

Vahagn Aslanyan

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Research Interests

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

Employment

- 2019 – present **Senior Research Associate**, *School of Mathematics, University of East Anglia, 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.*
- 2013 – 2017 **Tutor and TA**, *Mathematical Institute, University of Oxford, Oxford, UK.*

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 for excellence and research, Yerevan State University
- 2010–2012 Three 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

Preprints

- 6 V. Aslanyan, R. Henderson, M. Kamsma, J. Kirby, Independence relations in exponential fields, *in preparation* (2021).
- 5 V. Aslanyan, S. Eterović, Solving systems of equations involving the modular j -function and its derivatives, *in preparation* (2021).
- 4 V. Aslanyan, J. Kirby, V. Mantova, A geometric approach to some systems of exponential equations, *in preparation* (2021).
- 3 V. Aslanyan, S. Eterović, J. Kirby, A closure operator respecting the modular j -function, arXiv:2010.00102 (2020), pp. 1–26.
- 2 V. Aslanyan, J. Kirby, Blurrings of the j -function, arXiv:2005.10167 (2020), pp. 1–16.
- 1 V. Aslanyan, Adequate predimension inequalities in differential fields, arXiv:1803.04753 (2019), pp. 1–49.

Publications

- 16 V. Aslanyan, Weak Modular Zilber-Pink with Derivatives, To appear in *Mathematische Annalen*, arXiv:1803.05895 (2021), pp. 1–38.
- 15 V. Aslanyan, Some remarks on atypical intersections, To appear in *Proceedings of the AMS*, arXiv:1905.00827 (2021).
- 14 V. Aslanyan, S. Eterović, J. Kirby, Differential Existential Closedness for the j -function, *Proceedings of the AMS*, 149:4 (2021), pp. 1417–1429.
- 13 V. Aslanyan, Ax-Schanuel and strong minimality for the j -function, *Annals of Pure and Applied Logic*, 172:1 (2021).
- 12 V. Aslanyan, Existentially closed De Morgan algebras, *Algebra Universalis*, 81:4 (2020).
- 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

- 11 Mar 2021 Logic seminar, Università degli Studi della Campania Luigi Vanvitelli, Italy, “A geometric approach to certain systems of exponential equations”
- 1 Mar 2021 Online seminar: Topological and Differential Expansions of O-minimal Structures, “Blurrings of the j -function”, Recording available [here](#).
- 25 Nov 2020 Manchester logic seminar, University of Manchester, UK, “Blurrings of the j -function”
- 24 Nov 2020 LMS Online Lecture Series: An Excursion Into Model Theory and Its Applications, “Introduction to o-minimality and applications”. Recording available [here](#).
- 16 Jun 2020 Berkeley model theory seminar, UC Berkeley, USA, “Blurrings of the j -function”
- 15 Apr 2020 Number Theory learning seminar, UC Berkeley, USA, “Introduction to the Zilber-Pink conjecture”
- 11 Dec 2019 SEEMOD, Imperial College London, UK, “Strongly minimal sets in j -reducts of differentially closed fields”
- 11 Nov 2019 Pure mathematics seminar, UEA, UK, “A remark on atypical intersections”
- 7 Nov 2019 Logic Seminar, Oxford, UK, “Functional Modular Zilber-Pink with Derivatives”
- 9 Apr 2019 Logic Seminar, CMU, USA, “The Conjecture on Intersections with Tori”
- 26–29 Jun 2018 Around Functional Transcendence, University of Oxford, UK, “Weak Modular Zilber-Pink with Derivatives”
- 16–19 May 2018 ASL North American Annual Meeting, WIU, USA, “Ax-Schanuel and strongly minimal sets in reducts of differentially closed fields”
- 17 Apr 2018 Logic Seminar, CMU, USA, “Geometry of strongly minimal sets in differentially closed fields”
- 14 Nov 2017 Logic Seminar, UIUC, USA, “Ax-Schanuel and Strong Minimality”
- 23 Oct 2017 Model Theory Seminar, CMU, USA, “Schanuel’s conjecture and the Ax-Schanuel theorem”
- 23 Oct 2017 Logic Seminar, CMU, USA, “Schanuel’s conjecture, pseudo-exponentiation and Ax’s theorem”
- 13 Oct 2017 Kolchin Seminar in Differential Algebra, CUNY, USA, “Ax-Schanuel and Strong Minimality”

- 20 Feb 2017 Pure Mathematics Research Seminar, UEA, UK, "Ax-Schanuel and existential closedness for the j -function"
- 6 Jul 2016 SEEMOD, University of Oxford, UK, "Ax-Schanuel type theorems and geometry of strongly minimal sets in DCF_0 "
- 13 Apr 2016 Logic seminar, University of Manchester, UK, "Ax-Schanuel for linear differential equations"
- 4 Feb 2016 Logic advanced class, University of Oxford, UK, "Definability of derivations in the reducts of differentially closed fields, II"
- 30 Apr 2015 Logic advanced class, University of Oxford, UK, "Definability of derivations in the reducts of differentially closed fields, I"
- 7–9 Jan 2015 British Postgraduate Model Theory Conference, Oxford, UK, "Ax-Schanuel type theorems in differential fields"
- 23 Oct 2014 Logic advanced class, University of Oxford, UK, "Ax-Schanuel type inequities in differential fields"
- 5 Jun 2014 Logic advanced class, University of Oxford, UK, "The problem of definability of the ring of integers in number fields (after Poonen)"
- 11 Feb 2014 Logic advanced class, University of Oxford, UK, "A survey of the theory of differentially closed fields, II"
- 1–3 Nov 2012 Mathematical Logic and Applications, Yerevan, Armenia, "Hyperidentities of De Morgan algebras"

Teaching Experience

- 2019–2021 **University of East Anglia**
 - Spring 2021 Number Theory
 - Autumn 2020 LMS online lecture series in Model Theory
 - Autumn 2019 Mathematical Logic
- 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