

# Curriculum vitae of R.S. de Jong

## Contact data:

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## Personal data:

Full name:     Robin Sander de Jong  
Date of birth:  June 26, 1976, Vlaardingen, The Netherlands  
Citizenship:   Dutch

## Degrees:

1. M.Sc., Mathematics, University of Leiden, August 1999.
2. Ph.D., Mathematics, University of Amsterdam, December 2004.

## Positions held:

1. Assistant professor, University of Leiden, since January 2007.
2. Postdoctoral research fellow, University of Leiden, January 2005 until December 2006.
3. Postdoctoral research fellow, Institut des Hautes Etudes Scientifiques, Bures-sur-Yvette, France, October and November 2004.
4. Research assistant, University of Amsterdam, January 2001 until September 2004.

## Personal grants:

1. VENI grant (208 kE) from the Netherlands Organisation for Scientific Research (NWO), January 2007 until January 2010.

## Scientific activities:

1. Research program ‘Moduli spaces of Riemann surfaces’, Park City Math Institute, Park City, USA, July 2011.
2. Study visit Max Planck Institut für Mathematik, Bonn, Germany, March–April 2009.
3. Study visit ‘Moduli spaces’, Mittag-Leffler Institute, Stockholm, Sweden, April 2007.
4. Workshop ‘Calcul de représentation Galoisienne associée à une forme modulaire’, Rennes, May 2004, with J.-M. Couveignes and B. Edixhoven.

5. Reviewer for MathSciNet.
6. Referee for several journals.

**Organizational activities:**

1. DIAMANT Symposium, Heeze, May 2011.
2. Conference ‘Geometry and arithmetic’, in honor of the 60th birthday of Gerard van der Geer (with C. Faber and G. Farkas), September 2010.
3. Intercity Seminar ‘Functorial compactification of moduli of abelian varieties’ (with J. Heinloth), Autumn 2010.
4. DIAMANT Symposium (incl. a special afternoon around the *abc*-conjecture), Lunteren, November 2010.

**Administrative activities:**

1. Chairman of the Leiden Mathematical Institute’s PR Committee, since September 2010.
2. Research manager of the DIAMANT cluster, since Autumn 2010.
3. Editor of the Research Self Evaluation *Leiden Mathematical Institute: 2003–2008*. Summer 2009.
4. Editor of the Leiden Mathematical Institute’s website, since November 2005.
5. Member of the Leiden Mathematical Institute’s PR Committee, since July 2005.

**Courses taught:**

1. Introduction to algebraic topology. Fall 2011.
2. Lineaire algebra voor Natuur- en Sterrenkundigen (linear algebra). Fall 2011.
3. Coderingstheorie (coding theory). Reading course, Spring 2011.
4. Jacobians and Theta Functions (for the MRI Masterclass ‘Moduli spaces’). Autumn 2010.
5. Coderingstheorie (coding theory). Spring 2010.
6. Topics in Geometry II (singular homology and cohomology of sheaves). Autumn 2009.
7. Topics in Geometry I (algebraic geometry). Autumn 2006, 2007, 2008.
8. Algebra 3 (field extensions and Galois theory). Spring 2006, 2010.
9. Complexe Analyse voor LAV-1 (complex analysis). Spring 2006.
10. Topologie (topology). Spring 2005.
11. Wiskunde 1A voor BFW/LST (calculus). Autumn 2005, 2006, 2007, 2008.

**Theses supervised (Ph.D., master, bachelor):**

1. On the main conjecture on algebraic geometric MDS codes.  
*Y. Achnine, master thesis, Summer 2011.*
2. Reconstruction of cubic surfaces.  
*D. Calliari, master thesis, Summer 2011 (with R. van Luijk).*
3. De sluitstelling van Poncelet.  
*H. Rohrbach, bachelor thesis, Summer 2011.*
4. Modular curves, Arakelov theory, algorithmic applications.  
*P. Bruin, Ph.D. thesis, Summer 2010 (with B. Edixhoven).*
5. Geometric constructions of the irreducible representations of  $GL_n(\mathbf{C})$ .  
*N. Sambin, master thesis, Summer 2010.*
6. Eindige topologische ruimten.  
*R. Wols, bachelor thesis, Summer 2010.*
7. Potentieel goede reductie van elliptische krommen met een gegeven periodenrooster.  
*R. Hoogwater, bachelor thesis, Summer 2010.*
8. Asymptotically good generalized algebraic geometry codes.  
*H. Chang, master thesis, Summer 2010.*
9. Zariski topology vs. strong topology.  
*S.L. van Lieshout, bachelor thesis, Spring 2009.*
10. Algebraic and analytic multiplier ideals and applications.  
*A. Mohajer, master thesis, Spring 2008.*
11. Classifying polynomials of linear codes.  
*R. Jurrius, master thesis, Spring 2008 (with R. Pellikaan, TU Eindhoven).*
12. Schubert calculus.  
*M. Kusters, bachelor thesis, Spring 2008.*
13. Average height of isogenous abelian varieties.  
*N.V.A. Aryasomayajula, master thesis, Spring 2007.*
14. Green functions on Riemann surfaces and an application to Arakelov theory.  
*P. Bruin, master thesis, Spring 2006 (with B. Edixhoven).*
15. Algebraische topologie en de Lefschetz fixpuntstelling.  
*R. Jurrius, bachelor thesis, Spring 2005.*

**Invited talks:**

1. Normal functions and the height of Ceresa cycles.  
*Seminar Graduiertenkolleg Curvature, Cycles, Cohomology, Universität Regensburg, Germany, December 2011.*

2. Green's functions for the Arakelov metric on hyperelliptic Riemann surfaces, I, II.  
*Algebro-geometric methods in Gauge theory and General Relativity, Hanse Institute for Advanced Study, Delmenhorst, Germany, September 2011.*
3. On a line bundle on  $\mathcal{M}_{g,1}$  associated to Ceresa's cycle.  
*Research program Moduli spaces of Riemann surfaces, Park City, USA, July 2011.*
4. On a formula of Zhang on the height of Gross-Schoen cycles.  
*Conference Heights 2011, Tossa de Mar, Spain, April 2011.*
5. Properness of Olsson's moduli problem.  
*Intercity Seminar Algebraic Geometry, Amsterdam, December 2010.*
6. Introduction to functorial compactification.  
*Intercity Seminar Algebraic Geometry, Leiden, September 2010.*
7. Computing values of Ramanujan's tau-function.  
*EIDMA Seminar Combinatorial Theory, TU Eindhoven, September 2010.*
8. Resultant sequences for division polynomials.  
*DIAMANT/EIDMA symposium, Nunspeet, May 2010.*
9. Logarithmic equidistribution of division points on superelliptic curves.  
*Séminaire de Théorie des Nombres, Chevaleret, Paris, March 2010.*
10. Height of Ceresa cycles and Gross-Schoen cycles.  
*Workshop Arakelov theory and arithmetical applications, Regensburg, Germany, February 2010.*
11. Logarithmic equidistribution of division points on superelliptic curves.  
*Intercity Seminar Number Theory, Rijksuniversiteit Groningen, November 2009.*
12. Bogomolov for genus 2.  
*Algebra and Geometry Seminar, University of Amsterdam, June 2009.*
13. A Mahler measure for hyperelliptic curves.  
*Number Theory Seminar, Institut Fourier, Université Grenoble I, Grenoble, France, June 2009.*
14. Logarithmic equidistribution and hyperelliptic Mahler measure.  
*Number Theory Seminar, Max Planck Institut für Mathematik, Bonn, Germany, April 2009.*
15. Symmetric roots, symmetric discriminants.  
*Arithmétique, géométrie, cryptographie et théorie des codes, CIRM, Luminy, France, April 2009.*
16. Heights of ramified covers.  
*Journées de géométrie d'Arakelov à Rennes, Rennes, December 2008.*

17. Hitchin fibration and Néron models.  
*Intercity Seminar on the Fundamental Lemma, Utrecht, November 2008.*
18. On the discriminants of hyperelliptic curves.  
*Conference 'Moduli spaces', University of Warwick, Warwick, July 2008.*
19. Arithmetic positivity of line bundles on  $\overline{M}_g$ .  
*Conference 'Moduli spaces', Max Planck Institut für Mathematik, Bonn, January 2008.*
20. On an isomorphism of line bundles connected with Arakelov's proof of rigidity.  
*Conference 'Effective aspects of complex hyperbolic varieties', Brest, France, September 2007.*
21. Gauss map on the theta divisor and moduli of abelian varieties.  
*Seminar of the Mittag-Leffler Institute, Stockholm, Sweden, April 2007.*
22. Bounds for the height of torsion points, using Arakelov theory.  
*Arithmetik und Geometrie Seminar, Humboldt Universität, Berlin, November 2006.*
23. Symmetric functions.  
*Lunchcolloquium Faculty of Mathematics and Natural Sciences, November 2006.*
24. Modular forms on the universal theta divisor.  
*Conference on Modular Forms, Schiermonnikoog, October 2006.*
25. Theta functions and the Weierstrass divisor of a Riemann surface.  
*Workshop 'Abelian varieties', Amsterdam, May 2006.*
26. Zero knowledge proofs.  
*Lunchcolloquium Leidsche Flesch, Leiden, March 2006.*
27. Overview of modularity lifting.  
*Intercity Seminar on Khare's work on Serre's conjecture, Nijmegen, November 2005.*
28. Moduli spaces of curves.  
*General colloquium Leiden, October 2005.*
29. Computing values of the Ramanujan tau function.  
*Séminaire 'Autour de la Géométrie d'Arakelov', Paris, October 2005.*
30. On the Arakelov-Green's function of a hyperelliptic Riemann surface.  
*Conference 'Arakelov geometry', Oberwolfach, September 2005.*
31. Arakelov geometry of curves defined over a number field.  
*Series of lectures at the conference 'Number fields and curves over finite fields', Anogia, Crete, July 2005.*
32. Computing the coefficients of a modular form III: Application of Arakelov intersection theory.  
*Conference 'Explicit algebraic number theory', Oberwolfach, July 2005.*

33. Explicit Arakelov geometry.  
*Number Theory Seminar UPC, Barcelona, May 2005.*
34. Arakelov geometry and its applications in number theory.  
*Intercity Seminar Number Theory, Leiden, February 2005.*
35. Average height of cyclic quotients of an elliptic curve.  
*Seminario di Teorie dei numeri, Roma Tor Vergata, Rome, January 2005.*
36. A potential problem on compact Riemann surfaces.  
*General colloquium, University of Amsterdam, December 2004.*
37. An Arakelov theoretic proof of Jacobi's derivative formula.  
*Arithmetik und Geometrie Seminar, Humboldt Universität, Berlin, June 2004.*
38. Explicit formulas for the delta-invariant and the Arakelov-Green function.  
*Conference 'The analogy between number fields and function fields', Texel, April 2004.*
39. Arakelov invariants of Riemann surfaces.  
*Number Theory Seminar ETH, Zürich, January 2004.*
40. The local monodromy theorem.  
*Intercity Seminar on Hodge Theory, Nijmegen, March 2002.*

**Publications:**

1. Local heights on Galois covers of the projective line.  
*To appear in Acta Arithmetica.*
2. Second variation of Zhang's  $\lambda$ -invariant on the moduli space of curves.  
*To appear in American Journal of Mathematics.*
3. (with G. Rémond), Conjecture de Shafarevitch effective pour les revêtements cycliques.  
*To appear in Algebra and Number Theory.*
4. One half log discriminant and division polynomials.  
*Archiv der Mathematik 97 (2011), 251–257.*
5. Symmetric roots and admissible pairing.  
*Transactions of the American Mathematical Society 363 (2011), 4263–4283.*
6. (with B. Edixhoven) Short introduction to heights and Arakelov theory.  
*In: J.-M. Couveignes, B. Edixhoven (eds.), Computational aspects of Modular Forms and Galois Representations. Annals of Mathematics Studies 176, Princeton University Press 2011.*
7. (with B. Edixhoven) Applying Arakelov theory.  
*In: J.-M. Couveignes, B. Edixhoven (eds.), Computational aspects of Modular Forms and Galois Representations. Annals of Mathematics Studies 176, Princeton University Press 2011.*

8. (with B. Edixhoven) Bounds for Arakelov invariants of modular curves.  
*In: J.-M. Couveignes, B. Edixhoven (eds.), Computational aspects of Modular Forms and Galois Representations. Annals of Mathematics Studies 176, Princeton University Press 2011.*
9. (with B. Edixhoven and J. Schepers), Covers of surfaces with fixed branch locus.  
*International Journal of Mathematics 21 (2010), 859–874.*
10. Admissible constants for genus 2 curves.  
*Bulletin of the London Mathematical Society 42 (2010), 405–411.*
11. Theta functions on the theta divisor.  
*Rocky Mountain Journal of Mathematics 40 (2010), 155–176.*
12. Local invariants attached to Weierstrass points.  
*manuscripta mathematica 129 (2009), 273–292.*
13. Gauss map on the theta divisor and Green’s functions.  
*In: B. Edixhoven, G. van der Geer, B. Moonen (eds.), Modular Forms on Schiermonnikoog, Cambridge University Press 2008.*
14. Explicit Mumford isomorphism for hyperelliptic curves.  
*Journal of pure and applied Algebra 208 (2007), 1–14.*
15. On the Arakelov theory of elliptic curves.  
*l’Enseignement Mathématique 51 (2005), 179–201.*
16. Faltings’ delta-invariant of a hyperelliptic Riemann surface.  
*In: G. van der Geer, B. Moonen, R. Schoof (eds.), Number Fields and Function Fields: Two Parallel Worlds. Progress in Mathematics vol. 239, Birkhäuser Verlag 2005.*
17. Arakelov invariants of Riemann surfaces.  
*Documenta Mathematica 10 (2005), 311–329.*
18. Explicit Arakelov geometry.  
*Ph.D. thesis, University of Amsterdam, December 2004.*

**Popular:**

1. Kanonieke compactificaties.  
*Eureka! 32 (2011), 12–14.*