

Curriculum Vitae

Richard Paul Horja

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Education

Ph.D. Degree, Duke University, December 1999

Dissertation – Hypergeometric Functions and Mirror Symmetry in Toric Varieties

Advisor – Prof. David R. Morrison

European Exchange Student, Tempus Program, University of Dortmund, Germany, 1992–93

Bachelor's Degree in Mathematics, Ranked first in graduating class, University of Bucharest, Romania, June 1992

Current and Previous Appointments

Post-Doctoral Associate, University of Miami, 2014– present

Researcher, University of Vienna, Austria, 2012–2014

Assistant Professor, Oklahoma State University, September 2005–2012

Visiting Assistant Professor, University of British Columbia, and Research Fellow at the Pacific Institute for the Mathematical Sciences (PIMS), September 2007–August 2008

Marsden Research Postdoctoral Fellow, The Fields Institute for Research in Mathematical Sciences, Toronto, Canada, August 2004–July 2005

Assistant Professor (3-year term), University of Michigan, Ann Arbor, September 2001–August 2004

Member, School of Mathematics, Institute for Advanced Study, Princeton, NJ, September 2000–June 2001

Researcher, Max-Planck-Institut Für Mathematik, Bonn, Germany, May 2000–December 2000

Lecturer in Mathematics, Duke University, January 2000–April 2000

Selected Awards and Fellowships

MDA904-10-1-0190 NSA funded proposal *Categorical Structures in Algebraic Geometry*, PI: Richard Paul Horja, USD 30,000 for 2010-2012

2007-2008 Research Fellowship at the Pacific Institute for the Mathematical Sciences (PIMS), CAD 15,000

2007 Faculty Summer Research Award, Oklahoma State University

Dean's Incentive Grant, Oklahoma State University, Summers 2006, 2007

Marsden Research Postdoctoral Fellowship, Fields Institute for Research in Mathematical Sciences, Toronto, Canada, 2004–2005 Thematic Program “Geometry of String Theory”, CAD 50,000

Institute for Advanced Study, Princeton, NJ, 2000–2001 stay supported by NSF grant DMS 97-29992

European Tempus Program Scholarship, 1992–93

First Prize in the Balkan Mathematical Olympiad, 1986

Publications (the authors are listed in alphabetical order)

R. Paul Horja, Ludmil Katzarkov, *Categorical base loci and the categorification of multiplier ideal sheaves, in preparation.*

R. Paul Horja, Ludmil Katzarkov, *Windows as non-commutative resolutions and the Lawrence construction, in preparation.*

Lev A. Borisov, R. Paul Horja, *The categorification of the better behaved Gelfand–Kapranov–Zelevinski hypergeometric system*, preprint, in preparation.

R. Paul Horja, *Generalized Landau–Ginzburg models and exact categories*, preprint, in preparation.

Lev A. Borisov, R. Paul Horja, *Applications of homological mirror symmetry to hypergeometric systems: duality conjectures*, 34 pages, accepted for publication in *Advances in Math.*, [arXiv:1308.2238](#).

R. Paul Horja, *Toric Deligne–Mumford stacks and the better behaved version of the GKZ hypergeometric system*, invited contribution to the volume “Strings, Gauge Fields, and the Geometry Behind— The Legacy of Maximilian Kreuzer”, 329–348, World Scientific, Singapore, 2013, [arXiv:1205.0025](#).

Lev A. Borisov, R. Paul Horja, *On the better behaved version of the GKZ hypergeometric system*, *Math. Annalen*, **357** (2013), 585–603, [arXiv:1011.5720](#).

Lev A. Borisov, R. Paul Horja, *Mellin–Barnes integrals as Fourier–Mukai transforms*, *Adv. Math.*, **207** (2006), 876–927, [math.AG/0510486](#).

Lev A. Borisov, R. Paul Horja, *On the K-theory of smooth toric DM stacks*, Snowbird lectures on string geometry, 21–42, Contemp. Math., **401**, Amer. Math. Soc., Providence, RI, 2006, [math.AG/0503277](#).

Paul S. Aspinwall, R. Paul Horja, Robert L. Karp, *Massless D-Branes on Calabi-Yau Threefolds and Monodromy*, Comm. in Math. Physics, **259** (2005), 45–69, [hep-th/0209161](#).

R. Paul Horja, *Derived category automorphisms from mirror symmetry*, Duke Mathematical Journal, **127** (2005), 1–34, [math.AG/0103231](#).

R. Paul Horja, *Hypergeometric functions and mirror symmetry in toric varieties*, R. Paul Horja, *Hypergeometric functions and mirror symmetry in toric varieties*, Thesis (Ph.D.), Duke University, 1999, 120 pp, ProQuest LLC, Ann Arbor, MI, [math.AG/9912109](#).

L. Nicolescu, A. Bumbacea, A. Catana, P. Horja, G. Niculescu, N. Oprea, C. Zara, *Methods for solving problems in geometry. (Metode de rezolvare a problemelor de geometrie)*, (Romanian), București, Editura Universității București (ISBN 973-575-292-1), (1998), 376 pp.

Paul Horja, *On the number of geodesic segments connecting two points on manifolds of non-positive curvature*, Trans. Amer. Math. Soc. **349** (1997), 5021–5030.

G. Craciun, P. Horja, M. Prunescu, T. Zamfirescu, *Most homeomorphisms of the circle are semiperiodic*, Arch. Math. (Basel) **64** (1995), 452–458.

V. Boskoff, P. Horja, *The characterization of some spectral Barbilian spaces using the Tzitzeica construction*, Stud. Cercet. Mat. **46** (1994), 503–514.

Selected Invited Talks

Workshop on Wall Crossing, Quantum Integrable Systems, and TQFT”, November 17-21, 2014, Simons Center for Geometry and Physics.

University of Washington, Seattle, Algebra Seminar, February 2014

Workshop on Birational Geometry and Geometric Invariant Theory, May 21-24, 2013, Erwin Schrödinger International Institute for Mathematical Physics, Vienna, Austria

Conference on Homological Mirror Symmetry, January 28-February 1, 2013, University of Miami

Homological Projective Duality and Quantum Gauge Theory, November 12-16, 2012, Kavli Institute for the Physics and Mathematics of the Universe, University of Tokyo, Japan

Birational Geometry and Derived Categories, August 1-6, 2012, University of Vienna, Austria

Western Washington University, Colloquium, April 2012

2012 Spring Central AMS Section Meeting, March 31-April 2, 2012, University of Kansas

Rutgers University, Seminar on geometry, symmetry, and physics, November 2011

Mirror Symmetry in the Midwest Conference, November 3-6, 2011, Kansas State University

2011 Fall Western AMS Section Meeting, October 22-23, 2011, University of Utah

Conference on Homological Mirror Symmetry and Category Theory, July 11-15, 2011, Split, Croatia

Meeting on “Strings and Cats”, June 29-July 1, 2011, University of Vienna, Austria

The Memorial Conference for Maximilian Kreuzer, June 25-28, 2011, Erwin Schrödinger International Institute for Mathematical Physics, Vienna, Austria

Workshop on Derived Categories, Isaac Newton Institute of Mathematical Sciences, Cambridge University, UK, April 4-15, 2011

University of Washington, Seattle, Algebraic Geometry Seminar, June 2009

Series of talks at the Pacific Institute for the Mathematical Sciences (PIMS), University of British Columbia, Spring 2008

University of Washington, Seattle, Algebraic Geometry Seminar, March 2008

2007 AMS Fall Eastern Meeting, Rutgers University, New Brunswick, NJ, October 6, 2007

University of British Columbia, Algebraic Geometry and Donaldson-Thomas invariants Seminars, October 2007, April 2008

AMS-IMS-SIAM 2007 Summer Research Conference, Derived Categories in Mathematics and Physics, Snowbird, Utah, June 20, 2007

Utrecht University, The Netherlands, Algebraic Geometry Seminar, May 2007

ESI Research Conference on Homological Mirror Symmetry, Erwin Schrödinger International Institute for Mathematical Physics, Vienna, July 17, 2006

University of Wisconsin, Madison, Algebraic Geometry Seminar, March 2006

University of Massachusetts, Amherst, Colloquium, February 2006

Ohio State University, Colloquium, February 2006

Workshop on Convex and Algebraic Geometry, Oberwolfach, Germany, February 1, 2006

Mini-Workshop on Heterotic Strings, Derived Categories, and Stacks, Oberwolfach, Germany, November 15, 2005

Workshop on D-modules and Hypergeometric Functions, Lisbon, Portugal, July 11–14, 2005

Queens University, Kingston, Ontario, Canada, Colloquium, April 2005

Workshop on Arithmetic and Geometry of Higher Dimensional Varieties with Special Emphasis on Calabi-Yau Varieties and Mirror Symmetry, Toronto, March 5–6, 2005

University of Western Ontario, London, Ontario, Canada, Algebra seminar, January 2005

The Fields Institute, String Theory Seminar, Toronto, Ontario, Canada, October 2004

Workshop on Derived Categories, Quivers and Strings, Edinburgh, UK, August 2–6, 2004

The AMS-IMS-SIAM Summer Research Conference, Conference on String Geometry, Snowbird, Utah, June 5-11, 2004

Special Session in “Algebraic Geometry and Mirror Symmetry” at the AMS Meeting 997 at Rider University, Lawrenceville, NJ, April 17-18, 2004

Johns Hopkins University, Algebraic and Complex Geometry Seminar, March 2004

Princeton University, Geometry, Representation, and Moduli Seminar, February 2004

Northwestern University, Geometry and Physics Seminar, January 2004

University of Illinois at Urbana–Champaign, Math–Physics Seminar, November 2003

The 2003 School and Workshop on Algebraic Geometry and Physics, Salamanca, Spain, June 2003

Université Paris VII, Jussieu Algebraic Geometry Seminar, May 2003

University of Utah, String Geometry Seminar, February 2003

University of Illinois at Chicago, Colloquium, November 2002

The 2002 Workshop on Algebraic Geometry and Physics, Genova, Italy, June 2002

Boston University, Geometry Seminar, May 2002

Indiana University, Geometry Seminar, March 2002

University of Minnesota, Algebraic Geometry Seminar, December 2001

Ohio State University, Algebraic Geometry Seminar, November 2001

University of Michigan, Algebraic Geometry Seminar, April 2001

Duke University, Algebraic Geometry Seminar, April 2001

Institute for Advanced Study, Princeton, Members Seminar, April 2001

Max–Planck–Institut Für Mathematik, Bonn, Germany, Geometry and Physics Seminar, May 2000

University of Oxford, The Mathematical Institute, Oxford, UK, Colloquium, January 2000

Duke University, Geometry/Topology Seminar, Spring 1999

Cornell University, Geometry Seminar, Spring 1995

Other Longer Academic Visits Supported by External Funding and Professional Activities

2012 Summer Simons Workshop in Mathematics and Physics, Stony Brook, August 2012

Miniprogram in Geometry, Topology, and Strings, Kavli Institute for Theoretical Physics, University of California, Santa Barbara, July–August 2003

Institut des Hautes Études Scientifiques, Bures-sur-Yvette, France, May–June 2003

Program in Higher Dimensional Complex Geometry, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, June 2002

Summer Institute in Quantum Field Theory and Algebraic Geometry, IAS/Park City Mathematics Institute, July 2001

Duality Workshop: A Math–Physics Collaboration, Institute for Theoretical Physics, University of California, Santa Barbara, June 2001

Clay Mathematical Institute in Mirror Symmetry, Harvard University, June 2000

Workshop on Geometry and Physics, Institute for Theoretical Physics, University of California, Santa Barbara, July–August 1999

Winter School in Mirror Symmetry and Lagrangian Fibrations, Harvard University, January 1999

Summer School in Symplectic Geometry and Topology, IAS/Park City Mathematics Institute, 1997

Quantum Field Theory Program, IAS, Princeton, 1996–97

Santa Cruz Algebraic Geometry Conference, July 1995

Summer School in Geometry, Perugia, Italy, August 1992

I reviewed for the Mathematical Reviews and I refereed papers for the Journal of the AMS, Proceedings of the AMS, Journal of Algebraic Geometry, Crelle’s Journal, the Duke Mathematical Journal, Advances in Mathematics, Advances in Theoretical and Mathematical Physics.

Teaching Experience

Calculus I, University of Miami, Fall 2014

Vector Calculus (Calculus III), University of Miami, Fall 2014; Oklahoma State University, Spring 2011, Spring 2009, Fall 2008, Fall 2006, Fall 2005; University of Michigan, Winter 2004, Winter 2003

Calculus II, Oklahoma State University, Fall 2011, Fall 2009, Fall 2008, Spring 2010

Graduate Advanced Linear Algebra, Oklahoma State University, Fall 2010.

Differential Equations, Oklahoma State University, Fall 2009, Spring 2010, Fall 2010

Introductory Partial Differential Equations for Undergraduates, University of British Columbia, Summer 2008

One Variable Calculus, University of British Columbia, Fall 2007

Graduate Algebraic Geometry, Oklahoma State University, Spring 2007

Introductory Linear Algebra for Undergraduates, Oklahoma State University, Spring 2006; University of Michigan, Winter 2002

Introduction to Modern Algebra, University of Michigan, Winter 2004

Honors Vector Calculus, University of Michigan, Fall 2003

Advanced Calculus for Undergraduates, University of Michigan, Fall 2003

Honors Ordinary Differential Equations, University of Michigan, Winter 2003

Honors One Variable Calculus, University of Michigan, Fall 2002

Introductory Linear Algebra for Graduate Students, University of Michigan, Fall 2002

One Variable Laboratory Calculus, University of Michigan, Fall 2001

Laboratory Calculus, Duke University, Spring 1998, Fall 1997, Fall 1995

One Variable Calculus, Duke University, Fall 1999, Fall 1998

Vector Calculus, Duke University, Spring 1996

Teaching Assistant, University of Dortmund, Germany, 1992–93