

Curriculum Vitæ

Panteleimon Eleftheriou

School of Mathematics, University of Leeds
Leeds LS2 9JT, United Kingdom

<http://www1.maths.leeds.ac.uk/~pmtpe/>
Email: P.Eleftheriou@leeds.ac.uk

I am a model theorist working on various problems at the nexus of logic, algebra, geometry and number theory. My main interest is to recover concrete mathematical structure from given logical data, such as Lie groups from definable groups, algebraic curves from definable sets with many rational points, algebraically closed fields from strongly minimal structures, and algebraic topology (homotopy/homology) from semi-linear data. I am also interested in applications of model theory to computer science and machine learning.

Education

- 2019: Habilitation in Mathematics, University of Konstanz, Germany.
Thesis title: *Structure theorems and applications in semi-bounded and tame pairs*.
- 2002 – 2007: Ph.D. in Mathematics, University of Notre Dame, USA.
Thesis title: *Groups definable in linear o-minimal structures*.
Thesis supervisor: Sergei Starchenko.
- 2000 – 2002: M.Sc. in Logic and Theory of Algorithms and Computation (MPLA), National and Kapodistrian University of Athens, Greece, 2002.
- 1996 – 2000: B.Sc. in Mathematics, Aristotle University of Thessaloniki, Greece (ranked 1st).

Employment

- 2021 – : *University Academic Fellow (tenure-track towards Associate Professorship) and EPSRC Early Career Fellow*, School of Mathematics, University of Leeds, UK.
- 2020 – 2021: *PRIN Research Fellow*, Department of Mathematics, University of Pisa, Italy.
- 2015 – 2021: *Research Fellow of the Zukunftskolleg (Assistant Professor, non-tenure-track)*, Department of Mathematics and Statistics, University of Konstanz, Germany.
- 2013 – 2015: *Marie Curie Fellow of the Zukunftskolleg, ZIF-MARIE-CURIE 291784*, Department of Mathematics and Statistics, University of Konstanz, Germany.
- 2011 – 2013: *Postdoctoral Fellow*, Department of Mathematics, University of Waterloo, Canada.
- 2008 – 2011: *FCT Postdoctoral Fellow, SFRH/BPD/35000/2007*, CMAF, University of Lisbon, Portugal.
- 2007 – 2008: *Marie Curie Fellow (ModNet), MRTN-CT-2004-512234*, IMUB, University of Barcelona, Spain.

Visiting positions (thematic programs/long research visits)

- 03–04/2022: Fields Institute, University of Toronto, Canada.
- 01–03/2018: Institut Henri Poincaré, Paris, France.
- 05–06/2017: Fields Institute, University of Toronto, Canada.
- 07–10/2014: CMAF, University of Lisbon, Portugal.
- 04–05/2014: MSRI, University of California at Berkeley, USA.
- 05–06/2009: Fields Institute, University of Toronto, Canada.
- 11–12/2007: University of Haifa, Israel.

09–11/2004: McMaster University, Canada.

Research grants as Principal Investigator

- *EPSRC Early Career Fellowship* (£847,541), University of Leeds, UK, 2021–2026.
- *Zukunftskolleg Co-Funding for organizing Workshop on Tame Expansions of O-minimal Structures* (€10,000), University of Konstanz, Germany, 2018.
- *VolkswagenStiftung grant for organizing Summer School in Tame Geometry* (€34,200), University of Konstanz, Germany, 2016.
- *Young Scholar Fund (Exzellenzinitiative) for supporting a PhD student* (€49,500), University of Konstanz, Germany, 2015.
- *DFG Research Grant (German Research Foundation) for supporting a PhD student, EL 778/1-1* (€161,900), University of Konstanz, Germany, 2014.

Team grants - responsible for writing parts of the application

- *DFG grant with Hasson (Ben Gurion) and Kaiser (Passau) for conference organization* (€20,000), Practical and Structural Model Theory, on the occasion of the 60th birthdays of Kobi Peterzil and Sergei Starchenko, Passau (Germany), July 27 - 31, 2020.
- *Lisbon-Lyon Group Grant* (€2,000): Convénio FCT/CNRS Concurso 2010, Portugal-France, 2010.
- *Lisbon Group Grants: Fundação para a Ciência e a Tecnologia, Portugal.*
 - Applications and extensions of o-minimality (€30,000), PTDC/MAT/122844/2010-2012
 - On o-minimality and definably compact groups (€20,968), PTDC/MAT/101740/2008-2010
- *Barcelona Group Grant* (€36,900): Teoría de Modelos MTM2008-01545, Spain, 2009-2011.

Fellowships/Scholarships

- *1-year Research Fellowship (PRIN 2017)*, Department of Mathematics, University of Pisa, Italy, 2020.
- *5-year Research Fellowship at the Department of Mathematics and Statistics (Zukunftskolleg), Exzellenzinitiative*, University of Konstanz, Germany, 2015.
- *5-year FCT Research Position at the rank of Assistant Professor IF/01702/2013, plus 50,000 EUR start-up grant*, Fundação para a Ciência e a Tecnologia, Portugal, 2014 (declined).
- *2-year Marie Curie Postdoctoral Fellowship at the Zukunftskolleg, ZIF-MARIE-CURIE 291784*, University of Konstanz, Germany, 2013.
- *2-year Postdoctoral Fellowship*, University of Waterloo, Canada, 2011.
- *(3+3)-year FCT Postdoctoral Fellowship SFRH/BPD/35000/2007*, Fundação para a Ciência e a Tecnologia, Portugal, 2008 (second tri-annual declined).
- *9-month Marie Curie Research Fellowship*, European Commission's Research Training Network MRTN-CT-2004-512234 (MODNET), University of Barcelona, Spain, 2007.
- *5-year Graduate Research and Teaching Assistant Scholarship*, University of Notre Dame, USA, 2002.
- *2-year Academic Scholarship, MPLA*, University of Athens, Greece, 2000.

Awards

- *EPSRC Early Career Fellowship* (£847,541), EPSRC–UKRI, 2021.
- *Outstanding Graduate Student Teacher Award for Excellence in Teaching*, awarded by Notre Dame's Kaneb Center for Teaching and Learning, 2006.
- *Award and prize for highest G.P.A. of the year in the Department of Mathematics*, University of Thessaloniki, awarded by the Greek State Scholarships Foundation, 2000.
- *Award for Excellence in Mathematics*, ranked second in a mathematical competition among all tutoring schools in Thessaloniki, Greece, 1995.

Research Leadership

Postdocs:

- Pablo Andujar Guerrero, EPSRC Postdoctoral Fellow, University of Leeds, October 2022 - present.
- Eliana Barriga, Incoming Zukunftskolleg Fellow, University of Konstanz, Summer Term 2019.
First job: Postdoc, Ben-Gurion University, Israel.
- Erick Garcia Ramirez, DAAD Postdoctoral Fellow, University of Konstanz, Winter Term 2017–2018.
First job: Contract Professor, UNAM, Mexico.

Ph.D. students:

- Ben de Smet, University of Leeds, 2022– present (main supervisor).
- Mervyn Tong, University of Leeds, 2022– present (main supervisor).
- Aris Papadopoulos, University of Leeds, 2021– present (main supervisor).
- Alex Savatovsky, University of Konstanz, 2015–2020 (single supervisor).
First job: Postdoc, University of Haifa, Israel.

Masters students:

- Magdalena Forstner, “Quantifier elimination tests and examples”, University of Konstanz, 2017.
- Lorenzo Ceriello, “Lattices in linear o-minimal structures”, Seconda Università Degli Studi di Napoli, co-supervised with Paola D’Aquino, 2016.
- Gil Keren, “Definable compactness in weakly o-minimal structures”, Ben Gurion University, co-supervised with Assaf Hasson, 2014.

Undergraduate research students:

- Francis Westhead, “VC-dimension for 2-line and 3-line sets”, LMS Undergraduate Research Bursary, University of Leeds, Summer 2022 (upcoming publication).

Teaching

University of Leeds:

- Winter 2022/2023, Models and Sets (Graduate course)
- Winter 2021/2022, Models and Sets (Graduate course)

University of Konstanz:

- Winter 2015/2016, Topics in Model Theory (Graduate course)

University of Waterloo:

- Fall 2012, Linear Algebra II (Honors Mathematics) - evaluated 92/100
- Winter 2012, Linear Algebra I (Honors Mathematics)
- Fall 2011, Linear Algebra (Engineering)

University of Notre Dame:

- Fall 2006, Calculus A (Science) - received Excellence Award
- Fall 2005, Calculus A (Science)
- Spring 2005, (TA) Calculus B (Science)
- Spring 2004, (TA) Beginning Logic
- Fall 2003, (TA) Calculus III (Engineering)
- Fall 2003, (TA) Calculus A (Science)

University of Athens:

- Spring 2002, (TA) Mathematical Logic

Graduate mini-courses and seminars

- Oberseminar Modelltheorie, University of Konstanz, five terms 2015-2018.
- *Groups definable in o-minimal structures*, University of Lisbon, Spring 2008.
- *Groups definable in o-minimal structures*, University of Barcelona, Spring 2007.
- *Hrushovski's constructions*, Notre Dame, Spring 2006.

Publications in Peer-Reviewed Journals

Preprints/In progress:

- 34. *Orthogonality and domination monoids in o-minimal expansions of ordered groups*, with R. Mennuni, in progress.
- 33. *An unbounded version of Zarankiewicz's problem*, with A. Papadopoulos, in progress.
- 32. *On semibounded expansions of ordered groups*, with A. Savatovsky, arXiv:2003.02250.

Published/accepted:

- 31. *Orthogonal decomposition of definable groups*, with A. Berarducci and M. Mamino, arXiv:2101.00630. **Journal of Symbolic Logic** (to appear).
- 30. *Product cones in dense pairs*, **Mathematical Logic Quarterly** 68 (2022), 279–287.
- 29. *Pillay's Conjecture for groups definable in weakly o-minimal non-valuational structures*, **Bulletin of the London Mathematical Society** 53 (2021), 1205–1219.
- 28. *Strongly minimal groups in o-minimal structures*, with A. Hasson, Y. Peterzil, **Journal of the European Mathematical Society** 23 (2021), 3351–3418.
- 27. *Counting algebraic points in expansions of o-minimal structures by a dense set*, **Quarterly Journal of Mathematics** 72 (2021), 817–833.
- 26. *On coincidence of dimensions in closed ordered differential fields*, with O. Leon Sanchez, N. Regnault, **Notre Dame Journal of Formal Logic** 62 (2021), 257–268.
- 25. *Small sets in Mann pairs*, **Archive for Mathematical Logic** 60 (2021), 317–327.
- 24. *Structure theorems in tame expansions of o-minimal structures by a dense set*, with A. Günaydin, P. Hieronymi, **Israel Journal of Mathematics** 239 (2020), 435–500.
- 23. *Expansions of real closed fields which introduce no new smooth functions*, with A. Savatovsky, **Annals of Pure and Applied Logic** 171 (2020), 102808, 1–15.
- 22. *Locally definable subgroups of semialgebraic groups*, with E. Baro, Y. Peterzil, **Journal of Mathematical Logic** 20 (2020), 2050009, 17 pages.
- 21. *The Choice Property in tame expansions of o-minimal structures*, with A. Günaydin, P. Hieronymi, **Mathematical Logic Quarterly** 66 (2020), 239–246.
- 20. *Characterizing o-minimal groups in tame expansions of o-minimal structures*, **Journal of the Institute of Mathematics of Jussieu** (2019), 1–26.
- 19. *Small sets in dense pairs*, **Israel Journal of Mathematics**, Volume 233 (2019), 1–27.
- 18. *Semi-linear stars are contractible*, **Fundamenta Mathematicae**, Volume 241 (2018), 291–312.
- 17. *On weakly o-minimal non-valuational expansions of ordered groups*, with A. Hasson, G. Keren, **Journal of Symbolic Logic**, Volume 82 (2017), 1482–1495.

16. *Intrepretable groups are definable*, with Y. Peterzil, J. Ramakrishnan,
Journal of Mathematical Logic, Vol. 14, No. 1 (2014), 47 pages.
15. *Coverings by open cells*, with M. Edmundo, L. Prelli,
Archive for Mathematical Logic, Volume 53 (2014), 307–325.
14. *The universal covering map in o-minimal expansions of groups*, with M. Edmundo, L. Prelli,
Topology and its Applications, Volume 160 (2013), 1530–1556.
13. *Lattices in locally definable subgroups of $\langle R^n, + \rangle$* , with Y. Peterzil,
Notre Dame Journal of Formal Logic, Volume 54, Number 3–4 (2013), 449–461.
12. *Non-standard lattices and o-minimal groups*,
Bulletin of Symbolic Logic, Volume 19 (2013), 56–76.
11. *Definable groups as homomorphic images of semilinear and field-definable groups*, with Y. Peterzil,
Selecta Mathematica N.S., Volume 18 (2012), 905–940.
10. *Definable quotients of locally definable groups*, with Y. Peterzil,
Selecta Mathematica N.S., Volume 18 (2012), 885–903.
9. *Local analysis for semi-bounded groups*,
Fundamenta Mathematicae, Volume 216 (2012), 223–258.
8. *Notions of Bisimulation for Heyting-Valued Modal Languages*, with C. Koutras, C. Nomikos,
Journal of Logic and Computation, Volume 22 (2012), 213–235.
7. *Groups definable in linear o-minimal structures: the non-compact case*,
Journal of Symbolic Logic, Volume 75 (2010), 208–220.
6. *Compact domination for groups definable in linear o-minimal structures*,
Archive for Mathematical Logic, Volume 48, Issue 7 (2009), 607–623.
5. *Definable group extensions in semi-bounded o-minimal structures*, with M. Edmundo,
Mathematical Logic Quarterly, Volume 55 (2009), 598–604.
4. *A semi-linear group which is not affine*,
Annals of Pure and Applied Logic 156 (2008), 287–289.
3. *The universal covering homomorphism in o-minimal expansions of groups*, with M. Edmundo,
Mathematical Logic Quarterly, Volume 53 (2007), 571–582.
2. *Groups definable in ordered vector spaces over ordered division rings*, with S. Starchenko,
Journal of Symbolic Logic, Volume 72 (2007), 1108–1140.
1. *Frame constructions, truth invariance and validity preservation in many-valued modal logic*, with C. Koutras,
Journal of Applied Non-Classical Logics, Volume 15 - No. 4 (2005), 367–388.

Publications in Conference Proceedings

Refereed:

6. *Notions of Bisimulation for Heyting-Valued Modal Languages*, with C. Koutras and C. Nomikos,
Proceedings of Computability in Europe 2008 (CiE 2008), A. Beckman, C. Dimitracopoulos,
B. Loewe (eds), Logic and Theory of Algorithms, Athens University Press (2008), 117–126.

Non-refereed:

5. *From Logic to Geometry*,
Symposium for 90 years of Mathematics, Aristotle University of Thessaloniki (2018).
4. *Counting algebraic points in expansions of o-minimal structures by a dense set*,
Séminaire de structures algébriques ordonnées, F. Delon, M. Dickmann, D. Gondard, T. Servi

- (eds), Paris 6–7, Equipe de Logique Mathématique Prépublications, (2017–2018).
3. *Small sets in dense pairs*,
Oberwolfach Reports 22 (2017).
 2. *On weakly o-minimal non-valuational structures*, with A. Hasson and G. Keren,
Proceedings of 10th Panhellenic Logic Symposium, Samos (2015).
 1. *Semi-bounded groups*,
Proceedings of 9th Panhellenic Logic Symposium, Athens (2013).

Invited talks

At seminars/colloquia:

- (upcoming) Logic Seminar, University of Bonn, October 2023.
- Logic Seminar, University of Manchester, October 2022.
- Logic Seminar, University of Oxford, October 2022.
- Fields Institute Model Theory Seminar (Thematic Program), March 2022.
- (Virtual) Mathematics Colloquium, University of Konstanz, May 2021.
- (Virtual) Logic Seminar, Università della Campania Luigi Vanvitelli (Caserta), March 2021.
- Mathematics Colloquium, University of Bologna, October 2020.
- Logic Seminar, University of Manchester, November 2019.
- Models and Sets Seminar, University of Leeds, November 2019.
- Main Seminar, Trimester in Model Theory, Combinatorics and Valued fields, Institut Henri Poincaré, March 2018.
- Séminaire Structures algébriques ordonnées, Paris 7, March 2018.
- Logic Seminar, University of Waterloo, June 2017.
- Logic Seminar, University of Lyon 1, April 2017.
- Mathematics Colloquium, University of Konstanz, October 2015.
- Mathematics Colloquium, University of Cyprus, December 2014.
- Model Theory Seminar, University of Illinois at Urbana-Champaign, April 2014.
- Berkeley Model Theory Seminar, UC Berkeley, April 2014.
- Mathematical Logic Seminar, University of Lisbon, February 2014.
- Mathematics Colloquium, University of Crete, December 2013.
- Géométrie et Théorie des Modèles, Paris, December 2013.
- Mathematics Colloquium, Mimar Sinan Fine Arts University, Istanbul, November 2013.
- Model Theory Seminar, University of Konstanz, June 2013.
- Model Theory Seminar, University of Notre Dame, March 2013.
- Pure Mathematics Colloquium, Wesleyan University, January 2013.
- Geometry and Model Theory Seminar, Fields Institute, March 2012.
- Model Theory Seminar, McMaster University, September 2011.
- Logic Seminar, University of Notre Dame, September 2011.
- Pure Mathematics Seminar, University of Cyprus, February 2011.
- Pure Mathematics Seminar, University of East Anglia, November 2010.
- Logic Seminar, University of Manchester, October 2010.
- Model Theory Seminar, University of Leeds, October 2010.
- Logic Seminar, Amsterdam, March 30, 2010.
- Model Theory Seminar, University of Leeds, April 2008.
- MPLA Seminar, University of Athens, March 2008.
- Model Theory Seminar, University Claude Bernard - Lyon 1, February 2008.
- Algebra Seminar, University of Haifa, Israel, November 2007.

- Model Theory Seminar, University of Illinois at Chicago, November 2006.
- Model Theory Seminar, McMaster University, March 2006.
- Model Theory Seminar, McMaster University, March 2005.
- Set Theory Undergraduate Seminar, Aristotle University of Thessaloniki, Spring 2001.

At conferences:

- (upcoming) Days in Logic, University of Lisbon, February 2024.
- Model Theory Conference, University of Wrocław, September 2023.
- 2nd Congress of Greek Mathematicians, National and Technical University of Athens, July 2022.
- Lymots (Lancashire-Yorkshire Model Theory Seminar), University of Manchester, June 2022.
- (Virtual) Fudan Model Theory and Philosophy of Mathematics Conference, Fudan University, August 2021.
- Workshop on NIP and groups, University of Leeds, January 2019.
- Symposium for 90 years of Mathematics, Aristotle University of Thessaloniki, December 2018.
- Donau-Rhein Modelltheorie und Anwendungen 3rd meeting, Basel, July 2018.
- Workshop on O-minimality and Diophantine Applications, Fields Institute, June 2017.
- Oberwolfach Workshop: O-Minimality and its Applications to Number Theory and Analysis, Oberwolfach, May 2017.
- Model Theory Month in Münster - Conference, University of Münster, May 2016.
- Logic Colloquium 2014, Vienna University of Technology, July 2014.
- Workshop on Future Research Directions, Zukunftscolleg, Konstanz, January 2014.
- Naples - Konstanz Model Theory Days, Caserta, November 2013.
- ASL North American Annual Meeting, University of Wisconsin at Madison, April 2012.
- Days in Logic 2010, Porto, January 28 - 30, 2010.
- Panhellenic Logic Symposium, Patras, Greece, July 2009.
- MODNET Barcelona Conference, University of Barcelona, November 2008.
- ASL North American Annual Meeting, Florida, March 2007.
- MODNET midterm meeting, Antalya, Turkey, November 2006.

Invitations to workshops

- Oberwolfach Workshop: O-Minimality and its Applications to Number Theory and Analysis, Oberwolfach, Germany, April 30 - May 6, 2017.
- Oberwolfach Workshop in Model Theory: groups, geometry and combinatorics, Oberwolfach, Germany, January 3 - 9, 2016.
- Oberwolfach Workshop in Model Theory: around valued fields and dependent theories, Oberwolfach, Germany, January 3 - 9, 2010.

Organization of events

- Co-organizer, Combinatorial Problems in Model Theory and Computer Science, November 6 - 8, 2023
- Organizer, Pure Mathematics Colloquium, University of Leeds, October 2022 - present.
- Co-organizer (Lead), Oberwolfach Mini-Workshop: Topological and Differential Expansions of O-minimal Structures, Oberwolfach, Germany, November 27 - December 3, 2022.
- Co-organizer (Lead), Conference: Practical and Structural Model Theory, on the occasion of the 60th birthdays of Kobi Peterzil and Sergei Starchenko, Leeds, UK, July 25 - 29, 2022.
- Co-organizer, Unimod 2022: 3-Week Model Theory Program, Leeds (UK), July 18 - August 5, 2022.
- Co-organizer, Panhellenic Logic Symposium, Volos, Greece, July 2022.
- Co-organizer, Mini-workshop on tame expansions of o-minimal structures, Fields Institute (Thematic Program), April 2022.

- Co-organizer, Online Seminar: Topological and Differential Expansions of O-minimal Structures, Leeds-Bogotá, 2020 - 2022.
- Co-chair of the Scientific Committee of Panhellenic Logic Symposium, Anogeia, Crete, Greece, June 26 - 30, 2019.
- Chair of Workshop on Tame Expansions of O-minimal Structures, Konstanz, October 1 - 4, 2018.
- Co-organizer of Panhellenic Logic Symposium, Delphi, Greece, July 11 - 15, 2017.
- Co-organizer of Model Theory session at Panhellenic Logic Symposium, Delphi, Greece, July 11-15, 2017.
- Co-organizer (Lead), Model Theory Working Seminar, University of Konstanz, Summer 2017.
- Chair of the Summer School in Tame Geometry, Konstanz, July 18 - 23, 2016.
- Co-organizer of Model Theory seminar, University of Konstanz, 2015 - 2018.
- Co-organizer, Workshop on Stability Related Issues, Lisbon, October 15 - 16, 2009.
- Co-organizer of Model Theory seminar, University of Lisbon, 2008 - 2011.
- Co-organizer, MODNET Barcelona Conference, University of Barcelona, November 3 - 7, 2008.
- Organizer, Model Theory Working Seminar, Notre Dame, Spring 2007 and Fall 2006.
- Co-organizer, 5th Graduate Student Conference in Logic, Notre Dame, May 1 - 2, 2004.
- Organizer of graduate student seminar, MPLA, University of Athens, 2001 - 2002.

Other professional activities

- Associate member, EPSRC College, 2021–present.
- Referee for peer-reviewed journals:
 - Advances in Geometry
 - Journal of Mathematical Logic
 - Advances in Mathematics
 - Proceedings of the London Mathematical Society
 - Bulletin of the London Mathematical Society
 - Journal of Symbolic Logic
 - Annals of Pure and Applied Logic
 - Archive for Mathematical Logic
 - Notre Dame Journal of Formal Logic
 - Mathematical Logic Quarterly
 - Australasian Journal of Combinatorics
 - Fuzzy Sets and Systems
- Jury member of 1 PhD thesis: Nathalie Regnault, University of Mons, 2019.
- Member of the Executive Committee of the Zukunftskolleg (Institute for Advanced Studies for Junior Researchers), University of Konstanz, 2015 - 2016.
- Panelist, Teaching Seminar, Department of Mathematics, Notre Dame, February 2006.

Languages

- Greek (native)
- English (fluent)
- French, German, Portuguese, Spanish (basic)