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, S. Eterović, J. Kirby, Differential Existential Closedness for the j-function, arXiv:2003.10996 (2020), pp. 1–14.

17 V. Aslanyan, Some remarks on atypical intersections, arXiv:1905.00827 (2019), pp. 1–17.

16 V. Aslanyan, Existentially closed De Morgan algebras, *Algebra Universalis*, 81:4 (2020).

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. 1–49.

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

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 inequaities 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 **University of East Anglia**

Autumn 2019 Model Theory

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