

Curriculum Vitae of David SEVILLA GONZÁLEZ

Contact information

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Academic experience

- AUG 2007 – Research scientist at the Johann Radon Institute for Computational and applied
PRESENT Mathematics (Symbolic Computation group) of the Austrian Academy of Sciences
(Linz, Austria).
- JUN 2005 – Postdoctoral researcher at the Dpt. of Computer Science and Software Engineering
MAY 2007 of Concordia University (Montreal, Canada).
- MAY 2004 – Postdoctoral research grant at the Dpt. of Mathematics, Statistics and Computa-
DEC 2004 tion of University of Cantabria (Santander, Spain).
- JAN 2000 – Ph. D. grant (*F.P.U.*) from the Spanish Ministry of Education, at the Dpt. of
DEC 2003 Mathematics, Statistics and Computation of University of Cantabria.
- SEP 1998 – Pre-doctoral (Masters level) grant at the Dpt. of Topology of University Com-
JUN 1999 plutense of Madrid (Spain).

Education and academic qualifications

- OCT 2010 Accreditation as *contratado doctor* (associate Professor) by the Spanish National
Agency for Quality Assessment and Accreditation (ANECA).
- OCT 2006 Accreditation as *ayudante doctor* (junior/assistant Professor) by the Spanish Na-
tional Agency for Quality Assessment and Accreditation (ANECA).
- MARCH 2004 Ph. D. in Mathematics *Summa cum Laude*.
· Title: Ritt's theorems and computation of unirational fields.
· Area of study: Symbolic Computation
· Advisor: Professor Jaime Gutierrez.
· Institution: University of Cantabria (Santander, Spain).
- MARCH 2004 *Curso de Aptitud Pedagógica* (official Spanish qualification for secondary education
teaching) by the University Complutense of Madrid (Spain).
- JUNE 1999 Grad. in Mathematical Sciences.
· Specialty: Fundamental Mathematics.
· Average grade: 8,64 / 10.
· Institution: University Complutense of Madrid (Spain).

Teaching

JOHANNES KEPLER UNIVERSITY (LINZ, AUSTRIA), 2009 – 2011

- SPRING 2011
- Co-lecturer of the course *Mathematics for Chemists 2* and *Exercises in Mathematics for Chemists 2*.
 - Integral calculus, several variables, linear algebra, differential equations.
- WINTER 2010/2011
- Lecturer of the course *Galois Theory*.
 - Masters level course.
 - Classical Galois theory, modern Galois theory.
- SPRING 2010
- Lecturer of the course *Mathematics for Chemists 2* and *Exercises in Mathematics for Chemists 2*.
 - Integral calculus, several variables, linear algebra, differential equations.
- WINTER 2009/2010
- Lecturer of the courses *Mathematics for Chemists 1* and *Exercises in Mathematics for Chemists 1*.
 - Real-valued functions, differential calculus.

CONCORDIA UNIVERSITY (MONTREAL, CANADA), 2006 – 2007

- WINTER 2007
- Lecturer of the course MATH 203, *Differential and Integral Calculus I*.
- AUTUMN 2006
- Lecturer of the course MATH 202, *College Algebra*.
 - Polynomials, complex numbers, basic combinatorics.
 - Teaching assistant of the course COMP 238, *Math. for Computer Science I*.
 - Propositional logic, methods of proof.
 - Sets, functions, prime numbers, congruences, equivalence relations.
- SUMMER 2006
- Teaching assistant of the course COMP 239, *Math. for Computer Science II*.
 - Introduction to number theory, counting, recursion, graphs and trees.
- WINTER 2006
- Teaching assistant of the course COMP 238, *Math. for Computer Science I*.

UNIVERSITY OF CANTABRIA (SANTANDER, SPAIN), 2001 – 2005

- 2004 / 2005
- Co-lecturer of the course *Computer Science*.
 - Practical sessions in computer room.
 - Basic computer science, operating systems, Linux and Windows, programming in C.
 - Co-lecturer of the course *Information coding theory*.
 - Theoretical and practical (computer) lessons.
 - Basics of information theory, optimal codes, error-detecting and error-correcting codes.
- 2003 / 2004
- Co-lecturer of the course *Computer Science*, details above.
- 2002 / 2003
- Co-lecturer of the course *Computer Science*, details above.
 - Co-lecturer of the course *Information coding theory*, details above.
- 2001 / 2002
- Co-lecturer of the course *Information coding theory*, details above.

Research Interests

- Symbolic Computation for Algebraic Geometry and Commutative Algebra.
 - Radical parametrization of algebraic curves.
 - Functional decomposition of polynomials and rational functions.
- Computational aspects of Monstrous Moonshine.
- Automorphisms of hyperelliptic curves.

Publications in refereed journals and monographs

1. Common factors of resultants modulo p (with D. Gomez, J. Gutierrez and A. Ibeas), *Bulletin of the Australian Mathematical Society* 79 (April 2009), no. 2, p. 299–302. ISSN 0004-9727.
2. Decomposing replicable functions (with J. McKay), *LMS Journal of Computation and Mathematics* 11 (June 2008), p. 146–171. ISSN 1461-1570.
3. Hyperelliptic curves with reduced automorphism group A_5 (with T. Shaska), *Applicable Algebra In Engineering, Communication and Computing* 18 (Feb 2007), no. 1, p. 3–20. ISSN 0938-1279.
4. Computation of unirational fields (with J. Gutierrez), *Journal of Symbolic Computation* 41 (Nov 2006), no. 11, Special Issue on the Occasion of Volker Weispfenning's 60th Birthday, p. 1222–1244. ISSN 0747-7171.
5. Building counterexamples to generalizations for rational functions of Ritt's decomposition Theorem (with J. Gutierrez), *Journal of Algebra* 303 (Sep 2006), no. 2, p. 655–667. ISSN 0021-8693.
6. On decomposition of tame polynomials and rational functions (with J. Gutierrez), *Computer Algebra in Scientific Computing (CASC 2006)*, p. 219–226, *Lect. Notes in Comp. Sci.* 4194 (Sep 2006). ISBN 978-3-540-45182-2.
7. On Ritt's decomposition theorem in the case of finite fields (with J. Gutierrez), *Finite Fields and Their Applications* 12 (July 2006), no. 3, p. 403–412 (2006). ISSN 1071-5797.
8. Hyperelliptic curves of genus 3 with prescribed automorphism group (with J. Gutierrez and T. Shaska), *Computational Aspects of Algebraic Curves*, p. 201–225, *Lect. Notes Ser. Comput.* 13 (May 2005). ISBN 981-256-459-4.
9. On multivariate rational function decomposition (with J. Gutierrez and R. Rubio), *Journal of Symbolic Computation* 33 (May 2002), no. 5, p. 545–562. ISSN 0747-7171.
10. A symbolic/numeric toolbox for Computed Aided Geometric Design (with L. Gonzalez-Vega and I. Necula), *An. Univ. Timișoara Ser. Mat.-Inform.* 38 (2000), no. 2, Proceedings of the 2nd International Workshop on Symbolic and Numeric Algorithms in Scientific Computing (SYNASC 2000), p. 73–99. ISSN 1224-970X.

Publications in proceedings

1. Polynomial integration on regions defined by a triangle and a conic (with D. Wachsmuth), accepted for the *Proceedings of the 2010 International Symposium on Symbolic and Algebraic Computation (ISSAC 2010)*, 8 pages.
2. Computation of unirational fields (with J. Gutierrez), extended abstract, *Proceedings of the 2005 Algorithms, Algebra and Logic (A3L 2005)*, p. 129–134. BOD Norderstedt, Germany, 2005. ISBN 3-8334-2669-1.

3. Prediciendo el generador cuadrático (with D. Gomez-Perez, J. Gutierrez and A. Ibeas). *Proceedings of the VIII Reunión Española sobre Criptología y Seguridad de la Información (RECSI 2004)*, p. 185–195. Díaz de Santos, 2004. ISBN 84-7978-650-7.
4. Aplicación de la descomposición racional univariada a Monstrous Moonshine (with J. McKay), *Proceedings of the 2004 Encuentro de Álgebra Computacional y Aplicaciones (EACA 2004)*, p. 289–294. ISBN 84-688-6988-04.
5. Computing unirational fields of arbitrary transcendence degree (with J. Gutierrez and R. Rubio), extended abstract, *Electronic Proceedings of the First Joint Meeting AMS-RSME*, June 2003.
6. Computing the fixing group of a rational function (with J. Gutierrez and R. Rubio), *Proceedings of the 5th International workshop on Computer Algebra in Scientific Computing (CASC 2002)*, p. 159–164. Institut für Informatik, Technische Universität München, 2002. ISBN 3-9808546-0-4.
7. Unirational fields of transcendence degree one and functional decomposition (with J. Gutierrez and R. Rubio), *Proceedings of the 2001 International Symposium on Symbolic and Algebraic Computation (ISSAC 2001)*, p. 167–175. ACM, New York, 2001. ISBN 1-58113-417-7.
8. A Maple/Matlab toolbox for Computed Aided Geometric Design (with L. Gonzalez-Vega and I. Necula), *Proceedings of the 2000 Encuentro de Álgebra Computacional y Aplicaciones (EACA 2000)*, p. 239–256. ISBN 84-699-3037-0.

Preprints

1. Radical parametrizations of algebraic curves by adjoint curves (with R. Sendra), 16 pages, submitted in 2010.
2. Tschirnhaus-Weierstrass curves (with J. Schicho), 13 pages, submitted in 2008.
3. Polynomial integration on regions defined by a triangle and a conic (with D. Wachsmuth), in preparation.
4. Effective radical parametrization of trigonal curves (with J. Schicho), in preparation.

Selected talks and short courses

- “Polynomial integration on regions defined by a triangle and a conic” at the 2010 International Symposium on Symbolic and Algebraic Computation ISSAC. Munich (Germany), July 25–28, 2010.
- “Deciding trigonality of algebraic curves” in the Meeting of the Austrian and German Mathematical Societies, ÖMG-DMV 2009. Graz (Austria), September 25, 2009.
- Short course “Symbolic/numeric tools for computer aided geometric design” in the S³CM 2009 Summer School. Soria (Spain), July 20–24, 2009.
- “Deciding trigonality of algebraic curves” in the Effective Methods of Algebraic Geometry (MEGA) 2009 conference. Barcelona (Spain), June 19, 2009.
- “What is Symbolic Computation?” as part of the group presentation of the Symbolic Computation group at RICAM. Linz (Austria), April 15, 2009.

Participation in research projects

- 2011 – 2014 Leader of the project “Radical parametrizations of algebraic curves” P22766-N18 by the *FWF* (Austrian Science Fund) granted in October 2010.
· Members: David Sevilla, Josef Schicho and a Ph. D. student to be determined.
- 2007 – 2009 Full-time researcher within the project “Lattices and their applications in algorithms and Cryptology” MTM2007-67088, supported by the Spanish Ministry of Education and Science and Technology.
- 2004 – 2006 Full-time researcher within the project “Pseudorandom numbers and cryptology” MTM2004-07086, supported by the Spanish Ministry of Science and Technology.
- 2001 – 2003 Full-time researcher within the project “Unirational fields. Algorithms and applications” BFM2001-1294, supported by the Spanish Ministry of Science and Technology.

Visits to international research institutions

- JULY 2010 University of Alcalá de Henares (Spain). Research topic: Radical parametrization by adjoints.
- SPRING 2007 Concordia University (Montreal, Canada). Research topic: Computational aspects of Monstrous Moonshine.
- NOVEMBER 2005 Oakland University (Rochester, MI, USA). Research topic: Computational aspects of hyperelliptic moduli.
- MARCH–JUNE 2005 Concordia University (Montreal, Canada). Research topic: Computational aspects of Monstrous Moonshine.
- NOVEMBER 2004 University of Idaho (Moscow, ID, USA). Research topic: Hyperelliptic curves with certain prescribed automorphism groups.
- JUNE 2002 Interdisziplinäres Zentrum für Wissenschaftliches Rechnen (IWR), University of Heidelberg (Heidelberg, Germany). Research topic: Functional decomposition and group theory.
- SUMMER 2001 Concordia University (Montreal, Canada). Research topic: Functional decomposition and Monstrous Moonshine.
- SUMMER 2000 Concordia University (Montreal, Canada). Research topic: Functional decomposition and Monstrous Moonshine.

Organization of events

- Employee representative at RICAM since mid-June 2010.
- Co-organiser of the Linz Algebra Research Day (LARD 2010). Linz (Austria), June 4th, 2010.
- Co-organiser of the Second Workshop on Mathematical Cryptology (WMC 2008). Santander (Spain), October 23–25, 2008.
- Bi-weekly Symbolic Computation seminars at RICAM (Linz, Austria) since October 2007.
- Co-organiser of the session “Algorithms for computation in number theory” in the 2006 International Congress of Mathematical Software (ICMS). Castro Urdiales (Spain), September 1–3, 2006.
- Member of the local organization of the 2004 International Symposium on Symbolic and Algebraic Computation (ISSAC). Santander (Spain), July 4–7, 2004.

Refereeing and reviews

- Occasional referee for the Journal of Algebra, the Journal of Symbolic Computation, the Journal of Complexity, and several Symbolic Computation conferences (ISSAC, CASC, etc.)
- Reviewer for MathSciNet since March 2007.
- Reviewer for Zentralblatt since May 2008.

Other merits in mathematics

- JULY 2008 Member of the coordination team of the 49th International Mathematical Olympiad. Madrid (Spain), July 10–22, 2008.
- SEPTEMBER 2004 Tutor of the Spanish Delegation at the XIX Olimpiada Iberoamericana de Matemática (Iberoamerican Mathematics Olympiad). Castellón (Spain), September 17–26, 2004.

Language proficiency

SELF-ASSESSMENT OF LANGUAGE SKILLS (*)

Language	Understanding				Speaking				Writing	
	Listening		Reading		Spoken interaction		Spoken production			
Spanish	Mother tongue									
English	C1	Proficient User	C1	Proficient User	C1	Proficient User	C1	Proficient User	C1	Proficient User
French	B1	Independent User	B2	Independent User	B2	Independent User	B1	Independent User	B1	Independent User
German	A1	Basic User	A1	Basic User	A1	Basic User	A1	Basic User	A1	Basic User

(*) Common European Frame of Reference (CEF) level

DIPLOMAS AND CERTIFICATES

- OCTOBER 2006 Course “French conversation” in the Centre for Continuing Education of Concordia University, level 3 out of 6. Grade: 89%.
- NOVEMBER 1997 Highest Certification Level of English language attained at the Official Language School in Alcorcón (Spain).

LINGUISTIC EXPERIENCE

- 2007–PRESENT Work as a researcher and course lecturer in Linz, Austria, mostly in English. Life in a German environment.
- 2005 – 2007 Work as a researcher and course lecturer in Montreal, Canada, mostly in English. Life in a bilingual English-French environment.
- 2000 – 2004 Diverse research visits, mostly in English.