

Education

2020-2025 **PhD in Pure Mathematics**, *University of Leeds*

Supervisors Vincenzo Mantova and H. Dugald Macpherson

Thesis Title Structural Investigations in some Classes of o-minimal Fields. <https://etheses.whiterose.ac.uk/id/eprint/36168>

2017-2019 **Laurea Magistrale in Matematica (M.S.)**, *Università di Pisa*, 110/110 cum laude

Advisor Alessandro Berarducci

Thesis Title Surreal Numbers, Transseries and Omega Maps.

2012-2016 **Laurea Triennale in Matematica (B.S.)**, *Università di Pisa*, 110/110 cum laude

Advisor Enrico Sbarra

Thesis Title Risoluzioni libere di ideali monomiali.

2007-2012 **Maturità Scientifica**, *Liceo Scientifico Archimede, Messina*, 100/100 L

Professional Experience

2025-present **Research Fellow**, *University of Leeds*, Pure Mathematics

2025 **Substitute Teacher**, *IISS Antonio Pesenti, Cascina (PI), Italy*, Mathematics and Physics

2020-2023 **Math Tutor**, *Stem-up*

2020 **Substitute Teacher**, *ITCG Fermi, Pontedera (PI), Italy*, Informatics

Research Interests

Model theory, o-minimality, category theory, mathematical logic.

Publications

2021 Berarducci, A., Freni, P. (2021). *On the value group of the transseries*. Pacific Journal of Mathematics, 312(2), 335-354. <https://msp.org/pjm/2021/312-2/p04.xhtml>, arxiv version: <https://arxiv.org/abs/2101.04002>

Preprints

2023 *On Vector Spaces with Formal Infinite Sums*. <https://arxiv.org/abs/2303.08000>

2024 *T-convexity, Weakly Immediate Types and T- λ -Spherical Completions of o-minimal Structures*. <https://arxiv.org/abs/2404.07646>

2024 *On the structure of T- λ -spherical completions of o-minimal fields*. <https://arxiv.org/abs/2407.07442>

2024 *T-convexly valued o-minimal fields are definably spherically complete*. <https://arxiv.org/abs/2411.16706>

2025 (j.w. Angus Matthews) *Residually Constructible Extensions*. <https://arxiv.org/abs/2501.10033>

2025 *Absorbed Types and Derivations in Exponential o-Minimal Theories*. <https://arxiv.org/abs/2511.13447>

Posters

- 2022 On formal infinite linear combinations (Presented in different versions at: Model Theory and Applications, Cetraro 2022; Unimod 2022, Leeds)

Talks

- 2025 *Cuts and Derivations in Exponential o-minimal Fields.* Leeds, Models Seminar; *Expansions of Hahn fields by Algebras of generalized power series.* Napoli, INdAM intensive period on Model theory and tame expansions of topological fields, and Bologna, Logic, Categories, and Applications Seminar; *Strong vector spaces and some torsion theories of Ind(Vect^{OP}).* Bologna, Logic, Categories, and Applications Seminar; *Elementary (bounded) spherical completions of exponential o-minimal fields, and their structure.* Pisa, Logic seminar.
- 2024 *Weakly immediate types and spherical completions of o-minimal structures.* Burnley, 30th LYMOTS meeting; *T-convexity and T-λ-spherical completions of o-minimal structures.* Manchester Logic Seminar.
- 2023 *What Should Strong Vector Spaces be?* Online, ItaCa Fest May 2024, Leeds, Impromptu Leeds-MacMaster Model Theory days; *Summability in Algebras of Generalized Power Series.* Leeds, Postgraduate Logic Seminar; *How do you solve a system of polynomial equations?* Leeds, Postgraduate Pure Math Seminar.
- 2022 *What are Transseries?* Leeds, Postgraduate Pure Math Seminar; *Strong Vector Spaces* Minitalk at LYMOTS/SEEMOD meeting.
- 2021 *Around exponentiation in fields of generalized power series.* Leeds, Postgraduate Logic Seminar; *Gabrielov's theorem and the model completeness of reals with restricted analytic functions.* Leeds, Postgraduate Pure Math Seminar.

Teaching Experience

- 2023 Tutoring: Sets, Sequences and Series.
- 2022 Tutoring: Sets, Sequences and Series. Workshop: Further Linear Algebra.
- 2021 Tutoring: Numbers and Systems.

Further Experience

- 2025 Organiser of the Models Seminar at the University of Leeds.
- 2023 Organiser of the British Postgraduate Model Theory Conference 2023.
- 2022-2023 Organiser of the Leeds Postgraduate Logic Seminar.
- 2022 Helping in the organisation of the Unimod 2022 programme.

Fundings and Awards

- 2020-2024 School of Mathematics Full-Time Doctoral Scholarship at the School of Mathematics, University of Leeds.
- 2010-2012 Bronze Medal at the Italian Mathematics Olympiads in years 2010, 2011, 2012.

Computer skills

- Coding C, C#, octave, SQL, Lean 4 (basic experience with C++, Java, javascript, M2, AGDA).
Other L^AT_EX, html, css, Excel.

Languages

- Fluent Italian (native speaker), English.
Good German.