

Vahagn Aslanyan

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Research Interests

- My research interests are in model theory, which is a branch of mathematical logic. More specifically, I am interested in the model theory of differential equations and its applications in number theory.
- In the past I did research in universal algebra, in particular I explored first and second order properties of De Morgan algebras.

Academic Positions

- 2019 – present **Senior Research Associate**, *School of Mathematics, UEA, Norwich, UK.*
- 2017 – 2019 **Postdoctoral Associate**, *Department of Mathematical Sciences, Carnegie Mellon University, Pittsburgh, PA, USA.*
- 2017 – 2019 **Junior Researcher**, *Institute of Mathematics, National Academy of Sciences, Yerevan, Armenia.*

Education

- 2013 – 2017 **PhD in Mathematics**, *University of Oxford, Oxford, UK.*
- Thesis title: *Ax-Schanuel Type Inequalities in Differentially Closed Fields*
 - Supervisors: Boris Zilber, Jonathan Pila
- 2009 – 2013 **BSc in Mathematics**, *Yerevan State University, Yerevan, Armenia.*

Achievements and Awards

- 2019 Emil Artin Junior Prize in Mathematics
- 2016–2017 “Luys” Scholarship
- 2016–2017 AGBU UK Scholarship
- 2013–2016 Dulverton Scholarship, University of Oxford
- 2012–2013 Nominal Fellowship “Djrbashian”, given to one student from the Department of Mathematics for excellence and research, Yerevan State University
- 2010–2012 3 Second Prizes, International Mathematics Competition for university students, Blagoevgrad, Bulgaria
- 2010 Bronze Medal of Yerevan State University for excellence and scientific activity
- 2009 Bronze Medal, International Mathematical Olympiad, Bremen, Germany

Publications and Preprints

- 17 V. Aslanyan, Some remarks on atypical intersections, arXiv:1905.00827 (2019), pp. 1–17.
- 16 V. Aslanyan, Existentially closed De Morgan algebras, arXiv:1810.02335 (2018), pp. 1–9.
- 15 V. Aslanyan, Strongly minimal sets in j -reducts of differentially closed fields, arXiv:1805.03985 (2018), pp. 1–11.
- 14 V. Aslanyan, Weak Modular Zilber-Pink with Derivatives, arXiv:1803.05895 (2018), pp. 1–38.
- 13 V. Aslanyan, Adequate predimension inequalities in differential fields, arXiv:1803.04753 (2018), pp. 1–43.
- 12 V. Aslanyan, Ax-Schanuel type theorems and geometry of strongly minimal sets in differentially closed fields, arXiv:1606.01778 (2016), pp. 1–12.
- 11 V. Aslanyan, Ax-Schanuel for linear differential equations, *Archive for Mathematical Logic*, 57:5-6 (2018), pp. 629–648.
- 10 V. Aslanyan, Definability of derivations in the reducts of differentially closed fields, *The Journal of Symbolic Logic*, 82:4 (2017), pp. 1252–1277.
- 9 V. Aslanyan, Characterization of zigzag De Morgan functions. *Discrete Math. Algorithms Appl.* 8 (2016), no. 2.
- 8 Yu. Movsisyan, V. Aslanyan, A functional completeness theorem for De Morgan functions, *Discrete Applied Mathematics*, 162 (2014), pp. 1–16.
- 7 Yu. Movsisyan, V. Aslanyan, Boole-De Morgan algebras and quasi-De Morgan functions, *Communications in Algebra*, 42:11 (2014), pp. 4757–4777.
- 6 Yu. Movsisyan, V. Aslanyan, Super-De Morgan functions and free De Morgan quasilattices, *Central European Journal of Mathematics*, 12 (2014), no. 12, pp. 1749–1761.
- 5 Yu. Movsisyan, V. Aslanyan, Super-Boolean functions and free Boolean quasilattices. *Discrete Math. Algorithms Appl.* 6 (2014), no. 2.
- 4 Yu. Movsisyan, V. Aslanyan, De Morgan functions and free De Morgan algebras. *Demonstr. Math.* 47 (2014), no. 2, pp. 271–283.
- 3 Yu. Movsisyan, V. Aslanyan, Subdirectly irreducible algebras with hyperidentities of the variety of De Morgan algebras, *Journal of Contemporary Mathematical Analysis*, 48 (2013), no. 6, pp. 241–246.
- 2 Yu. Movsisyan, V. Aslanyan, Algebras with hyperidentities of the variety of De Morgan algebras, *Journal of Contemporary Mathematical Analysis*, 5 (2013), no. 5, pp. 233–240.
- 1 Yu. Movsisyan, V. Aslanyan, Hyperidentities of De Morgan algebras, *Logic Journal of the IGPL*, 20(2012), pp. 1153–1174.

Conference and seminar talks

Apr 9, 2019 Logic Seminar, CMU, USA, “The Conjecture on Intersections with Tori”

- Jun 26–29, 2018 Around Functional Transcendence, University of Oxford, UK, “Weak Modular Zilber-Pink with Derivatives”
- May 16–19, 2018 ASL North American Annual Meeting, WIU, USA, “Ax-Schanuel and strongly minimal sets in reducts of differentially closed fields”
- Apr 17, 2018 Logic Seminar, CMU, USA, “Geometry of strongly minimal sets in differentially closed fields”
- Nov 14, 2017 Logic Seminar, UIUC, USA, “Ax-Schanuel and Strong Minimality”
- Oct 23, 2017 Model Theory Seminar, CMU, USA, “Schanuel’s conjecture and the Ax-Schanuel theorem”
- Oct 17, 2017 Logic Seminar, CMU, USA, “Schanuel’s conjecture, pseudo-exponentiation and Ax’s theorem”
- Oct 13, 2017 Kolchin Seminar in Differential Algebra, CUNY, USA, “Ax-Schanuel and Strong Minimality”
- Feb 20, 2017 Pure Mathematics Research Seminar, UEA, UK, “Ax-Schanuel and existential closedness for the j -function”
- Jul 6, 2016 SEEMOD, University of Oxford, UK, “Ax-Schanuel type theorems and geometry of strongly minimal sets in DCF_0 ”
- Apr 13, 2016 Logic seminar, University of Manchester, UK, “Ax-Schanuel for linear differential equations”
- Feb 4, 2016 Logic advanced class, University of Oxford, UK, “Definability of derivations in the reducts of differentially closed fields, II”
- Apr 30, 2015 Logic advanced class, University of Oxford, UK, “Definability of derivations in the reducts of differentially closed fields, I”
- Jan 7–9, 2015 British Postgraduate Model Theory Conference, Oxford, UK, “Ax-Schanuel type theorems in differential fields”
- Oct 23, 2014 Logic advanced class, University of Oxford, UK, “Ax-Schanuel type inequities in differential fields”
- Jun 5, 2014 Logic advanced class, University of Oxford, UK, “The problem of definability of the ring of integers in number fields (after Poonen)”
- Feb 11, 2014 Logic advanced class, University of Oxford, UK, “A survey of the theory of differentially closed fields, II”
- Nov 1–3, 2012 Mathematical Logic and Applications, Yerevan, Armenia, “Hyperidentities of De Morgan algebras”

Participation in Conferences

- Oct 25–28, 2018 Pure and Applied Model Theory, Chicago, IL, USA
- Jun 26–29, 2018 Around Functional Transcendence, Oxford, UK
- May 16–19, 2018 ASL North American Annual Meeting, Macomb, USA
- Jun 12–24, 2016 Thematic Program on Model Theory, Notre Dame, IN, USA
- Jul 7–10, 2015 Future Directions in Model Theory and Analytic Functions, Manchester, UK

Apr 7–10, 2015 Model Theory, Difference/Differential Equations and Applications, CIRM, Luminy, France

Jan 7–9, 2015 British Postgraduate Model Theory Conference, Oxford, UK (I was a co-organiser)

Jan 13–15, 2014 British Postgraduate Model Theory Conference, Leeds, UK

Nov 1–3, 2012 Mathematical Logic and Applications, Yerevan, Armenia

Teaching Experience

2017–2019 **Carnegie Mellon University**

Spring 2019 Linear Algebra

Fall 2018 Number Theory

Spring 2018 Abstract Algebra

Fall 2017 Number Theory

2013–2017 **University of Oxford**

Hilary 2017 Algebraic Number Theory tutor

Michaelmas 2016 Logic and Analytic Number Theory tutor

Trinity 2016 Model Theory, Galois Theory, Algebraic Number Theory consultation sessions

Hilary 2016 Algebraic Number Theory tutor

Michaelmas 2015 Model Theory tutor, Analytic Number Theory teaching assistant

Trinity 2015 Model Theory and Galois Theory consultation sessions

Hilary 2015 Algebraic Number Theory teaching assistant

Michaelmas 2014 Model Theory tutor, Galois Theory teaching assistant

Hilary 2014 Set Theory teaching assistant

Michaelmas 2013 Model Theory teaching assistant

Languages

Armenian native

English fluent

Russian advanced