

Rahim Nazim Moosa

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Born in Toronto, Canada, on the 17th of February, 1973.

Education

Ph.D. in Mathematics University of Illinois at Urbana-Champaign, 2001
Thesis: *Contributions to the Model Theory of Fields and Compact Complex Spaces*
Advisor: Anand Pillay

B.ArtsSc. (Hons.) McMaster University, 1996

Academic Positions

Associate Professor *July 2009 – present*
University of Waterloo

Assistant Professor *July 2004 – June 2009*
University of Waterloo

CLE Moore Instructor *July 2002 – June 2004*
Massachusetts Institute of Technology

NSERC Postdoctoral Fellow *July 2001 – June 2002*
The Fields Institute, Toronto

Visiting Assistant Professor *August 2001 – May 2002*
University of California at Berkeley

Grants Awarded

NSERC Discovery Grant *2010–2015*
\$24,000 per year

NSERC Discovery Grant *2005–2010*
\$16,000 per year

Papers Under Review

1. *Model theory of fields with free operators in characteristic zero*
(with T. Scanlon) Submitted, 32 pages
2. *A model-theoretic perspective on algebraic reductions in hyperkähler manifolds*
(with A. Pillay) Submitted, 9 pages

Refereed Publications

3. *Countably categorical strongly minimal compact complex manifolds* (with A. Pillay)
Proceedings of the American Mathematical Society, 140(5):1785–11801, 2012
4. *Nonstandard methods for bounds in differential polynomial rings*
(with M. Harrison-Trainor and J. Klys)
Journal of Algebra, 360:71–86, 2012
5. *A model-theoretic counterpart to Moishezon morphisms*
In *Models, Logics and Higher-Dimensional Categories: A Tribute to the Work of Mihály Makkai*, (Eds. B. Hart et al), CRM Proceedings and Lecture Notes
American Mathematical Society, 53:177–188, 2011
6. *Generalised Hasse-Schmidt varieties and their jet spaces* (with T. Scanlon)
Proceedings of the London Math. Society, 103(2):197–234, 2011
7. *Model theory and complex geometry* (Feature article, invited submission)
Notices of the American Mathematical Society, 57(2):230–235, 2010
8. *Jet and prolongation spaces* (with T. Scanlon)
Journal de l'Institut de Mathématiques de Jussieu, 9(2):391–431, 2010
9. *On canonical bases and internality criteria* (with A. Pillay)
Illinois Journal of Mathematics, 52(3):901–917, 2008
10. *An essentially saturated surface not of Kähler-type*
(with R. Moraru and M. Toma)
Bulletin of the London Mathematical Society, 40(5):845–854, 2008
11. *Differential arcs and regular types in differential fields*
(with A. Pillay and T. Scanlon)
Journal für die reine und angewandte Mathematik, 620:35–54, 2008
12. *K-analytic vs CCM-analytic sets in nonstandard compact complex manifolds*
(with S. Starchenko), Fundamenta Mathematicae, 198(2):139–148, 2008

13. *Model Theory and Kähler Geometry* (with A. Pillay)
Model theory with Applications to Algebra and Analysis Vol. 1
(Eds. Z. Chatzidakis et al), Cambridge University Press, 167–195, 2008
14. *Stable definability and generic relations* (with B. Kim)
Journal of Symbolic Logic, 72(4):1163–1176, 2007
15. *Division points on subvarieties of isotrivial semiabelian varieties* (with D. Ghioca)
International Mathematics Research Notices, Article ID 65437, 23 pages, 2006
16. *Strongly minimal groups in the theory of compact complex spaces*
(with M. Aschenbrenner and T. Scanlon)
Journal of Symbolic Logic, 71(2):529–552, 2006
17. *On saturation and the model theory of compact Kähler manifolds*
Journal für die reine und angewandte Mathematik, 586:1–20, 2005
18. *The model theory of compact complex spaces. Logic Colloquium '01*
(Eds. M. Baaz et al), Association for Symbolic Logic, 317–349, 2005
19. *A nonstandard Riemann existence theorem*
Transactions of the American Mathematical Society, 356(5):1781–1797, 2004
20. *F-structures and integral points on semi-abelian varieties over finite fields*
(with T. Scanlon), American Journal of Mathematics, 126(3):473–522, 2004
21. *The Mordell-Lang conjecture in positive characteristic revisited*
(with T. Scanlon), Model Theory and Applications (Eds. L. Bélair et al),
Seconda Università di Napoli, 275–296, 2002
22. *On difference fields with quantifier elimination*
Bulletin of the London Mathematical Society, 33(6):641–646, 2001
23. *A note on uniform definability and minimal fields of definition*
Journal of Symbolic Logic, 65(2):817–821, 2000

Invited Participation at **Workshops**

MSRI Berkeley, California *Scheduled for Jan 20–May 23, 2014*
 Model theory, Arithmetic Geometry, and Number Theory

Luminy Centre International de Rencontres Mathématiques, France
 The Geometry of the Frobenius Automorphism *Scheduled for March 25–29, 2013*

Max Planck Institut for Mathematics Bonn, Germany
 Model theory and Applications *April 15–June 14, 2012*

Oberwolfach Mathematisches Forschungsinstitut, Germany
 Around Valued Fields and Dependent Theories *January 3–9, 2010*

Durham Symposium London Math. Society, United Kingdom
 New Directions in the Model Theory of Fields *July 20–30, 2009*

BIRS Alberta
 Stability Theoretic Methods in Unstable Theories *February 8–13, 2009*

Luminy Centre International de Rencontres Mathématiques, France
 MODNET workshop on Model Theory of Fields *November 12–16, 2007*

Oberwolfach Mathematisches Forschungsinstitut, Germany
 Model Theory and Groups *January 14–20, 2007*

Isaac Newton Institute Cambridge, United Kingdom
 Model Theory and Applications to Algebra and Analysis *May 15 – July 15, 2005*

Oberwolfach Mathematisches Forschungsinstitut, Germany
 Model Theory and Complex Analytic Geometry *July 18–24, 2004*

BIRS Alberta
 Interactions between Model Theory and Geometry *March 13–18, 2004*

Invited **Colloquia**

Géométrie et Théorie des Modèles Paris *Scheduled March 2013*

McMaster University Department of Mathematics and Statistics
 “Model theory and differential-algebraic geometry” *January 2012*
 “Model theory and complex analytic geometry” *February 2006*

University of Western Ontario Department of Mathematics
 “A Hasse-Schmidt approach to expansions of algebraic geometry” *March 2011*
 “Model theory and Kähler geometry” *November 2006*

Invited Talks at Conferences

- Model Theory 2013** Ravello, Italy *Scheduled for June 2013*
- Differential and difference equations, integrable systems, model theory**
University of Leeds, United Kingdom *September 2012*
“Model theory of fields with (noncommuting) operators”
- Model Theory and Applications** MPIM, Bonn, Germany *June 2012*
“Algebraicity theorems in differential-algebraic geometry”
- Joint Math. Meetings** Boston, Massachusetts *January 2012*
Special Session on Differential Algebraic Geometry and Galois Theory
“Some new techniques in differential algebraic geometry from model theory”
- Model Theory Conference** Yonsei University, South Korea *May 2010*
“ \aleph_0 -categorical strongly minimal Kähler manifolds”
- New Directions in the Model Theory of Fields** *July 2009*
Durham, United Kingdom
“Generalised Hasse varieties”
- Urbana in Lyon** France *July 2009*
“A strengthening of internality”
- Joint Math. Meetings** (ASL Invited Address) Washington, DC *January 2009*
“Jet spaces and the Zilber dichotomy”
- Second Canada-France Congress** (Model Theory Session) Montreal *June 2008*
“An essentially saturated space not of Kähler-type”
- Antalya Algebra Days** Antalya, Turkey *May 2008*
“Generalised Hasse varieties and jets”
- Model Theory of Fields** Luminy, France *November 2007*
“A consequence of the canonical base property”
- MODNET Training Workshop** Humboldt-Universität, Berlin *September 2007*
“Applications of model theory of fields: Zilber dichotomy and Mordell-Lang”
- CMS-MITACS Joint Conference** (Model Theory Session) Winnipeg *June 2007*
“A consequence of the canonical base property”
- Differential Fields Workshop** University of Leeds, United Kingdom *June 2007*
“Hasse schemes and jets”
- Model Theory and Groups** Oberwolfach, Germany *January 2007*
“Division points on isotrivial semiabelian varieties”

- Greater Boston Logic Conference** MIT *May 2006*
 “Strongly minimal groups in the theory of compact complex spaces”
- Around o-minimality** University of Leeds, United Kingdom *March 2006*
 “Complex manifolds in CCM versus \mathbb{R}_{an} ”
- Model Theory, Algebraic and Analytic Geometry** *July 2005*
 Isaac Newton Institute, Cambridge, United Kingdom
 “Strongly minimal groups in the theory of compact complex spaces”
- Model Theory and Complex Analytic Geometry** *July 2004*
 Oberwolfach, Germany
 “Model-theoretic analysis in compact Kähler manifolds”
- Model Theory Workshop** BIRS, Alberta *March 2004*
 “Jet spaces in complex analytic geometry”
- Midwest Model Theory Meeting** Toronto *November 2003*
 “Differential Jet Spaces”
- Joint Math. Meetings** Baltimore, Maryland *January 2003*
 “ F -structures and semi-abelian varieties over finite fields”
- Model Theory and Applications** Ravello, Italy *May 2002*
 “ F -structures and semi-abelian varieties over finite fields”
- ASL European Summer Meeting – Logic Coll. ’01** Vienna *August 2001*
 “Some model theory of compact complex spaces”
- Joint Math. Meetings** (ASL Invited Address) New Orleans, LA *January 2001*
 “Saturated compact complex spaces”
- Midwest Model Theory Meeting** Madison, Wisconsin *November 2000*
 “Saturated compact complex spaces”
- ASL Annual Meeting** (Model Theory Session) Urbana, Illinois *June 2000*
 “Difference fields with quantifier elimination”

Invited Seminar Talks

- UC Berkeley Model Theory Seminar** California
 “Blow-ups of essentially saturated spaces” *April 2011*
 “Internality criteria” *April 2007*
 “Complex manifolds in CCM versus \mathbb{R}_{an} ” *May 2006*

University of Western Ontario Analysis Seminar “ \mathbb{R} -analytic versus \mathbb{C} -analytic families of complex-analytic sets”	<i>January 2011</i>
McMaster Model Theory Seminar , Hamilton “On countably categorical compact complex manifolds” “Model-theoretic analysability in compact complex manifolds”	<i>November 2010</i> <i>November 2003</i>
University of Notre Dame Logic Seminar Indiana “A model-theoretic counterpart to Moishezon morphisms” “The model theory of compact complex manifolds”	<i>April 2010</i> <i>April 2008</i>
CUNY Logic Workshop New York “Canonical bases, jets, and the Zilber dichotomy” “Saturated compact complex manifolds”	<i>October 2009</i> <i>November 2002</i>
Kolchin Seminar in Differential Algebra CUNY, New York “Differential Arcs and the infinite-dimensional Zilber dichotomy”	<i>October 2009</i>
University of Leeds Logic Seminar Leeds, UK “An essentially saturated surface not of Kähler-type”	<i>July 2009</i>
University of Illinois Logic Seminar Chicago “An essentially saturated surface not of Kähler-type”	<i>September 2008</i>
UW Madison Logic Seminar Wisconsin “Complex manifolds in CCM versus \mathbb{R}_{an} ”	<i>April 2006</i>
Geometry and Model Theory Seminar Fields Institute “Nonstandard meromorphic groups”	<i>October 2004</i>
Cornell Logic Seminar Ithaca “Absolute Mordell-Lang in positive characteristic”	<i>January 2004</i>
Connecticut Logic Seminar , Middletown “Saturation in compact complex manifolds”	<i>March 2003</i>
Mid-Atlantic Mathematical Logic Seminar New Jersey “Fields interpretable in compact complex manifolds”	<i>September 2002</i>

Supervisory Experience

Post-doctoral

Pantelis Eleftheriou (principal co-supervisor)	<i>2011–</i>
Javier Moreno	<i>2011</i>
Bernie Anderson (co-supervisor)	<i>2009–2011</i>
Moshe Kamensky (principal co-supervisor)	<i>2007–2009</i>

Doctoral

Omar Leon Sanchez 2008–

Masters

Ruizhang Jin 2012–

Daniel Ivan 2011–2012

Allen O’Hara 2010–2011

Chris Eagle 2008–2010

Undergraduate (NSERC USRA)Yossef Musleh *Winter 2013*Chen Fei Du *Fall 2011*Matthew Harrison-Trainor *Spring 2010, Spring 2011*Jack Klys *Spring 2010*Atul Sivaswamy *Spring 2009*Oleg Chterental *Winter 2009*Richard Zsolt *Spring 2008*Elliot Lipnowski *Winter 2008*Wilson Kan *Spring 2006***Doctoral Thesis Committees**

James Frietag, University of Illinois at Chicago (external reader) 2012

Jean-Martin Albert, McMaster University (external reader) 2010

Dale Radin, University of Illinois at Chicago (external reader) 2004

External Service

Organising CommitteesIntroductory Workshop (Chair), MSRI, Berkeley *February 2014*ASL Annual Meeting, Waterloo *May 2013*IMNA (Chair), Max Planck Institute for Mathematics, Bonn *June 2012*Model theory session of the CMS-MITACS Joint Conference, Winnipeg *June 2007*Greater Boston Logic Conference, MIT *May 2003***Program Committees**Model Theory Special Session (Chair), ASL Annual Meeting, Waterloo *May 2013*Recent Developments in Model Theory, Oléron, France *June 2011*Association for Symbolic Logic Annual Meeting, Notre Dame *May 2009***Reviews Editor** The Bulletin of Symbolic Logic *March 2011 –*

Teaching at the University of Waterloo

Topics in Logic: **Model Theory** (PMath 911, formerly 711)
Winter 2013, Winter 2009

Set Theory and Model Theory (PMath 733, formerly 433/633)
Fall 2012, Fall 2010, Fall 2008

Algebra for Honours Mathematics (Math 135)
Fall 2012, Fall 2011, Winter 2011, Fall 2009, Fall 2004

Algebraic Curves (PMath 764)
Winter 2012

Topics in Algebra: **Valued Fields** (PMath 900)
Fall 2011

Rings, Polynomials, and Finite Fields (PMath 345)
Fall 2010, Fall 2009

Rings, Modules, and Representations (PMath 444/644)
Winter 2010

Introduction to Mathematical Logic (PMath 330)
Winter 2008, Fall 2008, Fall 2005

Linear Algebra 2 (Advanced Level) (Math 245)
Winter 2008

Linear Algebra 2 (Math 235)
Fall 2006

Topics in Geometry: **Model Theory of Fields** (PMath 755)
Fall 2006

Mathematical Logic (PMath 432/632)
Winter 2006, Fall 2004

Linear Algebra for Engineering (Math 115)
Fall 2005