

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

Sep 2017 – May 2019 **Postdoctoral Associate**, *Department of Mathematical Sciences, Carnegie Mellon University, Pittsburgh, PA, USA.*

Education

Oct 2013 – Apr 2017 **PhD in Mathematics**, *University of Oxford, Oxford, UK.*

- Thesis title: *Ax-Schanuel Type Inequalities in Differentially Closed Fields*
- Supervisors: Boris Zilber, Jonathan Pila

Sep 2009 – May 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