Rosario Mennuni

Postdoctoral researcher

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Professional Experience

2024–present	**Postdoctoral researcher**, *Università degli Studi di Milano*
2021–2024	**Postdoctoral researcher**, *Università di Pisa*
2020–2021	**Postdoctoral researcher**, *Westfälische Wilhelms-Universität Münster*

Professional Qualifications

2025–2037	**Abilitazione Scientifica Nazionale**, *II fascia*, settore concorsuale 01/A1, bando D.D. 1796/2023

Education

2016–2020	**PhD in Mathematics**, *University of Leeds*
Supervisors	H. Dugald Macpherson and Vincenzo Mantova
Thesis	Invariant types in model theory (`https://etheses.whiterose.ac.uk/26807/`)
2013–2016	**Laurea Magistrale in Matematica (M.S.)**, *Università di Pisa*, 110/110 cum laude
Advisor	Alessandro Berarducci
Thesis	Definable groups, NIP theories, and the Ellis Group Conjecture
2009–2013	**Laurea Triennale in Matematica (B.S.)**, *Università di Pisa*, 109/110
Advisor	Alessandro Berarducci
Thesis	Il Teorema di Keisler-Shelah

Research Interests

Model theory, neostability theory, ordered structures, type spaces, positive logic, arithmetic Ramsey theory

Publications and preprints

The Amalgamation Property for automorphisms of ordered abelian groups, with Jan Dobrowolski, Transactions of the American Mathematical Society, 377 (2024), 7037–7079, doi: 10.1090/tran/9217.

The domination monoid in henselian valued fields, with Martin Hils, Pacific Journal of Mathematics, 328(2), 287–323 (2024). doi: 10.2140/pjm.2024.328.287

Vector spaces with a union of independent subspaces, with Alessandro Berarducci and Marcello Mamino, Archive for Mathematical Logic, 63, 499–507 (2024). doi: 10.1007/s00153-024-00906-9

Self-divisible ultrafilters and congruences in $\beta\mathbb{Z}$, with Mauro Di Nasso, Lorenzo Luperi Baglini, Moreno Pierobon and Mariaclara Ragosta, Journal of Symbolic Logic. doi: 10.1017/jsl.2023.51

Some definable types that cannot be amalgamated, with Martin Hils, Mathematical Logic Quarterly, 69, 46–49 (2023). doi: 10.1002/malq.202200046

On double-membership graphs of models of Anti-Foundation, with Bea Adam-Day and John Howe, Bulletin of Symbolic Logic, 29(1), 128–144 (2023). doi: 10.1017/bsl.2022.37

The domination monoid in o-minimal theories, Journal of Mathematical Logic, Vol. 22, No. 01, 2150030 (2022). doi: 10.1142/S0219061321500306

Weakly binary expansions of dense meet-trees, Mathematical Logic Quarterly, 68:32–47 (2022). doi: 10.1002/malq.202000045

Invariant Types in Model Theory (Thesis abstract), Bulletin of Symbolic Logic, 26(3–4), 296–297 (2020). doi: 10.1017/bsl.2020.25

Product of invariant types modulo domination-equivalence, Archive for Mathematical Logic, 59, 1–29 (2020). doi: 10.1007/s00153-019-00676-9

Orthogonality and domination in o-minimal expansions of ordered groups, with Pablo Andújar Guerrero and Pantelis Eleftheriou, arxiv.org/abs/2503.17120

Ramsey's witnesses, with Mauro Di Nasso, Lorenzo Luperi Baglini, Marcello Mamino and Mariaclara Ragosta, arxiv.org/abs/2503.09246

Model-theoretic dividing lines via posets, with Darío García, arxiv.org/abs/2209.00571

Editorial Activity

2023–present **Reviewer**, *The Journal of Symbolic Logic*
2020–present **Reviewer**, *Archive for Mathematical Logic*

Reviews

2025 **zbMATH review**, *J. Gismatullin*, On model-theoretic connected groups, https://zbmath.org/7827879

2024 **mathscinet review**, *G. Boxall, C. Kestner*, Theories with distal Shelah expansions, https://mathscinet.ams.org/mathscinet/article?mr=4679233

2024 **zbMATH review**, *J. Hanson, T. Ibarlucía*, Approximate isomorphism of randomization pairs, https://zbmath.org/7669830

2024 **zbMATH review**, *Z. Ghadernezhad, J. de la Nuez González*, Group topologies on automorphism groups of homogeneous structures, https://zbmath.org/7807758

2024 **mathscinet review**, *S. Shelah*, Canonical universal locally finite groups, https://mathscinet.ams.org/mathscinet/article?mr=4575363

2023 **zbMATH review**, *V. Guingona*, On VC-density in VC-minimal theories, https://zbmath.org/7598586

2023 **zbMATH review**, *G. Metcalfe, L. Reggio*, Model completions for universal classes of algebras: necessary and sufficient conditions, https://zbmath.org/7657286

2023 **zbMATH review**, *A. Berenstein, E. Vassiliev*, Definable groups in dense pairs of geometric structures, https://zbmath.org/7541616

Mentoring and supervision

2023 **Supervisor**, of Alessandro Sferlazza (Master Student at Scuola Normale Superiore (Pisa) for his 4th year *colloquio*

2021 **Mentor**, of Simone Ramello (Master Student at the Università di Torino) during his 5 month Erasmus+ traineeship at WWU Münster

Outreach

2025 **Plenary talk**, *Come dimostrare che non puoi dimostrare di non poter dimostrare tutto (a meno che tu non possa dimostrare davvero tutto)*, XXI settimana matematica (outreach event aimed at senior high-school students), Università di Pisa

2023 **Responsabile di laboratorio**, *Infinito, infinito più uno, e cose parecchio più grandi*, XIX settimana matematica, Università di Pisa

Scholarships, Awards and Grants

2024 Progetto di ricerca GNSAGA: Model Theory and applications to Algebra and Combinatorics (travel grant, 1 year, €3k). Participant

2019 London Mathematical Society Postgraduate Research Conference Grant (Scheme 8), towards the organisation of the British Postgraduate Model Theory Conference 2020 (£2k). Cofunded by the School of Mathematics of the University of Leeds (£4k), guaranteed by the British Logic Colloquium (£750). Principal investigator

2019 ASL Travel Grant Award to attend "Logic Colloquium 2019", Prague

2018 ASL Travel Grant Award to attend "From Permutation Groups to Model Theory: a Workshop Inspired by the Interests of Dugald Macpherson, on the Occasion of His 60th Birthday", Edinburgh

2017 ASL Travel Grant Award to attend "Set-Theoretic and Topological Methods in Model Theory", Tezpur

2017 ASL Travel Grant Award to attend "Model Theory and Applications", Mons

2017 Premio Tesi 3+2 AILA 2017: Award for one of the best master theses in logic in Italy

2016–2020   Leeds Anniversary Research Scholarship

Research Projects

2024–2025   PRIN 2022: "Logical methods in combinatorics", Prot. 2022BXH4R5, MUR (postdoc)
2024–2025   Model Theory and applications to Algebra and Combinatorics, GNSAGA (participant)
2023–2025   PRIN 2022: "Models, sets and classifications" Prot. 2022TECZJA, MUR (participant)
2021–2023   PRIN 2017: "Mathematical Logic: models, sets, computability" Prot. 2017NWTM8RPRIN, MIUR (postdoc)
2020–2021   GeoMod, ANR-DFG (postdoc)

Conference Talks and Posters

- Generic automorphisms of valued fields (Buckingham, Dec '24, invited)
- Amalgamating first-order structures (mini-course) (Lausanne, Dec '24, invited)
- Generic automorphisms of valued fields (Leeds, Oct '24, invited)
- O-minimality, domination, and preorders (Udine, Sep '24, contributed)
- Generic automorphisms of valued fields (Udine, Sep '24, contributed)
- Positive model theory and automorphisms of ordered structures (Manchester, Jun '24, invited)
- Ultrafilters, congruences, and profinite groups (Pisa, Jun '24, invited)
- O-minimality, domination, and preorders (Freiburg, Nov '23, invited)
- The Amalgamation Property for automorphisms of ordered abelian groups (Pisa, Sep '23, contributed)
- Some definable types in the wild (Leeds, May '23, invited)
- Automorphisms of ordered abelian groups, the Amalgamation Property, and dependent positive theories (Leeds, Jan '23, contributed)
- The domination monoid in henselian valued fields (Colmar, Sep '21, invited)
- Viewpoints on Stability and Forking (mini-course) (Short Model Theory Huddle 2, Jun '21, invited)
- Product of Invariant Types Modulo Domination-Equivalence (Oxford, Sep '19, contributed)
- Product of Invariant Types Modulo Domination-Equivalence (Prague, Aug '19, contributed)
- Domination and Products in Unstable Theories (Leeds, Jan '19, invited)
- Product of Invariant Types Modulo Domination-Equivalence (Manchester, Jan '19, contributed)
- Notions of Domination Between Invariant Types (Tezpur, Sep '17, contributed)
- Product of Invariant Types Modulo Domination-Equivalence (Edinburgh, Sep '18, poster)

Seminar Talks, invited

- Ramsey's witnesses (Helsinki, Logic Seminar)
- Generic automorphisms of valued fields (Dortmund, Oberseminar Algebra und Geometrie)
- Positive model theory and automorphisms of ordered structures (Pisa, Scuola Normale Superiore, Logic seminar)
- Positive logic and automorphisms of ordered abelian groups and valued fields (Napoli, Logic seminar)
- Some definable types in the wild (Münster, Oberseminar Modelltheorie und Gruppen)
- Some definable types in the wild (Lyon, Séminaire Logique Mathématique)
- Ultrafilters, congruences and profinite groups (Freiburg, Oberseminar Logik)
- Automorphisms of ordered abelian groups and dependent positive theories (Bonn, Oberseminar Logik)
- Model theory of ordered abelian groups (Torino, Logic working group)
- Automorphisms of ordered abelian groups and positive logic (Manchester, Logic seminar)
- Automorphisms of ordered abelian groups and positive logic (Caserta, Logic seminar)
- The domination monoid in henselian valued fields (University of East Anglia, Pure mathematics seminar)
- The domination monoid (Konstanz, TDE seminar)
- The domination monoid (Caserta, Logic seminar)
- The domination monoid (Bogotá, Seminario Flotante de Lógica Matemática)
- Product of Invariant Types Modulo Domination-Equivalence (Torino)
- Double-Membership Graphs of Models of Anti-Foundation (Manchester, Logic Seminar)

- o Product of Invariant Types Modulo Domination-Equivalence (Imperial College London, Logic Seminar)

Seminar Talks, contributed

- o Ramsey's witnesses (Milano, Seminario di Logica, Algebra e Categorie)
- o Ramsey's witnesses (Pisa, Seminario di Logica)
- o Ordered groups, valued fields, and generic automorphisms (Milano, Seminario di Logica, Algebra e Categorie)
- o Teoria dei modelli della doppia appartenenza (Pisa, Seminario di Logica)
- o Automorfismi di gruppi abeliani ordinati e logica positiva (Pisa, Seminario di Logica)
- o Model theory of double-membership (Münster, Oberseminar Modelltheorie, Geometrie und Gruppentheorie)
- o The domination monoid (Münster, Oberseminar Modelltheorie, Geometrie und Gruppentheorie)
- o The domination monoid in o-minimal theories (Leeds, online Logic Seminar)
- o Domination-equivalence in o-minimal theories (Leeds, Postgraduate Logic Seminar)
- o Double-Membership Graphs of Models of Anti-Foundation (Leeds, Models and Sets Seminar)
- o The Weird, The Bad, and The Ugly (Leeds, Pure Postgraduate Seminar)
- o Morley's Theorem on the Number of Countable Models, (Leeds, Models and Sets Seminar)
- o Types, Products and Domination (Leeds, Postgraduate Logic Seminar)
- o Domination and Products of Invariant Types: a Counterexample (Leeds, Model Theory Seminar)
- o An Infinitesimal Glimpse of Non-Standard Analysis (Leeds, Pure Postgraduate Seminar)
- o Notions of Domination Between Invariant Types (Leeds, Model Theory Seminar)
- o First-order Quantifiers and Where to Eliminate Them (Leeds, Pure Postgraduate Seminar)
- o Externally Definable Sets: An Introduction and An Application (Leeds, Model Theory Seminar)
- o Keisler Measures (Leeds, Postgraduate Model Theory and Set Theory Seminar)
- o Independent families and RK-incomparable ultrafilters (Pisa)
- o Easton forcing (Pisa)

Organisational Duties

2022–2024	Organiser of the Logic Seminar, Pisa
2024	Local organiser of Ramsey Theory in Logic, Combinatorics and Complexity (RaTLoCC IV), Pisa
2023	Organiser of Logical Methods in Ramsey Theory and Related Topics, Pisa
2022	Local Organiser of Ultramath 2022, Pisa
2020	Organiser of the BPGMT Conference 2020, Leeds
2017	Organiser of the BPGMT Conference 2017, Leeds
2016–2019	Organiser of the postgraduate logic seminar, Leeds

Research visits

Jan '25	Dortmund, collaboration with Michele Serra
Oct '24	Leeds, collaboration with Pablo Andújar Guerrero
Oct '23	Münster, collaboration with Martin Hils
Oct '23	Lyon, collaboration with Frank Wagner
May '23	Leeds, collaboration with Pablo Andújar Guerrero and Pantelis Eleftheriou
May '22	Manchester, collaboration with Jan Dobrowolski

Conferences and Workshops

Dec '24	SEEMOD 19, Buckingham
Dec '24	Model Theory Workshop, Lausanne
Oct 24	MAC 30 - Model theory, Algebra & Combinatorics, Leeds
Oct 24	Model Theory and Applications to Groups and Combinatorics, Luminy
Sep '24	XXVIII Incontro di Logica AILA, Udine

Sep '24	Meeting of the PRIN "Models, sets, and classifications", Udine
Jun '24	75th British Mathematical Colloquium, Manchester
Jun '24	Ramsey Theory in Logic, Combinatorics and Complexity (RaTLoCC IV), Pisa
Feb '24	BIRS workshop on exponential fields, Banff
Nov '23	2023 Geomod Conference, Freiburg
Sep '23	XXII Congresso dell'Unione Matematica Italiana, Pisa
Jul '23	Logical Methods in Ramsey Theory and Related Topics, Pisa
May '23	Impromptu Leeds–McMaster model theory days, Leeds
Jan '23	British Postgraduate Model Theory Conference, Leeds
Dec '22	Model Theory Conference in celebration of Ludomir Newelski's 60th birthday, Będlewo
Nov '22	A tale of modules and models, a celebration in honour of Carlo Toffalori on his retirement, Firenze
Jun '22	Model theory and applications, Cetraro
Jun '22	Ultramath 2022, Pisa
Sep '21	AGRUME meeting, Colmar
Jun '21	Short Model Theory Huddle 2, online
Apr '21	British Postgraduate Model Theory Conference, online
May '20	Short Model Theory Huddle, online
Feb '20	Fifth Workshop on Generalised Baire Spaces, Bristol
Jan '20	British Postgraduate Model Theory Conference, Leeds
Sep '19	British Logic Colloquium 2019, Oxford
Aug '19	Logic Colloquium 2019, Prague
Jun '19	Applications of the Model Theory of Fields with Operators, Manchester
Jan '19	Workshop on NIP and Groups, Leeds
Jan '19	British Postgraduate Model Theory Conference, Manchester
Sep '18	From Permutation Groups to Model Theory: a Workshop Inspired by the Interests of Dugald Macpherson, on the Occasion of His 60th Birthday, Edinburgh
Aug '18	Model-theoretic Methods in Number Theory and Algebraic Differential Equations, Manchester
Apr '18	Workshop on model theory of finite and pseudofinite structures, Leeds
Mar '18	Model Theory and Applications, Paris
Mar '18	Model Theory of Valued fields, Paris
Feb '18	Model Theory and Combinatorics, Paris
Jan '18	British Postgraduate Model Theory Conference, Oxford
Sep '17	Set-Theoretic and Topological Methods in Model Theory, Tezpur
Jul '17	Model Theory, Będlewo
Jun '17	Model Theory in Wrocław 2017, Wrocław
Jan '17	British Postgraduate Model Theory Conference, Leeds
Jan '17	Model Theory and Applications, Mons
Jun '16	International Conference on Model Theory, Notre Dame
Aug '15	PhD-AILA 2015, Gargnano
Aug '15	Logic Colloquium 2015, Helsinki
May '15	COMFORT, Convegno in onore di Marco Forti, Dipartimento di Matematica, Pisa
Apr '14	XXV incontro dell'Associazione Italiana di Logica e sue Applicazioni, Pisa
Jan '13	Ultra-Combinatorics, Pisa

Summer/Winter Schools and Research Periods

Jan–Apr '18	Model Theory, Combinatorics and Valued Fields Trimester, Institut Henri Poincaré, Paris
Jan '18	Research School Model Theory, Combinatorics and Valued Fields, Luminy
Aug '17	Scuola Estiva di Logica 2017, Gargnano
Jul '16	Summer School in Tame Geometry, Konstanz

Jun '16	Thematic Programme on Model Theory, Graduate Summer School, Notre Dame
Aug '15	Scuola Estiva di Logica 2015, Gargnano
Jul '15	Scandinavian Logic Society Summer School in Logic 2015, Helsinki

Teaching

Spring '24	Elementi di Teoria degli Insiemi, with Mauro Di Nasso, exercise sessions, Università di Pisa
Spring '24	Logica Matematica, with Marcello Mamino, part 2/4, Università di Pisa
Spring '22	Model Theory, postgraduate course, Università di Pisa
Autumn '19	Computer Workshops (≈ 70 students) for Mathematics 1/Number Systems, University of Leeds
Autumn '19	Tutorials (≈ 10 students) for MATH1010 Mathematics 1, University of Leeds
Spring '19	Tutorials (≈ 10 students) for MATH1026 Sets, Sequences and Series, University of Leeds
Autumn '18	Computer Workshops (≈ 70 students) for Mathematics 1/Number Systems, University of Leeds
Autumn '18	Tutorials (≈ 10 students) for MATH1025 Number Systems, University of Leeds
Autumn '17	Computer Workshops (≈ 70 students) for Mathematics 1/Number Systems, University of Leeds
Autumn '17	Tutorials (≈ 10 students) for MATH1025 Number Systems, University of Leeds
Spring '17	Tutorials (≈ 10 students) for MATH1026 Sets, Sequences and Series, University of Leeds
Autumn '16	Computer Workshops (≈ 70 students) for Mathematics 1/Number Systems, University of Leeds
Autumn '16	Tutorials (≈ 10 students) for MATH1025 Number Systems, University of Leeds

Teaching Training

2024	Attended *Insegnare a insegnare, corso avanzato* (Advanced course on university-level teaching), Università di Pisa
2024	Attended *Insegnare a insegnare, corso base* (Basic course on university-level teaching), Università di Pisa

Professional Memberships

2021–present	Member of Unione Matematica Italiana (UMI)
2021–present	Member of Associazione Italiana di Logica e Sue Applicazioni (AILA)
2020–present	Member of Istituto Nazionale di Alta Matematica (INdAM), GNSAGA group
2016–2020	Student member of the Association for Symbolic Logic (ASL)

Languages

Native	Italian, Sanferdinandese (Apulian dialect)
Fluent	English
Basic	French, German