

CURRICULUM VITAE

Francisco Santos

December 2011

Contents

1	Personal data, academic degrees and current professional situation	2
2	Academic career	3
3	Publications	6
3.1	Preprints or submitted papers:	6
3.2	Papers accepted for publication or in referee process	6
3.3	Refereed research papers:	6
3.4	Books	11
3.5	Other publications	11
4	Other activities / service	13

Suggested recommendation providers, if needed

Tomás Recio (thesis advisor)

Departamento de Matemáticas, Estadística y Computación, Universidad de Cantabria, E-39005, Santander, SPAIN, tomas.recio@unican.es

Bernd Sturmfels

Department of Mathematics, University of California at Berkeley, Berkeley, CA 94720, USA, bernd@math.berkeley.edu

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Institut für Mathematik, Diskrete Geometrie, Freie Universität Berlin, Arnimallee 2, 14195 Berlin, Germany, ziegler@math.fu-berlin.de

1 Personal data, academic degrees and current professional situation

Name: Francisco Santos

Born in Valladolid (Spain) on 28 May, 1968. **Nacionality:** spanish

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Academic degrees:

Licenciado en Matemáticas, Univ. de Cantabria, Spain, June 1991

“con grado” (\simeq Master Thesis) in September 1991.

Maîtrise en Mathématiques Pures, Univ. de Grenoble I, France, June 1991.

Licenciado en Física, Univ. de Cantabria, Spain, September 1996.

Ph. D. in Mathematics, Univ. de Cantabria, Spain, June 1995.

Current position: *Catedrático de Geometría y Topología* (“Full professor in Geometry and Topology”) in the Department of Mathematics, Statistics and Computer Science, Universidad de Cantabria, since July 2008.

Research interests Discrete and Computational Geometry, Real Algebraic Geometry, Geometric and Topological Combinatorics

2 Academic career

Previous positions

- Oct.–Dec. 1991: “Profesor asociado” (teaching assistant), Dept. de Matemáticas, Estadística y Computación, Univ. de Cantabria, Santander, Spain.
- Jan. 1992 – Dec.1995, Becario F.P.U., (Spanish government doctoral scholarship) Univ. de Cantabria, Santander, Spain. Included a semester as a visiting student in the *Center for Applied Math*, Cornell University, U.S.A. (Aug.-Dec. 1993).
- Jan.– Dec. 1996: Postdoctoral fellow, Mathematical Institute, University of Oxford, Oxford, U.K.
- Feb. 1997–July 2008: Profesor Titular de Universidad (associate professor), Universidad de Cantabria.

Visiting positions

- Sep.–Dec. 2001: Visiting Professor, Dept. of Mathematics, University of California at Davis.
- Aug.– Dec. 2003: Research Professor, Mathematical Sciences Research Institute, Berkeley CA, EE.UU. (www.msri.org).
- Sep. 2007–Mar. 2008: Visiting Professor, Dept. of Mathematics, University of California at Davis.
- June 2008: Visiting Professor, Dept. of Computer Science, Ecole Normale Supérieure de Paris.

Distinctions and awards

- “**Premio joven**” de Ciencia y Tecnología 2003, (“Young researcher” award) of the Fundación General de la Universidad Complutense de Madrid.
<http://www.ucm.es/info/fgu/Premio>
- Selected as **semiplenary speaker** in the “Combinatorics” section of the *International Congress of Mathematicians, ICM 2006* (Madrid).

Ph. D. students (advisor)

Daciana Bochiş, “Estereoedros de Dirichlet en 2 y 3 dimensiones” (Universidad de Cantabria, Mathematics, May 1999)

Miguel Azaola “Subdivisiones Poliédricas en corranço 3” (Universidad de Cantabria, Mathematics, June 2001).

David Orden “Dos problemas de combinatoria geométrica: Triangulaciones eficientes del hipercubo; grafos planos y rigidez” (Universidad de Cantabria, Mathematics, June 2003).

Pilar Sabariego “Algunos problemas sobre teselaciones” (Universidad de Cantabria, Mathematics, June 2008).

Vincent Pilaud “Multitriangulations, Pseudotriangulations And Some Problems Of Realization Of Polytopes” (Universidad de Cantabria, Mathematics and Université de Paris VII, computer science, May 2010, coadvised with Michel Pocchiola).

Research projects and grants

- 1991–92, **Researcher** in project PB-89/0379 (*Real Geometry and Algorithms*) of the Spanish D.G.C.y T. (Main Researcher: Tomás Recio)
- 1993–95, **Researcher** in project PB-92/0498 (*Real Geometry and Algorithms*) of the Spanish D.G.C.y T. (Main Researcher: Tomás Recio)
- 1992–94, **Researcher** in project Esprit-BRA 6846 (*POSSO: Polynomial System Solving*) of the European Union (Main Researcher of the Spanish team: Tomás Recio).
- 1995–98, **Researcher** in project LTR 21024 (*FRISCO: Framework for Integrated Symbolic-Numeric Computation*) of the European Union (Main Researcher of the Spanish team: Laureano González Vega).
- 1995–96, **Researcher** in a bilateral Spanish-German integrated action with FernUniversität Hagen (Main Researcher of the Spanish team: Tomás Recio).
- 1997–2000, **Main Researcher** in project PB97-0358 (*Algunos problemas en Geometría Combinatoria de Politopos y Poliedros*) of the Spanish *Dirección General de Enseñanza Superior*.
- 2001–2003, **main Researcher** in project BFM2001-1153 (*Algunos problemas de Combinatoria Geométrica y Topológica*) of the Spanish *Dirección General de Investigación* (Plan Nacional de I+D+I).

- 2004–2005, **Coordinator** of the spanish version of *Maths Thesaurus*, <http://thesaurus.maths.org>. cofinanced by Universidad de Cantabria and the Regional Government of Cantabria.
- 2006–2008, **main Researcher** in project MTM2005-08618-C02-02 (*Combinatoria Geométrica y sus conexiones al Álgebra*) of the Spanish *Dirección General de Investigación* (Plan Nacional de I+D+I).
- 2009–2011, **main Researcher** in project MTM2008-04699-C03-02 (*Combinatoria Geométrica y sus conexiones al Álgebra*) of the Spanish *Dirección General de Investigación* (Plan Nacional de I+D+I).
- 2012–2014, **main Researcher** in project MTM2011-22792 (*Combinatoria y Complejidad de Estructuras Geométricas Discretas*) of the Spanish *Dirección General de Investigación* (Plan Nacional de I+D+I).

3 Publications

3.1 Preprints or submitted papers:

- [1] Benjamin Matschke, Francisco Santos, Christophe Weibel, The width of 5-dimensional prisms Preprint, February 2012, 28 pages. arXiv:1202.4701
- [2] Francisco Santos, Some acyclic systems of permutations are not realizable by triangulations of a product of simplices Preprint, January 2012, 12 pages. arXiv:1201.0529
- [3] Cesar Ceballos, Francisco Santos, Gnter M. Ziegler, Many non-equivalent realizations of the associahedron Preprint, September 2011, 28 pages. arXiv:1109.5544
- [4] Tristram Bogart, Christian Haase, Milena Hering, Benjamin Lorenz, Benjamin Nill, Andreas Paffenholz, Francisco Santos, Hal Schenck, Few smooth d-polytopes with N lattice points Preprint, October 2010, 19 pages. arXiv:1010.3887

3.2 Papers accepted for publication or in referee process

- [5] Oswin Aichholzer, Thomas Hackl, Michael Hoffmann, Clemens Huebner, Attila Pr, Francisco Santos, Bettina Speckmann, Birgit Vogtenhuber, Maximizing Maximal Angles for Plane Straight-Line Graphs. *Computational Geometry: Theory and Applications*, to appear. DOI: 10.1016/j.comgeo.2012.03.002
- [6] Julian Pfeifle, Vincent Pilaud, Francisco Santos, Polytopality and Cartesian products of graphs *Israel J. Math.*, to appear. DOI 10.1007/s11856-012-0049-5

3.3 Refereed research papers:

(In reverse chronological order)

- [7] Francisco Santos, A counter-example to the Hirsch conjecture *Annals of Math. (2)*, 176 (July 2012), 383-412. DOI: 10.4007/annals.2012.176.1.7
- [8] Vincent Pilaud, Francisco Santos, The brick polytope of a sorting network, *European J. Combin.*, 33:4 (2012), 632-662.
- [9] Francisco Santos, Tamon Stephen, Hugh Thomas, Embedding a pair of graphs in a surface, and the width of 4-dimensional prisms *Discrete Comput. Geom.*, 47:3 (2012), 569-576. DOI: 10.1007/s00454-011-9361-9

- [10] P. Sabariego and F. Santos, On the number of facets of three-dimensional Dirichlet stereohedra IV: Quarter cubic groups. *Contributions to Algebra and Geometry* 52:2 (2011), 237-263.
- [11] C. Cortés, C. I. Grima, F. Hurtado, A. Márquez, F. Santos, J. Valenzuela, Transforming triangulations on non planar surfaces. *SIAM J. Discrete Math.* 24:3 (2010), 821-840.
- [12] E. D. Kim, F. Santos, An update on the Hirsch conjecture, *Jahresbericht der Deutschen Mathematiker-Vereinigung*, Volume 112(2) (June 2010), 73–98.
- [13] J. A. de Loera, E. D. Kim, S. Onn, and F. Santos, Graphs of transportation polytopes *J. of Combin. Th. Ser. A*, **116**(8), 2009, 1306–1325.
- [14] P. Sabariego, F. Santos, Triple-loop networks with arbitrarily many minimum distance diagrams, *Discrete Math.* **309**(6), 2009, 1672–1684
- [15] V. Pilaud, F. Santos, Multi-triangulations as complexes of star polygons, *Discrete Comput. Geom.* 41(2), 2009, 284–317
- [16] Christian Haase, Benjamin Nill, Andreas Paffenholz, and Francisco Santos Lattice points in Minkowski sums accepted in *Electronic J. Combin.* 15 (2008), no. 1, Note 11, 5 pp
- [17] P. Sabariego and F. Santos, On the number of facets of three-dimensional Dirichlet stereohedra III: Full cubic groups, *Discrete Comput. Geom.* 40(2) (2008), 159–189
- [18] G. Rote, F. Santos, and I. Streinu, Pseudo-triangulations - a survey, in: J.E. Goodman, J. Pach, R. Pollack (Eds.), *Proceedings of the Joint Summer Research Conference on Discrete and Computational Geometry, Snowbird, UT, June 18-22, 2006*, **Contemp. Math.**, American Mathematical Society, Providence, RI, in press.
<http://arxiv.org/abs/math.CO/0612672>, 63 pp.
- [19] O. Aichholzer, D. Orden, F. Santos, and B. Speckmann, On the Number of Pseudo-Triangulations of Certain Point Sets, *J. Combin. Theory Ser. A* (2008) 254–278.
- [20] O. Aichholzer, T. Hackl, M. Hoffmann, C. Huemer, F. Santos, B. Speckmann, B. Vogtenhuber, Maximizing Maximal Angles for Plane Straight Line Graphs, In, Algorithms and Data Structures 10th International Workshop, WADS 2007, Halifax, Canada, August 15-17, 2007, Frank Dehne, Jrg-Rdiger Sack, Norbert Zeh (Eds.), Lecture Notes in Computer Science 4619, Springer-Verlag, 2007, pp. 458-469.

- [21] D. Orden, F. Santos, B. Servatius, H. Servatius, Combinatorial Pseudo-Triangulations, *Discrete Mathematics*, **307** (2007), 554–566.
- [22] F. Santos, A. Schrmann, F. Vallentin, Lattice Delone simplices with exponential volume. *European J. Combin.* **28**:3 (2007), 801–806.
- [23] F. Santos, Geometric bistellar flips. The setting, the context and a construction. In *Proceedings of the International Congress of Mathematicians, Madrid, August 22-30, 2006* (Marta Sanz-Sol, Javier Soria, Juan Luis Varona, Joan Verdera, eds.), European Mathematical Society, 2006, Vol III, pp. 931–962. ISBN 978-3-03719-022-7
- [24] D. Bochi and F. Santos, On the number of facets of three-dimensional Dirichlet stereohedra II: Non-cubic groups. *Beiträge Algebra Geom.*, **47**:1 (2006), 89–120.
- [25] F. Santos, Non-connected toric Hilbert schemes *Mathematische Annalen*. **332**:3 (2005), 645–665.
- [26] L. Bowen, J. A. de Loera, M. Develin, F. Santos, The Gromov norm of the product of two surfaces, *Topology* **44**:2 (2005), 321–339
- [27] F. Santos, The Cayley Trick and triangulations of products of simplices. In *Integer Points in Polyhedra — Geometry, Number Theory, Algebra, Optimization*, edited by A. Barvinok, M. Beck, C. Haase, B. Reznick, and V. Welker, *Contemporary Mathematics* **374**, American Mathematical Society, 2005, pp. 151–177.
- [28] M. Develin, F. Santos, B. Sturmfels On the rank of a tropical matrix In *Combinatorial and Computational Geometry* (J. E. Goodman, J. Pach and E. Welzl, eds), MSRI Publications **52**, Cambridge University Press, 2005, pp. 211–240. ISBN-10: 0521848628
- [29] R. Haas, D. Orden, G. Rote, F. Santos, B. Servatius, H. Servatius, D. Souvaine, I. Streinu and W. Whiteley Planar Minimally Rigid Graphs and Pseudo-Triangulations *Computational Geometry, Theory and Applications*, **31**:1-2 (May 2005), 31–61.
- [30] D. Orden and F. Santos, *The polytope of non-crossing graphs on a planar point set* *Discrete Comput. Geom.*, **33**:2 (2005), 275–305.
- [31] D. Orden, G. Rote, F. Santos, B. Servatius, H. Servatius, W. Whiteley, “Non-crossing frameworks with non-crossing reciprocals”. *Discrete Comput. Geom.*, **32**:4 (2004), 567–600.
- [32] D. Orden, F. Santos, “Asymptotically efficient triangulations of the d-cube”, *Discrete Comput. Geom.*, **30**:4 (2003), 509–528.

- [33] G. Rote, F. Santos and I. Streinu, “Expansive motions and the Polytope of Pointed Pseudo-Triangulations”, in *Discrete and Computational Geometry – The Goodman-Pollack Festschrift* (B. Aronov, S. Basu, J. Pach, M. Sharir, eds), Algorithms and Combinatorics 25, Springer Verlag, Berlin, June 2003, pp. 699–736.
- [34] F. Santos and B. Sturmfels, “Higher Lawrence configurations”, *J. Combin. Theory, Ser. A.*, **103**:1 (2003), 151-164.
- [35] F. Santos and R. Seidel, “A better upper bound on the number of triangulations of a planar point set”, *J. Combin. Theory Ser. A*, **102**:1 (2003), 186-193.
- [36] F. Santos and B. Sturmfels, “Alexander duality in subdivisions of Lawrence polytopes”, *Adv. Geom.*, **3**:2 (2003), 177-189.
- [37] F. Santos, “Triangulations of oriented matroids”, *Mem. Amer. Math. Soc.*, **156** (2002), no. 741, 81 pages.
- [38] C. A. Athanasiadis and F. Santos, “On the topology of the Baues poset of polyhedral subdivisions”, *Topology*, **41**:3 (2002), 423–433.
- [39] M. Azaola and F. Santos, “The number of triangulations of the cyclic polytope $C(n, n-4)$ ”, *Discrete Comput. Geom.* **27**:1 (2002), 29–48.
- [40] C. A. Athanasiadis and F. Santos, “Monotone paths on zonotopes”, *Canadian J. Math.*, **53**:6 (2001), 1121–1140.
- [41] F. Santos, “On the refinements of a polyhedral subdivision”, *Collect. Math.* **52**:3 (2001), 231–256.
- [42] J.A. de Loera, F. Takeuchi and F. Santos, “Extremal properties for dissections of convex polytopes”, *SIAM J. Disc. Math.*, **14**:2 (2001), 143–161.
- [43] F. Santos, “Realizable but not strongly Euclidean oriented matroids”, in ”Oriented matroids 99” (R. Cordovil and M. Las Vergnas, eds.), *European J. Combin.*, **22**:5 (2001), 767–776.
- [44] D. Bochi and F. Santos, “On the number of facets of three dimensional Dirichlet stereohedra I: groups with reflexions”, *Discrete Comput. Geom.*, **25** (2001) 3, 419–444.
- [45] F. Santos, “A point set whose space of triangulations is disconnected”, *J. Amer. Math. Soc.* **13** (2000), 611–637.
- [46] B. Huber, J. Rambau and F. Santos, “The Cayley trick, lifting subdivisions and the Bohne-Dress Theorem on zonotopal tilings”, *J. Eur. Math. Soc. (JEMS)*, **2** (2000), 179–198.

- [47] M. Azaola and F. Santos, “The graph of triangulations of a point configuration with $d + 4$ vertices is 3-connected”, *Discrete Comput. Geom.* **23** (2000) 4, 489–536.
- [48] C.A. Athanasiadis, J.A. de Loera, V. Reiner and F. Santos, “Fiber polytopes for the projections between cyclic polytopes”, *European J. Combin.* **21** (2000) 1, 19–47.
- [49] J. Rambau and F. Santos, “The generalized Baues problem for cyclic polytopes I”, *European J. Combin.* **21** (2000) 1, 65–83.
- [50] F. Santos, “Triangulations with very few geometric bistellar neighbors”, *Discrete Comput. Geom.* **23** (2000) 1, 15–33.
- [51] J.A. de Loera, F. Santos and J. Urrutia, “The number of geometric bistellar neighbors of a triangulation”, *Discrete Comput. Geom.* **21** (1999) 1, 131–142.
- [52] C.A. Athanasiadis, J. Rambau and F. Santos, “The generalized Baues problem for cyclic polytopes II” Proceedings of Geometric Combinatorics’98 (Kotor) *Publ. Inst. Math. (Beograd) (N.S.)* **66(80)** (1999) 3–15.
- [53] F. Santos, “Construction of real algebraic plane nodal curves with given topology and optimal degree, I”, *Rev. Mat. Univ. Complut. Madrid*, **10**, número suplementario (1997), 291–310.
- [54] J.A. de Loera, S. Hoşten, F. Santos, B. Sturmfels, “On the polytope of all triangulations of a point configuration”, *Doc. Math. J. DMV.*, **1** (1996), 103–119.
- [55] J.A. de Loera and F. Santos, “An effective version of Pólya’s theorem on positive definite forms”, *Journal of Pure and Applied Algebra*, **108** (1996), 231–240. A correction of errors has appeared in *J. Pure Appl. Algebra*, **155** (2001) 309–310.
- [56] F. Santos, “On Delaunay oriented matroids for convex distance functions”, *Discrete Comput. Geom.*, **16** (1996) 197–210.
- [57] F. Santos, “Inscribing a symmetric body in an ellipse”, *Inform. Process. Lett.*, **59** (1996) 175–178.
- [58] M.J. González-López, T. Recio and F. Santos, “Parametrization of Semialgebraic Sets”, *Math. Comput. Simulat.*, **42** (1996), 353–362.

3.4 Books

- [59] C. Athanasiadis, V. Batyrev, D. Dais, M. Henk, y F. Santos (eds.) Algebraic and Geometric Combinatorics, *Contemporary Mathematics* **423**, Amer. Math. Soc., 2007. ISBN-13: 978-0-8218-4080-1.
- [60] J. A. de Loera, J. Rambau y F. Santos Triangulations: Structures for Algorithms and Applications, 539 pp. Algorithms and Computation in Mathematics, Springer-Verlag, 2010. ISBN: 978-3-642-12970-4

3.5 Other publications

Conference proceedings with referee process

- [61] F. Santos, “Construction of singular algebraic plane nodal curves with given topology”, in *(Trento meeting on) Real Analytic and Algebraic Geometry, II*, de Gruyter Publishers, Berlin (1994), pp. 213–228.
- [62] A.G. Corbalán, M. Mazón, T. Recio, F. Santos, “ On the topological shape of planar Voronoi diagrams”, in *Proceedings of the 9th Annual Symposium on Computational Geometry*, Association for Computing Machinery Inc., New York, 1993, 109–115.
- [63] F. Santos, “On Delaunay Oriented Matroids”, in *Proceedings of the 6th Canadian Conference on Computational Geometry*, Mark Keil (ed.), University of Saskatchewan, Saskatoon, 1994, 375–380.
- [64] C. Icking, R. Klein, N.-M. Lê, L. Ma and F. Santos, “On Bisectors for Convex Distance Functions in 3-Space”, *Proceedings 11th Canad. Conf. Comput. Geom.*, University of British Columbia, Vancouver, Canada, 1999.
URL <http://www.cccg.ca/proceedings/1999/fp28.ps.gz>.
- [65] D. Randall, G. Rote, F. Santos and J. Snoeyink, “Counting triangulations and pseudo-triangulations of wheels”. *Proceedings 13th Canad. Conf. Comput. Geom.*, University of Waterloo, Waterloo, Canada, 2001, pp. 149-152.
URL: <http://www.cccg.ca/proceedings/2001/snoeyink-77218.ps.gz>.
- [66] D. Orden and F. Santos. “Asymptotically efficient triangulations of the d -cube”. *Proceedings of the 14th Canad. Conf. on Comput. Geom. (CCCG'02)*, University of Lethbridge, Lethbridge, Canada, 2002, pages 167-169.
URL: <http://www.cccg.ca/proceedings/2002/02.ps>

- [67] O. Aichholzer, D. Orden, F. Santos and B. Speckmann, *On the number of pseudo-triangulations of certain point sets*, proceedings 15th Canad. Conf. Comput. Geom., Dalhousie University, Halifax, Canada, 11–13 de Agosto de 2003.
- [68] R. Haas, D. Orden, G. Rote, F. Santos, B. Servatius, H. Servatius, D. Souvaine, I. Streinu and W. Whiteley, *Planar Minimally Rigid Graphs and Pseudo-Triangulations*, proceedings of the 19th ACM Symposium on Computational Geometry, San Diego, June 8-10, 2003

Non-refereed and/or expository publications

- [69] T. Recio and F. Santos, *Johannes Kepler, empaquetamientos de esferas y el concepto matemático de demostración*, en: *Fotografiando las matemáticas*. Ed. Carroggio. Barcelona. 2000.
- [70] D. Bochis y F. Santos, “Nuevas cotas superiores para el número de caras de estereoedros de dirichlet 3-dimensionales”, *Gaceta de la R. S. M. E.*, **2**(3), 1999, 577–581.
- [71] Francisco Santos, Sobre un contraejemplo a la Conjetura de Hirsch, *La Gaceta de la RSME*, Vol. 13 (2010), Num. 3, 525-538.
This paper was translated into German by Julian Pfeifle, and has appeared in *Mitteilungen der DMV*, Vol. 18-4 (Winter 2010), 214–220.

4 Other activities / service

- **Organization of workshops and advanced courses:**

Coorganizer of the “10th European Workshop on Computational Geometry, ECG’94” Santander, Marzo 1994.

Director of the summer course “Triangulations of polyhedra and point sets”, Univ. of Cantabria, Julio 2000.

Coorganizer of the summer course “Triangulations of polyhedra and point sets”, MSRI, Berkeley, Julio 2003.

Organizer of the workshop “XI Encuentro Español de Geometría Computacional”, in Santander, 27–29 June, 2005.

Coorganizer of the workshop “Algebraic and Geometric Combinatorics” in Anogia (Crete, Greece), 20–25 August, 2005.

Main Organizer of the workshop “Geometric and Topological combinatorics – A satellite conference of ICM 2006”, Alcalá de Henares, Spain, 30 August - 5 September, 2006.

International Fall Workshop on Geometry and Physics (Castro Urdiales, September 3-6 2008). Organizing committee member.

Real Geometry, Computer Algebra and Math Education, in honor of Tomás Recio (Castro Urdiales, May 17-21 2010). Scientific and organizing committee member.

Jornadas de Matemática Discreta y Algorítmica (Castro Urdiales, July 7-9 2010). Scientific committee chair and organizing committee member.

Congreso de Clausura del Proyecto i-MATH (Castro Urdiales, September 19-21 2010). Scientific committee and organizing committee member.

Triangulations (MFO Oberwolfach, April 29-May 4). Scientific committee member.

- Member in the **Ph. D. defense committees** of Carmen Cortés (Universidad de Sevilla, 1999), Maria Jesús Pisabarro (Universidad de Valladolid, 2001), Rafael Santamaría (Universidad de Cantabria, 2002), Julian Pfeifle (Technische Universität Berlin, 2003), Aimée Calatayud (Universidad Politécnica de Madrid, 2004), Narcís Coll (Universitat Politècnica de Catalunya, 2004), and Cesar Ceballos (Freie Univ. Berlin, 2012).
- I have served as referee for the following journals: *J. of the Amer. Math. Soc.*, *Proceedings of the Amer. Math. Soc.*, *Topology*, *Advances in Math.*, *Discrete and Computational Geometry*, *Computational Geometry: theory and applications*, *SIAM J. Applied Mathematics*, *SIAM*

J. Discrete Mathematics, SIAM J. of Computing, European Journal of Combinatorics, Journal of Combinatorial Theory, Ser. A, Discrete Mathematics, Discrete Applied Mathematics, J. of Algebraic Combinatorics, Collectanea Mathematica, Publicacions Matemàtiques, Gaceta de la R. S. M. E., besides several international conferences.

- Erasmus/ECTS coordinator for Mathematics at the Universidad de Cantabria, from 1995 to March 2003.
- Director of the *Centro Internacional de Enceuentros Matemáticos* of the University of Cantabria (www.ciem.unican.es) since May 2008 to September 2010.
- Vicedean of the Faculty of Sciences – Coordinator of the *Degree in Mathematics* of Universidad de Cantabria since April 2009 to date.