

CURRICULUM VITAE

Benjamin Bakker

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Contact Information

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Personal Information

Born March 5, 1985 in Massachusetts, USA
U.S. Citizen

Education

Princeton University, Princeton, New Jersey
Ph.D. in Mathematics, 2010
Thesis: *Hodge polynomials of moduli spaces of stable pairs on K3 surfaces*
Advisor: Rahul Pandharipande

Harvard University, Cambridge, Massachusetts
A.B. in Mathematics and Physics, 2005
Senior thesis: *Toric varieties and mirror symmetry*
Senior thesis advisor: Shing-Tung Yau

Academic Positions

2016–present Assistant Professor, University of Georgia
2014–2016 wiss. Mitarb., Humboldt-Universität zu Berlin
2011–2014 NSF Postdoctoral Fellow
2010–2013 Courant Instructor at Courant Institute, NYU

Research Interests

Algebraic geometry, moduli of abelian varieties, toroidal compactifications, moduli of sheaves on K3 surfaces, symplectic varieties, derived categories.

Honors

2011–2014 National Science Foundation Postdoctoral Fellowship
2006 Clay Mathematics Institute Summer School grant
2005–2010 Princeton University graduate support
2004 Phi Beta Kappa (Harvard University)
2004–2005 John Harvard Scholarship (Harvard University)
2003 Derek Bok Certificate for Distinction in Teaching (Harvard University)
2002 Detur Book Prize (Harvard University)
2000 Massachusetts AP State Scholar

Papers

A global Torelli theorem for singular symplectic varieties,
with C. Lehn, submitted.

The Kodaira dimension of complex hyperbolic manifolds with cusps,
with J. Tsimerman, submitted.

The Mercat conjecture for stable rank 2 vector bundles on generic curves,
with G. Farkas, *Amer. J. Math.*, to appear.

The geometric torsion conjecture for abelian varieties with real multiplication,
with J. Tsimerman, *J. Differential Geom.*, to appear.

p -torsion monodromy representations of elliptic curves over geometric function fields,
with J. Tsimerman, *Ann. of Math.*, to appear.

A classification of Lagrangian planes in holomorphic symplectic varieties,
J. Inst. Math. Jussieu, to appear.

On the Frey–Mazur conjecture over low genus curves, with J. Tsimerman,
arXiv preprint.

Lagrangian 4-planes in holomorphic symplectic varieties of $K3^{[4]}$ -type,
with A. Jorza, *Cent. Eur. J. Math.* **12**, 7 (2014).

Higher rank stable pairs on K3 surfaces,
with A. Jorza, *Commun. Number Theory Phys.* **6**, 4 (2012).

Hodge polynomials of moduli spaces of stable pairs on K3 surfaces,
Ph.D. thesis, Princeton University, 2010.

Invited Talks

January 2017	Algebraic geometry seminar, Stanford University
November 2016	Algebraic geometry seminar, Stony Brook University
October 2016	Colloquium, University of South Carolina
October 2016	Algebra and number theory seminar, Emory University
August 2016	Geometry at the ANU, ANU
June 2016	Algebraic geometry seminar, University of Edinburgh
March 2016	Algebraic and Tropical Geometry, Yale University
March 2016	Colloquium, University of Georgia
February 2016	Colloquium, Rice University
February 2016	Algebraic geometry seminar, University of Hong Kong
January 2016	Colloquium, University of Washington
January 2016	Colloquium, University of Notre Dame
January 2016	German-Israeli Workshop in Algebraic and Tropical Geometry, Bar-Ilan University
January 2016	Colloquium, UC Irvine
December 2015	North German Algebraic Geometry Seminar, Freie Universität
December 2015	Colloquium, University of Pennsylvania
November 2015	SFB Kolloquium, Universität Mainz
October 2015	Japanese-European Symposium on Symplectic Varieties and Moduli Spaces, Kyoto University
September 2015	Algebraic geometry seminar, Northeastern University
September 2015	Algebraic geometry seminar, Courant Institute NYU
July 2015	AMS Summer Institute in Algebraic Geometry, Conference at University of Utah
June 2015	Algebraic geometry seminar, Leibniz-Universität Hannover
February 2015	Geometry and arithmetic of hyperkähler manifolds, Workshop at Leibniz-Universität
February 2015	Motivic invariants related to K3 and abelian geometries, Conference at Humboldt-Universität
January 2015	Number theory seminar, University of Toronto
January 2014	Algebraic geometry seminar, Max Planck Institut
November 2014	Algebraic geometry seminar, Humboldt-Universität Berlin
November 2014	Algebraic geometry seminar, ETH

Invited Talks (continued)

- October 2014 Current developments in moduli theory, Conference at Northeastern University
- October 2014 Algebraic geometry seminar, Columbia University
- September 2014 Lie groups seminar, Yale University
- September 2014 Algebra seminar, University of Pennsylvania
- August 2014 Recent Developments in Algebraic and Arithmetic Geometry, Conference at Rényi Institute
- April 2014 Algebraic geometry preprint seminar, Columbia University
- January 2014 Algebraic geometry seminar, Leibniz-Universität Hannover
- January 2014 Algebraic geometry seminar, Humboldt-Universität Berlin
- January 2014 Algebraic geometry seminar, University of Chicago
- December 2013 Algebraic geometry seminar, Courant Institute NYU
- December 2013 Algebraic geometry seminar, University of Michigan
- November 2013 Holomorphic Symplectic Varieties, Lecture Series at BICMR, Peking University
- November 2013 Number theory seminar, UIC
- November 2013 Algebraic geometry seminar, UIUC
- November 2013 Algebraic geometry seminar, University of Notre Dame
- October 2013 Algebra seminar, University of Pennsylvania
- September 2013 Arithmetic and Geometry of Rational Curves, Conference at Rice University
- May 2013 Algebraic geometry seminar, Courant Institute
- October 2012 Hyperkähler Geometry, Conference at Stony Brook University
- April 2012 Algebraic geometry seminar, UMASS
- January 2012 Algebraic geometry seminar, UCSD
- January 2012 Algebraic geometry seminar, Caltech
- October 2011 Algebraic geometry seminar, Courant Institute NYU
- October 2011 Algebraic geometry seminar, Harvard/MIT
- June 2011 Holomorphic Symplectic Varieties, Conference at Courant Institute
- November 2010 Algebraic geometry seminar, Courant Institute
- October 2010 Graduate student seminar, Princeton University
- September 2010 Algebraic geometry seminar, Columbia University
- March 2010 Geometry, representation theory, and moduli seminar, Princeton University

Teaching Experience

- 2014–2016 Organizer of the college seminar at Humboldt-Universität zu Berlin
 - Nonarchimedean analytic geometry and rational points
 - Literature seminar
 - Faltings' Theorem
 - Derived equivalence of abelian varieties
- 2010–2014 Instructor at Courant Institute, NYU
 - Undergraduate reading course on Elementary Number Theory
 - Graduate Algebraic Number Theory (MATH-GA 2210)
 - Elementary Number Theory (MATH-UA 248)
 - Graduate Algebra I (MATH-GA 2130)
 - Graduate reading course on Complex Algebraic Curves
 - Graduate Algebraic Topology II (Math-GA 2320)
 - Calculus (V63.0121)
- 2007 Instructor at Princeton University
 - Calculus (Math 103)
- 2005–2010 Teaching Assistant at Princeton University
 - Numbers, Equations, and Proofs (Math 214)
 - Advanced Multivariable Calculus (Math 203)
 - Analysis in Several Variables (Math 218)
 - Ordinary Differential Equations (Math 303)
 - Calculus (Math 104)
 - Multivariable Calculus (Math 201)
 - Linear Algebra (Math 202)

Teaching Experience (continued)

2002–2005 Course Assistant at Harvard University
Multivariable Calculus (Math 21a/b)
Multivariable Calculus (Math 21a/b)
Honors Multivariable Calculus and Linear Algebra (Math 25a)
Multivariable Calculus (Math 21a/b)

Academic Services

2009–present Referee for: *Algebra Number Theory*, *IMRN*, *Invent. Math.*, *J. Differential Geom.*, *J. Lond. Math. Soc.*, *J. Reine Angew. Math.*, *Math. Ann.*
2014–2016 College Seminar for IRTG "Moduli and Automorphic Forms," Humboldt-Universität
2013 Undergraduate reading course on elementary number theory, Courant Institute
2012–2013 Committee member for Ph.D. general examinations, Courant Institute
Committee member for Ph.D. defense, Courant Institute
2011–2012 Joint Columbia-CUNY-NYU Number Theory seminar, Courant Institute
2011 Graduate reading course on plane algebraic curves, Courant Institute

Languages

Fluent: English
Reading: French, German, Classical Greek

References

- **Rahul Pandharipande** (doctoral advisor)
ETH Zürich
rahul@math.ethz.ch
- **Johan de Jong**
Columbia University
dejong@math.columbia.edu
- **Gavril Farkas**
Humboldt-Universität zu Berlin
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- **Samuel Grushevsky**
Stony Brook University
sam@math.sunysb.edu
- **Sylvain Cappell** (teaching reference)
Courant Institute
cappell@cims.nyu.edu
- **Chris Jankowski** (teaching reference)
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