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Date of birth: April 11, 1977  
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## Education

- **University of California, Berkeley, USA**  
Ph.D. in mathematics, May 2005  
Thesis title: *Rational points on K3 surfaces*  
Thesis adviser: H.W. Lenstra, Jr.
- **Universiteit Utrecht, The Netherlands**  
Doctoraal examen in mathematics, June 2000  
Thesis title: *On perfect cuboids*  
Thesis adviser: F. Beukers and B. Moonen
- **University of California, Berkeley, USA**  
Exchange student, Fall 1999.
- **Universiteit Utrecht, The Netherlands**  
Propedeuse in mathematics, 1996.  
Propedeuse in computer science, 1996.

## Affiliations

- Universiteit Leiden, 2008–.
- Warwick, Marie-Curie Fellowship, Spring and Summer 2008.
- Jacobs University Bremen, ICTS, Summer 2007.
- Pacific Institute for the Mathematical Sciences (PIMS), SFU/UBC, Vancouver, 2006–2008.
- Universidad de los Andes, Bogotá, Fall 2006.
- Mathematical Sciences Research Institute (MSRI), Berkeley, Spring 2006.
- Centre de Recherches Mathématiques (CRM), Montréal, Fall 2005.
- Institut Henri Poincaré, Paris, Fall 2004.

## Interests

- **Explicit methods in higher-dimensional arithmetic geometry.**  
Diophantine equations, elliptic surfaces, K3 surfaces, Del Pezzo surfaces, Néron-Severi groups, potential density of rational points, number of points of bounded height, Manin conjecture, zeta-functions, cryptography, elliptic curves with high rank, Brauer groups, Brauer-Manin obstructions, descent obstructions, torsors, algorithms, Tate conjecture, Lang conjecture.

## Students and postdocs

- Enrique Acosta (masters, Bogotá, 2006)
- Youssef Achnine (bachelor, Leiden, 2009)
- Wouter Zomervrucht (bachelor, Leiden, 2010)
- René Pannekoek (Ph.D., Leiden, expected 2013)
- Cecília Salgado (postdoc, Leiden, 2009–2011)
- Remy van Dobben de Bruyn (bachelor, Leiden, 2011)
- Davide Calliari (masters, Leiden, 2011)
- Erik Massop (bachelor, Leiden, expected 2012)
- Dino Festi (masters, Leiden, expected 2012)
- Rachel Newton (postdoc, Leiden, 2012–2013)

## Publications

Published:

- *Cubics points on cubic curves and the Brauer-Manin obstruction for K3 surfaces*, Acta Arithmetica, Volume 146, no. 2 (2011), 153–172.
- *On character varieties on two-bridge knot groups*, Proceedings of the London Mathematical Society, Volume 103, no. 2 (2011), 473–507 (with M. Macasieb and K. Petersen).
- *Wehler K3 surfaces with Picard number 3 and 4. Appendix to: Orbits of points on certain K3 surfaces, by Arthur Baragar*, Journal of Number Theory, Volume 131, Issue 3 (2011), 600–603.
- *Lines on Fermat surfaces*, Journal of Number Theory, Volume 130 (2010), 1939–1963 (with M. Schütt and T. Shioda).
- *Density of rational points on diagonal quartic surfaces*, Algebra and Number Theory, Volume 4, No. 1 (2010), 1–20 (with A. Logan and D. McKinnon).
- *Nontrivial elements of Sha explained through K3 surfaces*, Math. Comp. 78 (2009), 441–483 (with A. Logan).
- *Non-Euclidean Pythagorean triples, a problem of Euler, and rational points on K3 surfaces*, Mathematical Intelligencer, Volume 30, No. 4 (2008), 4–10 (with R. Hartshorne).
- *The diameter of the circumcircle of a Heron triangle*, Elemente der Mathematik, Volume 63, Issue 3 (2008), p. 118–121.
- *K3 surfaces with Picard number one and infinitely many rational points*, Algebra and Number Theory, Volume 1, No. 1 (2007), 1–15.
- *K3 surfaces with Picard number three and canonical vector heights*, Mathematics of Computation, Volume 76 (2007), 1493–1498 (with Arthur Baragar).
- *An elliptic K3 surface associated to Heron triangles*, Journal of Number Theory, Volume 123 (2007), 92–119.
- *A K3 surface associated with certain integral matrices with integral eigenvalues*, Canadian Mathematical Bulletin, Volume 49, No. 4 (2006), 560–577.
- *Quartic K3 surfaces without nontrivial automorphisms*, Mathematical Research Letters, Volume 13, No. 3 (2006), 423–439.
- *A linear algebra exercise*, Nieuw Arch. Wiskd. (5), Volume 3, No. 2 (2002), 139–140 (with F. Beukers and R. Vidunas).

Accepted/submitted:

- *Two-coverings of Jacobians of curves of genus two*, accepted by Proceedings of the London Mathematical Society, available at arXiv:0905.1242 (with D. Testa and V. Flynn).
- *Density of rational points on elliptic surfaces*, accepted by Acta Arithmetica.
- *Squares from blocks of consecutive integers: a problem of Erdős and Graham*, accepted by Indagationes Mathematicae (with Michael A. Bennett).
- *Unfaking the fake Selmer group*, submitted (with M. Stoll).

## Teaching intensive workshops

- Workshop on cryptography in number theory, 4 lectures, Bogotá, November 2011.
- Workshop on Batyrev-Manin conjecture, 4 lectures, Leiden, April 2009.
- Workshop on the Hasse principle, 4 lectures, Bogotá, October 2008.
- Workshop on Brauer-Manin obstructions, 5 lectures, Warwick, April 2008.
- Workshop on cryptography in number theory, 5 lectures, Bogotá, October 2006.
- Freshmen Preparation Bootcamp for UC Berkeley’s Multicultural Engineering Program, Summer 2004, 2005.

## Honors and awards

- G. de B. Robinson Award, awarded by the Canadian Mathematical Society, 2007.
- Marie-Curie Fellowship at Warwick, 2007.
- PIMS Postdoctoral Fellowship, 2006.
- Three year fellowship from Deutsche Forschungsgemeinschaft (DFG), 2006 (declined).
- Outstanding Graduate Student Instructor Teaching Award, UC Berkeley, 2003.
- Talentenprogramma Fellowship, 2000–2001.
- VSB Fellowship and several other Dutch travel awards 1999–2001.
- Timman prize for exceptional solution to the “Universitaire Wiskundecompetitie” (University Mathematical Competition for undergraduates in The Netherlands and Flanders, comparable to the Putnam exam in the USA), 1998.
- First place in “Universitaire Wiskundecompetitie” (see above), 1997, 1998, 1999 and 2000.
- Fourth place in “Universitaire Wiskundecompetitie” (see above), 1996.
- Bronze medal at International Mathematical Olympiad, 1994 and 1995.

## Selected activities

- Organizer of workshop “Criptografía,” Bogotá, November 2011.
- Chief Coordinator (grading) International Mathematical Olympiad (IMO), 2011 & Benelux Mathematical Olympiad, 2010.
- Organizer of conference “Arithmetic of surfaces,” Leiden, October 2010.
- Organizer of workshop and conference “Counting points on varieties,” Leiden, April 2009.
- Organizer of workshop “Norm residue symbols,” Leiden, February 2009.
- Organizer of conference “Arithmetic of K3 surfaces,” Banff, December 2008.
- Scientific organizer of workshop “The Hasse principle,” Bogotá, October 2008.
- Organizer of workshop “Surfaces: geometry and arithmetic,” Warwick, April 2008.
- Organizer of workshop “Number theory in cryptography,” Bogotá, October 2006.
- Organizer of postdoc seminar at MSRI, spring 2006.
- Editor of problem section of “Nieuw Archief voor Wiskunde,” 2004–.
- Assistant-organizer of the Lenstra Treurfeest, the farewell conference for Prof. H.W. Lenstra at UC Berkeley, Spring 2003.
- Co-author of a problem column in the Dutch mathematical magazine Pythagoras for high school students, 1996–2000.
- Trainer of the Dutch team for the International Mathematical Olympiad, 1996–2001 (organizational leader, 1998–2001).
- Deputy leader of the Dutch team at the International Mathematical Olympiad, 1999–2001.
- Leader of a mathematics summer camp for high school students for Stichting Vierkant, 1996.

## Teaching

- Algebra 1, Spring 2011.
- Bachelor Seminar, Leiden, Spring 2009, Spring 2010, Spring 2011, Spring 2012.
- Linear Algebra 1, Leiden, Fall 2008, Fall 2009, Fall 2010, Fall 2011.
- Elliptic Curves, Bogotá, Fall 2006 & The Netherlands (Mastermath), Fall 2009, Fall 2011.
- Calculus, Bogotá, Fall 2006.
- Graduate Student Instructor for UC Berkeley’s Professional Development Program (PDP), Calculus, Fall 2001, Spring 2003, Fall 2003, Spring 2005.
- Calculus, Berkeley, Summer 2004.
- Discrete Mathematics, Berkeley, Summer 2002.

## Selected talks since Fall 2004

- *Density of rational points on Del Pezzo surfaces of degree one*, Boston, Jan. 2012.
- *K3 surfaces: rational points and Picard numbers*, Paris, May 2011.
- *Computability of Picard numbers*, Amsterdam, Mar. 2011.
- *Computing Picard groups of surfaces*, Tokyo (Feb.), Leiden (Apr.), Zürich (May), 2010, Bogotá, Nov. 2011.
- *Density of rational points on elliptic surfaces*, Bonn, Mar. 2010.
- *Unfaking the fake Selmer group*, Eindhoven, Sept. 2009, Cambridge, Nov. 2010.
- *Two-coverings of Jacobians*, Berlin (June), Oberwolfach (July), Bristol, Warwick (Sept.), 2009.
- *Density of rational points on diagonal quartic surfaces*, Colloquium, Leiden, May 2009.
- *The Brauer-Manin obstruction*, two talks, Leiden, Feb. 2009.
- *Batyrev-Manin conjecture for K3 surfaces*, Banff, Dec. 2008.
- *Character varieties*, Leiden, Nov. 2008.
- *Pythagorean boxes*, Lunchcolloquium, Leiden, Sept. 2008.
- *Density of rational points on diagonal quartic surfaces*, Bristol, Oxford, Berkeley (May), Rennes, Warwick, FOCM Hong Kong (June), CNTA Waterloo (July), Leiden (Sept.), Bogotá (Oct.), 2008.
- *Manin conjectures for K3 surfaces*, SFU, Feb. 2008.
- *K3 surfaces with Picard number one and infinitely many rational points*, UBC, Feb. 2008.
- *Explicit twisting of Jacobians*, CWI, Amsterdam, Oct. 2007.
- *Cyclic points on cubic curves and the Brauer-Manin obstruction on K3 surfaces*, Vancouver, Sept. 2007.
- *Introduction to the arithmetic of K3 surfaces*, Bremen, July 2007.
- *The Manin conjecture for K3 surfaces*, Oberwolfach, July 2007.
- *Cyclic points on cubic curves and the Brauer-Manin obstruction on K3 surfaces*, Berkeley (Jan.), Cuba, Banff (Feb.), Leiden (May), Bristol (July), 2007.
- *Quartic K3 surfaces without nontrivial automorphisms*, Vancouver, Jan. 2007.
- *Heron triangles*, Universidad de los Andes, Bogotá, Sept. 2006.
- *Manin conjectures for K3 surfaces*, Clay summer school Göttingen, July 2006.
- *Nontrivial Sha for curves of genus 2 arising from K3 surfaces*, San Diego (May), CNTA Vancouver (July), 2006.
- *Manin conjectures for K3 surfaces*, Banff, May 2006.
- *Rational points on K3 surfaces*, Warwick, Austin (Feb.), MSRI (Mar.) 2006.
- *Toward an explicit 2-descent on the Jacobian of a generic curve of genus 2*, AMS annual meeting, San Antonio, Jan. 2006.
- *Quartic surfaces with trivial automorphism group*, Fields Institute, Toronto, Nov. 2005.
- *Quartic K3 surfaces without nontrivial automorphisms*, Boston, Oct. 2005.
- *Explicit examples of generic K3 surfaces with infinitely many rational points*, Québec-Vermont Seminar Series, Oct. 2005.
- *An elliptic K3 surface associated to Heron triangles*, Colloq. Queen's Univ., Canada, Oct. 2005.
- *K3 surfaces with Néron-Severi rank one and infinitely many rational points*, Number theory seminar, Queen's, Canada, Oct. 2005.
- *Explicit computations on the Manin conjectures*, Explicit Methods in Number Theory, Oberwolfach, Germany, July 2005.
- *K3 surfaces with Néron-Severi rank one and infinitely many rational points*, The Pacific North West Number Theory Conference 9, Vancouver, Canada, Apr. 2005.
- *Finding Heron triangles and integral matrices with K3 surfaces*, Imperial College, London, Mar. 2005.
- *K3 surfaces with Néron-Severi rank one and infinitely many rational points*, Banff (Nov.), IHP, Paris (Dec.), 2004, Harvard (Feb.), Groningen (Mar.) 2005.