

Personal

Born December 20, 1964 in Ourense, Spain. Citizenship: Spain

Present Position: Professor of Applied Mathematics and Vice-Chair for Research

Departamento de Matemáticas and Institute UC3M-BS for Financial Big Data

Universidad Carlos III de Madrid, Leganés, Madrid, Spain

Voice: +34-916 249 411 Fax: +34-916 249 129

anxo@math.uc3m.es <http://www.anxosanchez.eu>

Also affiliated with: Instituto de Biocomputación y Física de Sistemas Complejos (BIFI),
Universidad de Zaragoza, Zaragoza, Spain

Education

M. Sc. in Physics, Universidad Complutense de Madrid, Spain, June 1987

Ph. D. in Mathematical and Theoretical Physics, Universidad Complutense de Madrid, Spain,
June 1991.

Past Positions

Research fellow, Departamento de Física Teórica, Universidad Complutense de Madrid, 1988-1990

Teaching assistant, Departamento de Física Teórica, Universidad Complutense de Madrid, 1991-
1992

Assistant Professor, Departamento de Ingeniería, Universidad Carlos III de Madrid, 1992-1995

Fulbright Postdoctoral Fellow, Center for Nonlinear Studies, Los Alamos National Laboratory,
Los Alamos, U.S.A., 1993-1994

Associate Professor, Departamento de Matemáticas, Universidad Carlos III de Madrid, 1995-2009

Research

- Research lines: Complex systems: Game Theory, Statistical Mechanics, Nonlinear dynamics, Applications in Biological, Social and Economic Sciences, Experimental economics
- Publications: 160 in JCR (SCI) journals. 3900+ citations, h=35 (5100+ in Google Scholar, h=37). Invited talks at conferences: 48. Communications: 162.
- Recent selected papers (see complete list in enclosures, also at web site):
 - Social experiments in the mesoscale: Humans playing a spatial Prisoner's Dilemma. J. Grujic, C. Fosco, L. Araujo, J. A. Cuesta y A. Sánchez. PLoS ONE **5** (11), e13749 (2010).
 - Evolutionary games defined at the network mesoscale: The Public Goods game. J. Gómez-Gardeñes, M. Romance, R. Criado, D. Vilone and A. Sánchez. Chaos **21**, 016113 (2011)
 - Heterogeneous networks do not promote cooperation when humans play a Prisoner's Dilemma. C. Gracia-Lázaro, A. Ferrer, G. Ruiz, A. Tarancón, J. A. Cuesta, A. Sánchez and Y. Moreno. Proceedings of the National Academy of the USA **109**, 12922-12926 (2012).
 - Heterogeneous network games: Conflicting preferences. P. Hernández, M. Muñoz-Herrera, and A. Sánchez. Games and Economic Behavior **79**, 56 (2013).
 - A meta-analysis of spatial Prisoner's Dilemma experiments: Conditional cooperation and payoff irrelevance. J. Grujic, C. Gracia-Lázaro, M. Milinski, D. Semmann, A. Traulsen, J. A. Cuesta, Y. Moreno and A. Sánchez. Scientific Reports **4**, 4615 (2014).
 - Transition from reciprocal cooperation to persistent behaviour in social dilemmas at the end of adolescence. M. Gutiérrez-Roig, C. Gracia-Lázaro, J. Perelló, Y. Moreno and A. Sánchez. Nature Communications **5**, 4362 (2014).

- Reputation drives cooperative behaviour and network formation in human groups. J. A. Cuesta, C. Gracia-Lázaro, A. Ferrer, Y. Moreno and A. Sánchez. *Scientific Reports* **5**, 7843 (2015).
- Humans display a reduced set of consistent behavioral phenotypes in dyadic games. J. Poncela-Casasnovas, M. Gutiérrez-Roig, C. Gracia-Lázaro, J. Vicens, J. Gómez-Gardeñes, J. Perelló, Y. Moreno, J. Duch and A. Sánchez. *Science Advances* **2**, e1600451 (2016).
- Funded projects: 19 as Principal Investigator, from the Spanish Ministry of Education, Regional Government of Madrid, NATO, European Commission, Repsol, Fundación BBVA. Member of the Management Committee of 2 COST Actions (European Science Foundation). Participation in another 22 projects.

Selected projects as PI:

- Modeling, simulation and analysis of complex systems (MOSAICO). Spanish Ministry of Education and Science, 500 000 €. The team included 10 faculty and 16 postdocs and Ph D students from two Universities in Madrid and produced 213 papers. Finished in 2013.
- Resilience of Networks in Ecology and Economy (RESINEE). ERA-Net on Complexity. 500 000 € (coordinated a Spanish-British-Dutch team). The team included 6 faculty and 4 postdocs and produced 41 papers. Finished in 2013.
- Bridging the gap: from Individual Behavior to the Socio-technical MaN (IBSEN). FET-Open, H2020, European Commission, 2 600 000 €. The team consisted of groups from Universidad Carlos III de Madrid (PI), Universidad de Zaragoza, Universitat de València, University of Oxford, University of Cambridge, Aalto University and Universiteit van Amsterdam. September 1, 2015 - August 31, 2018.
- Dunbar's numbers and the structure of digital societies: modeling and simulation (DUNDIG), Fundación BBVA, 72 692 €. October 1, 2016 – September 30, 2018.

Other

- Awards:
 - Award for Excellence in Ph. D. Studies, Universidad Complutense de Madrid, 1992.
 - Award for Excellence in Research and Teaching, Universidad Carlos III de Madrid, 2004.
 - Listed among the 10% top researchers of Universidad Carlos III de Madrid (biannual evaluations). 2007-2016.
 - Award for Excellence for Young Researchers, Consejo Social de la Universidad Carlos III de Madrid, 2009.
- Member of the Board of the Statistical and Nonlinear Physics Group of the Royal Spanish Society of Physics 2001 – 2006.
- Vice-chair of the Mathematics Department of Universidad Carlos III de Madrid, November 2005 – November 2007, and December 2009 – to date.
- Editor of *Journal of Statistical Mechanics: Theory and Applications*, published by Springer-Verlag under the auspices of the International School for Advanced Studies, 2010 – .
- Editor of *PLoS ONE*, 2011 – 2016.
- Editor of *Scientific Reports*, published by Nature Publishing Group. 2014 – .
- Coordinator of the Spanish Thematic Network “Dynamics and collective phenomena of socio-economic systems”. Spanish Ministry of Education. 2009-2010.
- Expert in the VI, VII and H2020 Framework Programmes, Marie Curie, NEST, FET Programs.
- Evaluator for Research Funding Agencies in Spain (national and regional), UK, The Netherlands, Chile, Venezuela and Flanders, and for the European Research Council.
- Referee for over 25 SCI journals including *Nature*, *Nature Communications* and *Proceedings of the National Academy of Sciences of the USA*.
- Co-Director (with I. Rehberg) of the International Research Training Group Madrid-Bayreuth “Non-equilibrium phenomena and phase transitions in Complex Systems” 2000-2004.
- Bilingual Galician-Spanish. Fluent in English, Good in Portuguese.