measurability of omega-categorical Hrushovski constructions.** South and East of England Model Theory Network Conference (SEEMOD). Queen Mary University of London.

Long research visits

Mar 2024 **Two weeks visit at the Korean Institute of Advanced Studies (KIAS).** Visiting Javi de la Nuez Gonzales. Funded by the KIAS.

Nov 2022 **One month visit to the Institut Camille Jordan (ICJ)**, Université Claude Bernard, Lyon 1, France. Funded by the ICJ.

Organisation of meetings and conferences

2026 **Arbeitstagung Allgemeine Algebra (AAA) 108 - 108th Workshop on General Algebra.** TU Wien. Organizer jointly with Michael Pinsker and Mike Behrisch.

2024 & 2025 **POCOCOP meeting.** TU Wien. Organiser. Room, hotel, and restaurant bookings. Schedule.

2025 **Shelah's 80th birthday conference & VOrST (Vienna Oracle of Set Theory).** TU Wien. Registration and coffee breaks.

2022 **SEEMOD.** Imperial College London.

Organisation of reading groups involving multiple universities

2023-2025 **Finite Structures with Few Types**, by Cherlin and Hrushovski. Jointly with Aris Papadopoulos. TU Wien, U. Leeds, U. Notre Dame, Imperial, and U. Maryland.

2023-2024 **CSP reading group.** Organiser. TU Wien, TU Dresden, Charles University (Prague), U. Leeds, and U. Cambridge. Website with recordings: cspreadingroup.github.io.

2023 "On NSOP_2 theories" by Mutchnik. Organiser. Imperial and Institut Camille Jordan.

Awards

2023 **Runner-up prize for the Mathematics PhD Symposium poster competition**. Imperial College London.

2022 **Travel Grant from the Association for Symbolic Logic (ASL)** for Unimod 2022.

2017 **Gibbs Prize for FHS Mathematics and Philosophy Part A.** Best performance in Math.

2016 **Scholarship, Worcester College.** For performance in first year exams.

Teaching

2024-2025 **Model theory II: Stability**. TU Wien. Masters' course. Designing and teaching the course. 16 lectures+problem classes & oral exam. Lecture notes and recordings available on my website.

2023-2025 **Supervising students** at TU Wien:

- bachelor thesis on "Automorphism groups and Ramsey properties of sparse graphs" by Evans, Hubička, and Nešetřil;
- bachelor mini-thesis on "The CSP Dichotomy, the Axiom of Choice, and Cyclic Polymorphisms" by Kátay, Tóth, and Vidnyánszky;
- visiting student (from ISEER Bhopal) bachelor project on Hall's universal group.

2024 **Model theory**. TU Wien. Masters' course. Problem classes, problem sheets, and two lectures.

2022 **Associate Fellowship of the Higher Education Academy.** Approved through the Imperial College London STAR Framework.

2019-2023 **Graduate Teaching Assistant** at Imperial College London: Introduction to University Mathematics (2020, 2022); Introduction to University Mathematics re-sit exam preparation (2021, 2023); Linear Algebra and Groups (2019-2022); Latex workshops for first year projects (2020-2022); Mathematics Pre-Arrival Course (2021-2022); Commutative Algebra (2020).

2020-2022 **Senior Graduate Teaching Assistant:** Analysis II (metric spaces and topology).

2020-2021 **Personal tutoring** in mathematics and philosophy. Grosvenor Tutors.

Professional development courses

2019-2023 Graduate School and Department of Mathematics of Imperial College London: Teaching: Maths GTA training; Intro to Assessment and Feedback for Learning; Intro to Learning and Teaching; Performative Aspects of Teaching; Microteaching; GTA Retreat for Associate Fellowship to the Higher Education Academy. Management Skills: Time Management for your Doctorate.

Other skills and interests

Languages: Fluent: Italian, Spanish, English. Elementary (A1): German, French.

Piano: Recently playing: Brahms' Intermezzo Op.118 No.2. and Schumann's Arabeske. Op.18.

Philosophy: Early analytic philosophy (Frege, Russell, Wittgenstein, and Ramsey). Philosophy of logic, mathematics, and quantum physics. Ethics (Anscombe, Murdoch, Foote, and Midgley).

Origami: Advanced practitioner and creator. Interested in uses of origami for mathematics education.