

# Andrew P. Staal

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## Employment

2018–present *Postdoctoral Fellow* The Hebrew University of Jerusalem  
2016–17 *Research Fellow* Higher School of Economics

## Education

2011–16 *Ph.D. in Mathematics*, Queen’s University. Advisor: G. Smith  
2006–08 *M.Sc. in Mathematics*, The University of British Columbia. Advisor: K. Karu  
2002–06 *B.Sc. in Mathematics*, University of Ottawa. *Magna Cum Laude*.  
2004 *Math in Moscow*, Independent University of Moscow

## Statement on Leadership

Despite its reputation as a solitary pursuit, research mathematics offers many opportunities to be a leader, which I enjoy seeking out. First off, I am striving to build an important and novel research program combining highly abstract and concrete computational aspects in collaboration with mathematicians around the globe. I have participated in multiple international summer schools (Austria, Illinois, Utah, etc.) to become an expert in computer algebra and to learn about the famous Resolution of Algebraic Varieties program. I have made math connections and friends from all over the world at these meetings. I have also formally presented my research in Canada, Russia, and Poland, and am working to form collaborations throughout the international mathematical community. In graduate school I initiated a deformation theory learning seminar with another graduate student, which lead into my thesis research, and I gave various other talks in graduate student seminars. I led a learning seminar on Geometric Invariant Theory, where I gave weekly lectures to two fellow graduate students and a postdoc. I co-organized semi-yearly trips to AGNES conferences, where our small group of Queen’s students would regularly be the only participants from Canadian graduate programs (e.g. see link [here](#)). I have taught traditional and online courses, led undergraduate tutorials, and have begun to mentor masters students. I was also treasurer of the UBC Math Grads Committee during my masters degree. In terms of community service, I volunteered with PIMS UBC outreach, helping to run problem-solving sessions in local elementary schools. Later on, I volunteered and was on the board of directors for the Kingston Bouldering Co-operative, which is a non-profit climbing gym that hosts various public events, participates in local fundraising, and has hosted the Boys and Girls Club of Kingston. In general, I lead by being active in the community, encouraging others, forming connections and friendships, and producing high-quality mathematics.

## Research

### Interests

My main research interests are algebraic geometry and commutative algebra with a topological and combinatorial flavour. In particular, I study the geometry and geography of Hilbert schemes using computational techniques of deformation theory and combinatorial commutative algebra. I have also studied generalizations of jet schemes to log geometry.

### Research Papers

2017	A.P. Staal. <a href="#">The Ubiquity of Smooth Hilbert Schemes.</a> <a href="#">arXiv:1702.00080 [math.AG]</a>	Submitted
2012	K. Karu and A.P. Staal. <a href="#">Singularities of Log Varieties via Jet Schemes.</a> <a href="#">arXiv:1201.6646 [math.AG]</a>	Submitted

### Theses

2016	A.P. Staal. <a href="#">Irreducibility of Random Hilbert Schemes.</a> <a href="#">Queen's University QSpace.</a>	Ph.D. Thesis
2008	A.P. Staal. <a href="#">On The Existence of Jet Schemes Logarithmic Along Families of Divisors.</a> <a href="#">UBC cIRcle.</a>	Masters Thesis

## Honours, Awards, & Fellowships

### Major Awards

2012–15	<i>Ontario Graduate Scholarship</i> , Province of Ontario and Queen's University	\$15 000/year
2011–12	<i>E.G. Bauman Fellowship</i> , Queen's University	\$15 000/year
2007–08	<i>NSERC Canada Graduate Scholarship – M</i> , Natural Sciences and Engineering Research Council of Canada	\$17 500/year

### Minor Awards

2014	<i>Queen's Graduate Award</i> , Queen's University	\$1 000
2006	<i>Special UBC Graduate Scholarship</i> , University of British Columbia	\$500
2006	<i>Graduate Entrance Scholarship</i> , University of British Columbia	\$1 000
2006	<i>Linis Award in Mathematics</i> , University of Ottawa	\$650
2002–06	<i>University of Ottawa Admission Scholarship</i> , University of Ottawa	
2002–06	<i>Dean's Honour List</i> , Faculty of Science, University of Ottawa (except semester abroad)	

## Conference and Seminar Activity

### Invited Talks

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2017	Apr	<i>Algebraic Geometry Seminar</i> , University of Warsaw
2016	Dec	<i>Laboratory of Algebraic Geometry and its Applications Seminar</i> , Higher School of Economics
	July	<i>Combinatorial Commutative Algebra Thematic Program Seminar</i> , Fields Institute

### Seminar Presentations

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2014–15		<i>Geometric Invariant Theory Student Seminar</i> , Queen's University
2013–14		<i>Positivity and Hilbert Schemes Student Seminar</i> , Queen's University
2012–13		<i>Deformation Theory Student Seminar</i> , Queen's University
2011	Apr	<i>Motivic Integration Seminar</i> , The University of British Columbia

### Participation

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2017	Dec	<i>Mirror Symmetry and Applications</i> , Steklov Mathematical Institute
	Nov	<i>Workshop on Birational Geometry</i> , Higher School of Economics
	Jul	<i>Algebra and Geometry Summer School</i> , Yaroslavl State Pedagogical University
2016	Nov	<i>Groups of Birational Automorphisms</i> , Higher School of Economics
	Sep	<i>Conference in honour of Fedor Bogomolov's 70th birthday</i> , Higher School of Economics
	Aug	<i>Thematic Program on Combinatorial Algebraic Geometry, Introductory Workshop</i> , Fields Institute
	Jul	<i>Thematic Program on Combinatorial Algebraic Geometry, Graduate Summer School</i> , Fields Institute
2015	Oct	<i>Route 81</i> , Queen's University
	Jul	<i>AMS Summer Institute in Algebraic Geometry</i> , University of Utah
2014	Nov	<i>AGNES</i> , University of Pennsylvania
	Sep	<i>Route 81</i> , Cornell University
	Jun	<i>Macaulay2 Summer School and Conference</i> , University of Illinois Urbana-Champaign
	Apr	<i>AGNES</i> , Stony Brook University
2013	Oct	<i>AGNES</i> , Boston College
	Oct	<i>Route 81</i> , Syracuse University
	Apr	<i>AGNES</i> , Yale University
2012	Oct	<i>AGNES</i> , Brown University
	Oct	<i>Route 81</i> , Queen's University
	Jun	<i>CMI Summer School "The Resolution of Singular Algebraic Varieties"</i> , Obergurgl University Centre of University of Innsbruck
	Mar	<i>AGNES</i> , University of Massachusetts Amherst
2011	Oct	<i>AGNES</i> , Stony Brook University
	Sep	<i>Route 81</i> , Cornell University
	Apr	<i>WAGS</i> , Stanford University
2010	Nov	<i>WAGS</i> , The University of Arizona
	May	<i>WAGS</i> , The University of British Columbia
2008	May	<i>Lie Theory and Geometry: The Mathematical Legacy of Bertram Kostant</i> , The University of British Columbia

## Teaching Experience

### Instruction

2017 W	MiM	Algebraic Geometry(Two-week substitute)	HSE
2016 S	MATH 212	ODEs (CDS online course)	Queen's
2016 W	MATH 212	Linear Algebra II	
2015 S	MATH 121	Calculus (CDS online course)	
2014 F	MATH 231	DEs (One-week lecturing apprenticeship)	
2010 W	Math 105	Integral Calculus	UBC

### Tutorials

2015 W	MTHE 228	Complex Analysis	Queen's
2014 F	MTHE 338	Topics in Applied Mathematics – Fourier Series	
2014 W	MATH 121	Differential and Integral Calculus	
	HCH	Help Centre Hours	
2013 F	MTHE 225	Ordinary Differential Equations	
2013 W	HCH	Help Centre Hours	
2012 F	HCH	Help Centre Hours	
2012 W	MATH 122	Calculus for Biology and Life Sciences	
2011 F	MATH 122	Calculus for Biology and Life Sciences	
2009 F	Math 180	Differential Calculus with Physical Applications	UBC
	Math 184	Differential Calculus for Social Science	
2008 F	Math 180	Differential Calculus with Physical Applications	
	Math 184	Differential Calculus for Social Science	
2008 W	MLC	Math Learning Centre, Linear Systems	

## Miscellaneous

2015–16	Media Coordinator	Kingston Bouldering Co-operative, Board of Directors
2014–15	Facilities Officer	Kingston Bouldering Co-operative, Board of Directors
2012	19th place	Canadian National Bouldering Championships
2008–09	Treasurer	UBC Math Grads Committee
2008	Volunteer	UBC Math School Workshops

## Professional References

Prof. Alan Ableson (teaching) – [ableson@mast.queensu.ca](mailto:ableson@mast.queensu.ca)  
 Prof. Chris Brav – [c.brav@hse.ru](mailto:c.brav@hse.ru)  
 Prof. Kalle Karu – [karu@math.ubc.ca](mailto:karu@math.ubc.ca)  
 Prof. Diane Maclagan – [d.maclagan@warwick.ac.uk](mailto:d.maclagan@warwick.ac.uk)  
 Prof. Mike Roth – [mikeroth@mast.queensu.ca](mailto:mikeroth@mast.queensu.ca)  
 Prof. Gregory G. Smith – [ggsmith@mast.queensu.ca](mailto:ggsmith@mast.queensu.ca)