

# RICARDO JESÚS PALOMINO PIEPENBORN

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Latest CV update: 12th May 2025

## RESEARCH

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Algebra and model theory of lattice-ordered structures (in particular abelian groups, modules, and rings of functions) with emphasis on those arising in real algebra, as well as connections with spectral spaces.

## EDUCATION

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### PhD in Mathematical Logic

*University of Manchester*

Sep. 2020 - Dec. 2024

Manchester, UK

Thesis: *Contributions to the Model Theory of Lattice-Ordered Algebras*

Supervisor: Marcus Tressl

### MMath Mathematics

*University of Manchester*

Sep. 2016 - May 2020

Manchester, UK

Graduation Honours: First Class

MMath project: *Regular Categories and Regular Logic*

MMath project supervisor: Mike Prest

## PREPRINTS AND WORK IN PROGRESS

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### PREPRINTS

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1. *Model theory of local real closed SV-rings of finite rank.* [ArXiv](#).

### WORK IN PROGRESS

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1. (with Marcus Tressl) *Cross-sections of real closed rings.*

## TALKS AND POSTERS

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### INVITED CONFERENCE AND SEMINAR TALKS

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*Local real closed SV-rings of finite rank and their model theory*

15th May 2024

Manchester Logic Seminar, University of Manchester

*Relative quantifier elimination for lattice-ordered modules of continuous semi-algebraic functions on a curve* ([slides](#))

15th Apr. 2024

LYMoTS, University of Central Lancashire

*Relative quantifier elimination for lattice-ordered modules of continuous semi-algebraic functions on a curve* ([slides](#))

29th Nov. 2023

London Logic Seminar, Imperial College London

*Relative quantifier elimination for lattice-ordered modules of continuous semi-algebraic functions on the line*

8th Jun. 2022

Caserta Logic Seminar, Università degli Studi della Campania Luigi Vanvitelli

### CONTRIBUTED CONFERENCE AND SEMINAR TALKS/POSTERS

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*Local real closed SV-rings of finite rank and their model theory* ([slides](#))

10th May 2025

OAL 2025, Florida Atlantic University

*Local real closed SV-rings of finite rank* ([slides](#))

19th Jun. 2024

75th British Mathematical Colloquium, University of Manchester

<i>Relative quantifier elimination for lattice-ordered modules of continuous semi-algebraic functions on a curve</i> ( <a href="#">slides</a> ) OAL-RAG 2024, Louisiana State University	10th May 2024
<i>Transferring properties between mathematical structures via model theory</i> (Prezi <a href="#">slides</a> ) Mathematics Research Students' Conference, University of Manchester	29th Sep. 2023
<i>Elementary classes of real closed SV-rings</i> British Postgraduate Model Theory Conference, University of Leeds	20th Jan. 2023
(poster, available <a href="#">here</a> ) <i>Relative quantifier elimination for lattice-ordered modules of continuous semi-algebraic functions on a real closed field</i> Model Theory Conference in Celebration of Ludomir Newelski's 60th Birthday, Będlewo	16th - 22nd Dec. 2022
(poster, available <a href="#">here</a> ) <i>Relative quantifier elimination for lattice-ordered modules of continuous semi-algebraic functions on a real closed field</i> Practical and Structural Model Theory Workshop, University of Leeds	25th - 29th Jul. 2022
<i>Relative quantifier elimination for lattice-ordered modules of continuous semi-algebraic functions on the line</i> Joint LYMoTS/SEEMOD meeting, University of Manchester	29th Jun. 2022
(poster, available <a href="#">here</a> ) <i>Real closed rings: an overview</i> Mathematics Research Students' Conference, University of Manchester	1st Oct. 2021
STUDENT SEMINAR TALKS AT THE UNIVERSITY OF MANCHESTER	
<i>Real closed valued fields via tame pairs</i> Student Logic Seminar	14th Feb. 2024
<i>Real closed valuation rings</i> Student Logic Seminar	18th Apr. 2023
<i>A tour through model-theoretic interpretations</i> Pure Postgraduate Seminar	3rd Mar. 2023
<i>Lattice-ordered groups</i> Pure Postgraduate Seminar	1st Apr. 2022
<i>Lattice-valued real closed rings</i> Student Logic Seminar	3rd Mar. 2022
<i>The real spectrum</i> Student Logic Seminar	11th Oct. 2021
<i>Spectral spaces in model theory</i> ( <a href="#">slides</a> ) Student Logic Seminar	1st Mar. 2021
<i>A spectral space tour</i> ( <a href="#">slides</a> ) Pure Postgraduate Seminar	5th Feb. 2021
<i>Regular categories and regular logic</i> Student Logic Seminar	11th May 2020
<i>Category theory: origins, motivation, and basic definitions</i> MSc Pure Mathematics Seminar	6th Feb. 2020

## TEACHING

### UNIVERSITY LEVEL

<i>Graduate teaching assistant</i> University of Manchester (Manchester, UK)	Sep. 2019 - May 2024
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- Tutorials (~ 50 students): *Sequences and Series* (2022), *Introduction to Mathematical Logic* (2021), *Mathematical Workshop* (2020), *Mathematical Logic* (2020), and *Combinatorics and Graph Theory* (2019).

- Supervisions ( $\sim 15$  students; leading problem sessions and weekly marking): *Calculus and Applications* (2022), *Linear Algebra* (2020), and *Foundation of Pure Mathematics* (2019 and 2021).
- Coursework marking: *Algebraic Structures 2* (2024), *Foundations of Pure Mathematics* (2021), and *Mathematical Workshop* (2020).

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## SECONDARY SCHOOL LEVEL

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*Mathematics Tutor at the Brilliant Tutoring Programme* Mar. 2021 - Jul. 2021  
Brilliant Club (online)

- I delivered bi-weekly online lessons to two groups of three KS3-level students from St. Mark's Church of England School on core topics in mathematics such as indices, surds, and ratio and angle problems.

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## PRIVATE TUTORING

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*Mathematics, Physics, and English Tutor* November 2024 - present  
Academia AGA (Alicante, Spain)

- I deliver bi-weekly individual lessons to 11 different students aged from 16 to 21 years old, focusing mostly on teaching mathematics (high school and university level), as well as preparing students for particular exams, such as *Cambridge English: B2 First for Schools* or *International Baccalaureate's Mathematics: Analysis and Interpretation (Standard Level)*.

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## OUTREACH

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### EVENTS

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*Mathematical Modelling and Problem Solving Day* ([slides](#)) 23rd Jun. 2021 & 30th Jun. 2022  
University of Manchester, Manchester (UK)

- Yearly one-day event aimed at Year 12 students for them to take part in real world problem solving projects lead by PhD students. I lead the cryptography project for the 2021 and 2022 events; this consisted in explaining some of the early history of cryptography, and then going through some basic modular arithmetic to use it in a particular instance of the Diffie-Hellman key exchange protocol.

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### TALKS

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*Mathematics at University and Infinite Sets* ([slides](#)) 10th Mar. 2020  
Trinity Church of England High School, Manchester (UK)

*Matemáticas en la Universidad (Mathematics at University)* 11th Sep. 2019  
IES Mediterrània, Benidorm (Spain)

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## EVENT ORGANISATION

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*Mathematics Research Students' Conference* (co-organiser;  $\sim 70$  attendees) September 2022  
University of Manchester

- Funding obtained from the Manchester Institute for Mathematical Sciences.

*British Postgraduate Model Theory Conference* (co-organiser;  $\sim 50$  attendees) 12th - 14th Jan. 2022  
University of Manchester

- Online conference. Funding obtained from the Manchester Institute for Mathematical Sciences and the London Mathematical Society.

*Pure Postgraduate Seminar* (co-organiser;  $\sim 20$  attendees) Oct. 2021 - Jun. 2022  
University of Manchester

*Student Logic Seminar* (organiser;  $\sim 10$  attendees) Oct. 2021 - Jun. 2022  
University of Manchester

*Manchester MSc Pure Mathematics Seminar* (organiser;  $\sim 10$  attendees)  
University of Manchester

Oct. 2019 - Jun. 2020

## GRANTS AND PRIZES

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*MRSC 2nd prize for best talk*

October 2023

Mathematics Research Students' Conference, University of Manchester

- Award: £50.
- Talk title: *Transferring properties between mathematical structures via model theory.*

*MRSC 2nd prize for best poster*

October 2021

Mathematics Research Students' Conference, University of Manchester

- Award: £25.
- Poster Title: *Real closed rings: an overview.*

*President's Doctoral Scholar Award*

2020 - 2024

University of Manchester

- £1000 per year for living allowance.

*Manchester Research Scholar Award*

Sep. 2020 - Mar. 2024

University of Manchester

- Covers PhD tuition fees and maintenance grant ( $\sim$  £15,285 per year).

*High Standard of Attainment Departmental Award*

July 2020

University of Manchester

- Award: £100.

*LMS Summer School 2019*

14th - 24th Jul. 2019

London Mathematical Society, Leeds

- A two-week course organized by the LMS to introduce modern mathematics to high-achieving UK undergraduates.

*LMS Undergraduate Research Bursary 2019*

Jun. 2019 - Jul. 2019

London Mathematical Society, University of Manchester

- Project title: *Invariants of the simultaneous conjugacy problem for matrices over  $\mathbb{C}$*  ([pdf](#)).
- Project supervisor: Marcus Tressl.
- Bursary value £1,260 (match-funded together with the University of Manchester).
- Grant reference: URB 18-19-09.

## LANGUAGES

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Spanish (native speaker), English (IELTS certificate score: 7.5), Catalan (Proficient User C1), and Polish (basic user A2).