

## José-Manuel REY

### MATHEMATICIAN

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DEPARTMENT OF ECONOMIC ANALYSIS  
FACULTY OF ECONOMICS  
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URL <http://grupocofractal.com/es/miembros/jmrey>



## 1. EDUCATION

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- 1995 Ph.D. Mathematics.**  
Faculty of Mathematics.  
Complutense University of Madrid (Spain).  
Title of PhD dissertation: "*Geometry of self-similar measures*".  
Qualification: *Cum Laude*. Best thesis award (Faculty of Mathematics).
- 1989-91 M.Sc. Applied Mathematics.**(2 years degree).  
Department of Mathematics.  
Complutense University of Madrid (Spain).
- 1984-89 B.Sc. Mathematics.** (5 years degree).  
Faculty of Mathematics.  
Autonomous University of Madrid (Spain).

## 2. PROFESSIONAL EXPERIENCE

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- >2000 Associate Professor** (with tenure).  
Department of Economic Analysis.  
**Complutense University of Madrid** (Spain).
- 2016 Visiting Scholar** (February-April).  
Department of Applied Mathematics  
**Technical University of Madrid (UPM)** (Spain).
- 2015 Visiting Scholar** (February-July).  
Department of Psychology, and Institute for Quantitative Social Science  
**Harvard University (USA)**.
- 1999 Visiting Scholar** (January).  
Isaac Newton Institute for Mathematical Sciences.  
**Cambridge University (UK)**.

- 1997-99 Assistant Professor.**  
Department of Economic Analysis.  
**Complutense University of Madrid** (Spain).
- 1996 Visiting Scholar** (July-December.)  
Centre for Nonlinear Dynamics and its Applications.  
**University College London** (UK).
- 1996 Visiting Scholar** (April-July).  
Mathematical Institute.  
**University of St. Andrews**, Scotland (UK).
- 1993 Visiting Researcher** (February-September).  
Department of Applied Mathematics.  
School of Agricultural Engineering.  
**Technical University of Madrid** (Spain).
- 1989-96 Assistant Professor.**  
Department of Economic Analysis.  
**Complutense University of Madrid** (Spain).

### 3. PERSONAL GRANTS AND AWARDS

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- 2016 Research Fellowship 2016-17.**  
*Senior Scientist Visiting Program Salvador de Madariaga.*  
Spanish Ministry of Education.
- 2014 Research Fellowship 2014-15.**  
Real Colegio Complutense, Harvard University (USA).
- 2009 Plus New Writers Award 2009.**  
+Plus Magazine. Cambridge University (UK).
- 2008 Plus New Writers Award 2008.**  
+Plus Magazine. Cambridge University (UK).
- 1998 Doctoral Dissertation Award** (1995 Best Thesis in Mathematics).  
Complutense University of Madrid.
- 1996 Postdoctoral Grant** (One Year Abroad).  
Complutense University of Madrid.

### 4. TEACHING EXPERIENCE

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▷ Undergraduate

>1989, Faculty of Economics, Complutense University of Madrid.

- **Dynamic Optimization and Games** (4th year, 4 year degree).  
[yrs. 12/13, 13/14, 14/15, 15/16, 16/17]
- **Mathematics III** (Optimization and Dynamics) (2nd year, 4 year degree). [\[in English\]](#)  
[yrs. 10/11, 11/12, 12/13, 13/14, 14/15, 15/16]
- **Mathematics III** (Optimization and Dynamics) (2nd year, 4 year degree).  
[yrs. 11/12, 12/13, 14/15]
- **Microeconomics III** (Production Theory) (2nd year, 4 year degree).  
[yr. 13/14]

- **Game Theory** (3rd year, former 5 year degree).  
[yrs. 03/04, 04/05, 05/06, 06/07, 07/08, 08/09, 09/10, 11/12, 12/13].
- **Dynamical Optimization** (3rd year, former 5 year degree).  
[yrs. 00/01, 01/02, 02/03, 03/04, 04/05, 05/06, 06/07, 07/08, 08/09, 09/10, 10/11].
- **Dynamical Systems** (2nd year, former 5 year degree).  
[yrs. 91/92, 92/93, 94/95, 95/96, 96/97, 99/00, 00/01, 01/02].
- **Introduction to Mathematics for Economics** (1st year, former 5 year degree).  
[yrs. 02/03, 03/04, 04/05, 05/06, 06/07]
- **Mathematical Programming** (2nd year, former 5 year degree).  
[yrs. 02/03, 03/04, 04/05, 05/06, 06/07]
- **Mathematical Analysis** (1st year, former 5 year degree).  
[yrs. 89/90, 90/91, 91/92, 95/96, 98/99, 00/01, 02/03, 06/07]
- **Linear Algebra** (1st year, former 5 year degree)  
[yrs. 96/97, 97/98, 98/99, 99/00]

#### ▷Posgraduate

- **Mathematical Methods for Economic Analysis.**  
M.Sc. Public Economics, Institute of Fiscal Studies. Ministry of Finance (Spain).  
[yrs. 92/93,93/94,94/95]
- **Nonlinear Time Series Analysis.**  
Ph.D. program, Department of Economic Analysis.  
Complutense University of Madrid  
[yrs. 97/98, 98/99].

## 5. FUNDED RESEARCH PROJECTS

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14. **2016-19** Analysis and modelling of soil attributes and formation factors by fractal techniques, data mining and mathematical morphology.  
**Funding agency:** Ministry of Science and Innovation, Spain. Ref. AGL2015-69697-P  
**PI:** Miguel Angel Martín (Technical University of Madrid.)
13. **2012-15** Analysis, parameterization and modelling of soil and its physical properties by means of fractal techniques and affine mathematical methods.  
**Funding agency:** Ministry of Science and Innovation, Spain. Ref. AGL2011-25175  
**PI:** Miguel Angel Martín (Technical University of Madrid.)
12. **2009-12** Stochastic calculus with applications to Social Sciences.  
**Funding agency:** Ministry of Science and Innovation, Spain. Ref. MTM2009-12672.  
**PI:** Manuel Morán (Complutense University of Madrid.)
11. **2007-10** Porous structure, hydraulic properties and pollutant transport in structured soils: parameterization, modelling and simulation by fractal and affine methods.  
**Funding agency:** Ministry of Science and Technology, Spain. Ref. AGL2007-62648.  
**PI:** Miguel Angel Martín (Technical University of Madrid.)
10. **2007** Scale Dependences in Soil and Hydrologic Systems.  
**Funding agency:** Ministry of Science and Technology, Spain. Ref. AGL2007-28609E.  
**PI:** Miguel Angel Martín (Technical University of Madrid.)
9. **2007-10** Nonlinear stochastic equilibria: economic and environmental applications.  
**Funding agency:** Ministry of Science and Technology, Spain. Ref. MTM2006-02372.  
**PI:** Manuel Morán (Complutense University of Madrid.)

8. **2004-07** Fractal analysis and modelling of soil-water interaction. Application to the quantitative characterization of illuviation processes and their impact.  
**Funding agency:** Ministry of Science and Technology, Spain. Ref. AGL2004-04079/AGR.  
**PI:** Miguel Angel Martín (Technical University of Madrid.)
7. **2003-06** Dynamics and geometry of stochastic equilibria.  
**Funding agency:** Ministry of Science and Technology, Spain. Ref. BFM2003-08204.  
**PI:** Manuel Morán (Complutense University of Madrid.)
6. **2000-03** Separation of deterministic components in time series processing.  
**Funding agency:** Ministry of Science and Technology, Spain. Ref. BX2000-0639.  
**PI:** Manuel Morán (Complutense University of Madrid.)
5. **2000-03** Fractal parametrization and modelling to quantify soil quality and to simulate soil degradation processes.  
**Funding agency:** Ministry of Science and Technology, Spain. Ref. REN2000-1542.  
**PI:** Miguel Angel Martín (Technical University of Madrid.)
4. **2000-03** Fractal modelling and testing of soil hydraulic pedotransfer functions in order to quantify degradation of soils at the southern region of Madrid.  
**Funding agency:** Comunidad Autónoma de Madrid, Spain.  
**PI:** Miguel Angel Martín (Technical University of Madrid.)
3. **1998-00** Analysis of spatial correlations in time series.  
**Funding agency:** Ministry of Science and Technology, Spain. Ref. DGES PB97-0301.  
**PI:** Manuel Morán (Complutense University of Madrid.)
2. **1996-98** Nonlinear analysis of time series for financial markets.  
**Funding agency:** Ministry of Science and Technology, Spain. Ref. DGES PS95-0193.  
**PI:** Manuel Morán (Complutense University of Madrid.)
1. **1992-94** Detection of deterministic chaos in sea wave height time series.  
**Funding agency:** Public Entity Spanish Ports, Ministry of Public Works and Transports.  
**PI:** Manuel Morán (Complutense University of Madrid.)

## 6. LIST OF PUBLICATIONS

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### 6.1 ARTICLES in REFEREED ISI JOURNALS

29. Pricing Strategy versus Heterogeneous Shopping Behavior under Market Price Dispersion.  
Francisco Álvarez, José-Manuel **Rey**, and Raúl G. Sanchís.  
*Abstract and Applied Analysis* Volume 2016 (2016) Article ID 3254240, 8 pages.
28. Consumer's Response to Price Distribution and  $\sigma$ -Overload under Time Allocation.  
Francisco Álvarez, José-Manuel **Rey**, and Raúl G. Sanchís.  
*Journal of Computational and Applied Mathematics* **291** (2016) 242- 256.
27. Choice Overload, Satisficing Behavior, and Price Distribution in a Time Allocation Model.  
Francisco Álvarez, José-Manuel **Rey**, and Raúl G. Sanchís.  
*Abstract and Applied Analysis* Volume 2014 (2014) Article ID 569054, 9 pages.
26. Numerical Analysis of a Time Allocation Model Accounting for Choice Overload.  
Raúl G. Sanchís, José-Manuel **Rey**, and Francisco Álvarez.  
*International Journal of Computer Mathematics* (2013) [June] 1-12

25. Sentimental Equilibria with Optimal Control.  
José-Manuel **Rey**.  
*Mathematical and Computer Modelling* **57**(7-8) (2013) 1965-1969.
24. A Mathematical Model of Sentimental Dynamics Accounting for Marital Dissolution.  
José-Manuel **Rey**.  
*PLoS ONE* **5**(3) e9881 (2010).
23. On the Fractal Modeling of Biomass Distributions: an Application to Size Class in Fisheries.  
Carlos García-Gutiérrez, Miguel Ángel Martín, and José-Manuel **Rey**,  
*Ecological Complexity* **6** (2009) 246-253.
22. Basic Quantization Properties of Balanced-Entropy.  
José-Manuel **Rey**.  
*Geoderma* **134** (3-4) (2006) 425-427.
21. Inter-Scale Behavior of Balanced Entropy for Soil Texture.  
José-Manuel **Rey**, Eloísa Montero, and Miguel Ángel Martín.  
*Geoderma* **134** (3-4) (2006) 415-425.
20. The Balanced Entropy Index to Characterize Soil Texture for Soil Water Retention Estimation.  
Miguel Ángel Martín, Yakov A. Pachepsky, José-Manuel **Rey**, Fco. Javier Taguas, and Walter J. Rawls.  
*Soil Science* **170**(10) (2005) 759-766.
19. An Entropy-Based Heterogeneity Index for Size Distributions in Earth Science.  
Miguel Ángel Martín, José-Manuel **Rey**, and Fco. Javier Taguas.  
*Ecological Modelling* **182**(3-4) (2005) 221-228.
18. An Entropy-Based Parameterization of Soil Texture Via Fractal Modelling of Particle-Size Distribution.  
Miguel Ángel Martín, José-Manuel **Rey**, and Fco. Javier Taguas.  
*Proceedings of the Royal Society of London, Series A* **457** (2001) 937-948.
17. On the Role of Shannon's Entropy as a Measure of Heterogeneity.  
Miguel Ángel Martín and José-Manuel **Rey**.  
*Geoderma* **98** (2000) 1-2.
16. Dimension of a Measure.  
Pertti Mattila, Manuel Morán and José-Manuel **Rey**.  
*Studia Mathematica* **142**(3) (2000) 219-233.
15. The Role of Billingsley Dimensions in Computing Fractal Dimensions on Cantor-Like Spaces.  
José-Manuel **Rey**.  
*Proceedings of the American Mathematical Society* **128** (2000) 561-572.
14. Singularity of Self-Similar Measures with respect to Hausdorff Measures.  
Manuel Morán and José-Manuel **Rey**.  
*Transactions of the American Mathematical Society*, **350** (1998) 2297-2310.
13. Geometry of Self-Similar Measures.  
Manuel Morán and José-Manuel **Rey**.  
*Annales Academiæ Scientiarum Fennicæ Mathematica* **22** (1997) 365-386.

## 6.2 OTHER REFEREED ARTICLES and PUBLICATIONS

12. [Whatever Happened to Adam and Eve's Relationship?](#) [in Spanish]  
José-Manuel **Rey**.  
*Pensamiento Matemático* **5**(1) (2015) 75-82.
11. [Maximizing and Satisficing in a Time Allocation Model](#).  
Raúl G. Sanchís, José-Manuel **Rey**, Francisco Álvarez.  
*International Journal of Complex Systems in Science*. **4**(1) (2014) 1–6.
10. [Societal Mathematics and Social Syndromes](#). [in Spanish]  
José-Manuel **Rey**.  
*Pensamiento Matemático* **3**(1) (2013) 167-176.
9. [Optimal Control of Long-Term Sentimental Dynamics](#).  
José-Manuel **Rey**.  
*Modelling for Engineering and Human Behaviour*.  
Jódar, L., Acedo, L., Cortés, J.C., (eds.)  
IMM, Polytechnic University of Valencia (2012). ISBN:78-84-695-2143-4.
8. [The Double Helix of the Social Sciences](#). [in Spanish]  
José-Manuel **Rey**.  
*Matematicalia* **7** (2) June (2011).
7. [Survival Odds: Are All Soldiers Equal?](#)  
José-Manuel **Rey**.  
*+Plus Magazine*, **54** (2010).
6. [The Carol Syndrome](#).  
José-Manuel **Rey**.  
*+Plus Magazine*, **51**(2009).  
▷ Winner of the [Plus New Writers Award 2009](#) (Cambridge University).  
▷ Reprinted in [\[The Commutator\] 3\(1\) \(2012\) \(September\)](#)
5. [If We All Go for the Blonde](#).  
José-Manuel **Rey**.  
*+Plus Magazine*, **47** (2008).  
▷ Winner of the [Plus New Writers Award 2008](#) (Cambridge University).
4. [Negishi's Stability without Recontracting](#).  
José-Manuel **Rey**.  
*An Eponymous Dictionary of Economics (A Guide to Laws and Theorems Named after Economists)*.  
Segura, J. and Rodríguez Braun, C. (eds.).  
Edward Elgar (2005).
3. [A Formalism for the Dimensional Analysis of Time Series](#).  
Manuel Morán and José-Manuel **Rey**.  
IDEAS-RePec, Society for Computational Economics (1999).  
*Series Computing in Economics and Finance* 1999, number 1331.

2. [Geometry of Self-Similar Sets and Measures.](#)[in Spanish]  
José-Manuel **Rey**.  
Universidad Complutense de Madrid, 1995, ISBN 84-669-0717-3.
1. [Detection of Chaos in Time Series. An Application to Spanish Sea Swell.](#)  
Eugenia Mera, Manuel Morán, and José-Manuel **Rey**.  
Working Paper #9507, Faculty of Economics, Complutense University, 1995.

### 6.3 REVIEW OF SCIENTIFIC PUBLICATIONS

- >Jan 2000. Reviewer of [Zentrablatt MATH](#) (European Mathematical Society)  
60 reviews published (by December 2015)

### 6.4 BOOKS

4. [Mathematics for the Natural Sciences and Technology I](#) [in Spanish]  
Miguel Ángel Martín, Manuel Morán, José-Manuel **Rey**, Miguel Reyes.  
Bruño, 2002. ISBN: 84-216-4810-1.
3. [Mathematics for the Natural Sciences and Technology II](#) [in Spanish]  
Miguel Ángel Martín, Manuel Morán, José-Manuel **Rey**, Miguel Reyes.  
Bruño, 2002. ISBN: 84-216-4810-1.
2. [Mathematics for the Social Sciences I.](#) [in Spanish]  
Miguel Ángel Martín, Manuel Morán, José-Manuel **Rey**, Miguel Reyes.  
Bruño, 2000. ISBN: 84-216-4810-1.
1. [Mathematics for the Social Sciences II.](#)[in Spanish]  
Miguel Ángel Martín, Manuel Morán, José-Manuel **Rey**, Miguel Reyes.  
Bruño, 2000. ISBN: 84-216-4810-1.

## 7. LIST of PRESENTATIONS

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### 7.1 COMMUNICATIONS in INTERNATIONAL CONFERENCES

- 27 Jul 2016 *Market dynamics under price and search cost dispersions*  
Mathematical Modelling in Engineering and Human Behavior 2016.  
Institute for Multidisciplinary Mathematics.  
Polytechnic City of Innovation.  
Valencia (Spain).[presented by R. G. Sanchís]
26. Sep 2015 *Pricing strategy versus shopping behavior under market price dispersion*  
Mathematical Modelling in Engineering and Human Behavior 2015.  
Institute for Multidisciplinary Mathematics.  
Polytechnic City of Innovation.  
Valencia (Spain).[presented by R. G. Sanchís]
25. Sep 2014 *Consumer's response to price distribution in a time allocation model.*  
Mathematical Modelling in Engineering and Human Behavior 2014.  
Institute for Multidisciplinary Mathematics.  
Polytechnic City of Innovation.



Valencia (Spain). [presented by F. Álvarez]

24. **Sep 2013** *Maximizing and satisficing in a choice model based in time allocation.*  
Mathematical Modelling in Engineering and Human Behavior 2013.  
Institute for Multidisciplinary Mathematics.  
Polytechnic City of Innovation.  
Valencia (Spain). [presented by R. G. Sanchís]
23. **Sep 2012** *A time allocation model accounting for the paradox of choice.*  
Mathematical Modelling in Engineering and Human Behavior 2012.  
Institute for Multidisciplinary Mathematics.  
Polytechnic City of Innovation.  
Valencia (Spain).
22. **Sep 2011** *Our love was to last forever. Hence we are breaking up now.*  
11th Workshop on Optimal Control, Dynamic Games and Nonlinear Dynamics.  
CeNDEF, University of Amsterdam.  
Amsterdam (Netherlands).
21. **Jun 2008** *Love is not enough: a mathematical model explaining couple breakup.*  
Nonlinear 2008. Universitat Politècnica de Catalunya.  
Barcelona (Spain).
20. **Sep 2007** *(Durable) love is a very unstable thing.*  
EMPG38 (38th meeting of the European Mathematical Psychology Group.)  
University of Luxembourg  
Luxembourg.
19. **Sep 2007** *Gauging Shannon's entropy to evaluate heterogeneity of mass-size distributions.*  
Nonlinear 2007. Universidad de Castilla-La Mancha.  
Ciudad Real (Spain).
18. **Jul 2004** *Properties and uses of the balanced-entropy index for soil textural analysis.*  
PEDOFRACT'04. International Workshop on Fractal Mathematics Applied to Soil  
and Related Systems.  
El Barco de Ávila (Spain).
17. **Jun 2004** *A generalization of Shannon's entropy to evaluate heterogeneity of mass-size  
distributions.*  
Workshop on Mathematical Economics.  
Complutense University of Madrid.  
Madrid (Spain).
16. **Feb 2003** *A simple entropy index to evaluate heterogeneity of mass-size distributions:  
application to soil texture.*  
Applied Mathematics & Applications of Mathematics (AMAM 2003).  
Nice (France).
15. **Jul 2002** *Dimensions of measures and correlation dimensions.*  
X Congresso di Analisi Reale e Teoria della Misura (C.A.R.Te.Mi. X).  
Ischia (Italy).



14. **Jun 2002** *Balancing entropy to measure biodiversity and soil texture.*  
PEDOFRACT'04. International Workshop on Fractal Mathematics Describing Soil and Other Heterogenous Systems.  
El Barco de Ávila (Spain).
13. **Jun 2001** *Properties of the dimension of a measure and the behavior of correlation dimensions.*  
Fractals in Graz 2001. University of Graz.  
Graz (Austria).
12. **Jul 2000** *Dimension of a measure.*  
VI International Conference on Harmonic Analysis and Partial Differential Equations.  
El Escorial (Spain).
11. **Sep 2000** *Entropy-based parametrization of textures in disordered media.*  
IX Congresso di Analisi Reale e Teoria della Misura (C.A.R.Te.Mi. IX).  
Grado (Italia). [presented by M.A. Martín]
10. **Sep 1999** *Dimensional analysis of time series.*  
International Workshop on Chaotic Dynamics and Fractals in Geosciences.  
School of Agricultural Engineering. Technical University of Madrid.  
Madrid (Spain).
9. **Jun 1999** *A formalism for the dimensional analysis of time series.*  
CEF'99 (Computing in Economics and Finance).  
Fifth International Conference of the Society for Computational Economics.  
Boston College, Chesnut Hill, Massachusetts (USA)
8. **Jun 1999** *Dimension of a measure.*  
International Workshop on the Structure of Hyperbolic Measures.  
Complutense University of Madrid.  
Madrid (Spain).
7. **Jan 1999** *On the dimension of a measure.*  
Workshop on Multifractals and Applications.  
Isaac Newton Institute for Mathematical Sciences, Cambridge University.  
Cambridge (UK).
6. **Sep 1998** *On the role of geometry in computing dimensions within fractal spaces.*  
VIII Congresso di Analisi Reale e Teoria della Misura (C.A.R.Te.Mi. VIII),  
Maiori (Italy)
5. **Sep 1998** *Billingsley dimension and fractal geometry.*  
Conference on Fractal Geometry and Stochastics II.  
Greifswald (Germany).
4. **Jul 1996** *Packing and Hausdorff Geometry of self-similar Measures.*  
VII Congresso di Analisi Reale e Teoria della Misura (C.A.R.Te.Mi. VII).  
Ischia (Italy).
3. **Jul 1995** *A new method for detecting chaotic dynamics in time series. An application to the analysis of significant wave height series.*  
International Union of Geodesy and Geophysics (IUGG), XXI General Assembly,  
Boulder, Colorado, (EE.UU.) [presented by M. Alfonso]

2. **May 1995** *Efficient ways of covering cylinders by balls in self-similar constructions*  
ERGOFRACT'95 (International Meeting on Chaos, Fractals, and Ergodic Theory),  
Las Palmas de Gran Canaria (Spain). [presented by M. Morán]
1. **May 1995** *Hausdorff singularity of self-similar measures*  
ERGOFRACT'95 (International Meeting on Chaos, Fractals, and Ergodic Theory),  
Las Palmas de Gran Canaria (Spain).

## 7.2 INVITED RESEARCH LECTURES at CONFERENCES and SEMINARS

23. **Sep 2016** *Our love was to last forever... [Plenary Speaker]*  
Paradigmatic Models in Social Science  
11<sup>th</sup> International Workshop "Topics in Nonlinear Dynamics"  
Italian Society for Chaos and Complexity.  
Politecnico di Milano, Milano (Italy)
22. **Jul 2016** *And they lived (not) happily ever after. [Plenary Speaker]*  
Why are (not) we happy?  
Summer Course. Complutense University of Madrid.  
El Escorial (Spain)
21. **May 2016** *Love Engineering*  
Schools of Agricultural Engineering.  
Technical University of Madrid (Spain),
20. **Abr 2015** *Is it possible to make love last?*  
Real Colegio Complutense at Harvard,  
Harvard University (USA).
19. **Mar 2015** *Our love was to last forever.*  
Department of Psychology.  
Harvard University (USA).
18. **May 2014** *Whatever happened to Adam and Eve's love relationship? [Plenary Speaker]*  
III International Workshop "Mathematics Everywhere".  
Centro Internacional de Encuentros Matemáticos.  
Castro Urdiales, Cantabria (Spain).
17. **Jun 2012** *Societal mathematics and social syndromes. [Plenary Speaker]*  
II International Workshop "Mathematics Everywhere".  
Centro Internacional de Encuentros Matemáticos.  
Castro Urdiales, Cantabria (Spain).
16. **Sep 2011** *Optimal control of long-term sentimental dynamics. [Plenary Speaker]*  
Conference "Mathematical Modelling in Engineering Human Behavior".  
Institute for Multidisciplinary Mathematics.  
Polytechnic City of Innovation, Valencia (Spain).
15. **May 2011** *Society minus science equals crisis? [Plenary Speaker]*  
Workshop "The Necessary Scientific Society: More Science, Less Crisis."  
Universidad Internacional Menéndez Pelayo.  
Sevilla (Spain).

14. **Dic 2009** *The invisible hand and the platinum blonde.*  
Research Seminar. Department of Mathematics. Public University of Navarre.  
Pamplona (Spain).
13. **Dic 2007** *Control and failure of sentimental dynamics*  
Research Seminar. Department of Mathematics. Public University of Navarre.  
Pamplona (Spain)
12. **May 1999** *Geometry of self-similar measures.*  
Seminar. Department of Mathematics.  
Autonomous University of Madrid (Spain).
11. **Jun 1998** *A formalism for the dimensional analysis of time series.*  
Research Seminar. Department of Mathematics.  
University of Castilla-La Mancha  
Ciudad Real (Spain).
10. **May 1997** *Billingsley dimensions on Cantor-like spaces.*  
Fractal Geometry Seminar. Complutense University and Technical University.  
Madrid (Spain).
9. **Nov 1996** *Nonlinear signal analysis: some results and practicalities.*  
Nonlinear Dynamics Seminar. Centre for Nonlinear Dynamics and its Applications.  
University College London  
London (UK)
8. **Nov 1996** *Hausdorff and packing self-similar geometry.*  
Research Seminar. Department of Mathematics.  
University College London.  
London (UK)
7. **Jun 1996** *Billingsley dimensions on self-similar spaces.*  
Analysis Seminar. Mathematical Institute.  
University of St. Andrews.  
St. Andrews (Scotland)
6. **May 1996** *Geometric-size properties of self-similar measures.*  
Analysis Seminar. Mathematical Institute.  
University of St. Andrews.  
St. Andrews (Scotland)
5. **Mar 1996** *Local representation of Hausdorff and packing dimensions.*  
Fractal Geometry Seminar.  
Complutense University and Technical University.  
Madrid (Spain).
4. **Jun 1995** *Geometry of self-similar measures.*  
Research Seminar. Department of Mathematical Analysis.  
Complutense University of Madrid (Spain).
3. **Jun 1994** *Product measures on self-similar spaces.*  
Research Seminar. Department of Mathematical Analysis.  
Complutense University of Madrid (Spain)

2. **Dic 1993** *Detection of chaos in experimental signals.*  
Mathematics Seminar. Schools of Engineering (Civil, Agricultural and Architecture).  
Technical University of Madrid (Spain).
1. **Abr 1993** *Nonlinear time series analysis.*  
Research Seminar. Department of Applied Mathematics.  
School of Agricultural Engineering.  
Technical University of Madrid (Spain).

### 7.3 INVITED LECTURES on POPULARIZATION OF SCIENCE [in spanish]

#### UNIVERSITY LEVEL

6. **Mar 2011** *Mathematics and everything else.*  
Faculty of Economics and Business Administration.  
Autonomous University of Madrid (Spain).
5. **Nov 2010** *Game theory and economics.*  
Faculty of Economics and Business Administration.  
Autonomous University of Madrid (Spain).
4. **Dic 2010** *Not without mathematics*  
School of Agricultural Engineering.  
Technical University of Madrid (Spain).
3. **Nov 2007** *Could you live without mathematics?*  
Faculty of Environmental Sciences.  
University of Castilla-La Mancha. Toledo (Spain).
2. **Nov 2004** *Why is mathematics useful?*  
Faculty of Computer Sciences.  
Technical University of Madrid (Spain).
1. **Sep 2004** *Why mathematics?*  
School of Agricultural Engineering.  
Technical University of Madrid (Spain).

#### HIGH SCHOOL LEVEL and GENERAL AUDIENCE

6. **Jun 2004** *Mathematics and the real world.*  
Colegio Joyfe (Madrid)
5. **May 2004** *Mathematics and the real world.*  
Colegio Nuevo Equipo (Madrid)
4. **May 2004** *What is mathematics for?*  
Faculty of Education. University programme for older students.  
University of Valladolid.
3. **May 2004** *Mathematics and the real world.*  
Colegio Arturo Soria (Madrid).
2. **Abr 2004** *Why you need mathematics*  
Military Prison. Alcalá de Henares (Madrid)

1. **Sep 2000** *Invitation to mathematics for the social sciences.*  
Colegio Nuevo Equipo (Madrid).

#### 7.4 INVITED LECTURES on UNIVERSITY EDUCATION

2. **Abr 2007** *Pilot experience on the European Higher Education Space.*  
School of Agricultural Engineering.  
Technical University of Madrid (Spain).
1. **Jun 2006** *Teaching mathematics in the European Higher Education Space.*  
Faculty of Economics. University of Alicante (Spain).

#### 7.5 COURSES GIVEN

##### EDUCATIONAL TRAINING

5. **Apr 2009** *Stellar mathematical moments in History. (9 hours)*  
Training Programme for Mathematical Teachers.  
Territorial Centre of Training and Innovation (CTIF) Madrid Sur, Leganés (Spain).
4. **Jan 2009** *The invisible universe of mathematics.(21 hours)*  
Training Programme for Mathematical Teachers.  
Territorial Centre of Training and Innovation (CTIF) Madrid Sur, Fuenlabrada (Spain).
3. **Feb 2008** *Societal mathematics and social syndromes. (6 hours)*  
Training Programme for Mathematical Teachers.  
Centre of Training and Innovation. CAP Getafe (Spain).
2. **May 2007** *Mathematics of strategy. (6 hours)*  
Training Programme for Mathematical Teachers.  
Territorial Centre of Training and Innovation. CAP Fuenlabrada (Spain).

##### POST-GRADUATE LEVEL

1. **Jul 2005** *Multidimensional chaos. (5 hours)*  
Summer School.  
University of Teruel (Spain) .

## 8. ORGANIZATION OF CONFERENCES and COURSES

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### 8.1 INTERNATIONAL CONFERENCES

4. **May 2012** PEDOFRACT'12. International Workshop on Scaling in Particulate and Porous Media: Modeling and Use in Predictions  
A Coruña (Spain)  
Member of the Organizing Committee. Member of the Scientific Committee.
3. **July 2007** PEDOFRACT'07. International Workshop on Scale Dependences in Soil and Hydrologic Systems.  
El Barco de Ávila (Spain)  
Member of the Organizing Committee.
2. **July 2004** PEDOFRACT'04. International Workshop on Fractal Mathematics describing Soil and Related Heterogeneous Systems.  
El Barco de Ávila (Spain)  
Member of the Organizing Committee.

1. **July 2002** PEDOFRACT'02. International Workshop on Fractal Mathematics describing Soil and Heterogeneous Systems.  
El Barco de Ávila (Spain)  
Member of the Organizing Committee.

## 8.2 COURSES

3. **July 2016** Why are (not) we happy?  
Summer Course. Complutense University of Madrid.  
El Escorial (Spain), July 11-13  
Co-Director of the course.
2. **May 2011** The Necessary Scientific Society: More Science, Less Crisis.(14 hours)  
Universidad Internacional Menéndez Pelayo. Sevilla (Spain)  
Organizer and Director.
1. **Ene 2009** The invisible universe of mathematics.(21 hours)  
Territorial Centre of Training and Innovation (CTIF) Madrid Sur, Fuenlabrada.  
Director and Main Speaker.

## 9. PhD THESES SUPERVISED

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1. **Jun 2013** *Time microeconomics: on the allocation of time and choice overload*  
authored by Raúl G. Sanchís.  
European Mention Doctorate.  
Doctoral Dissertation Award (2013 Best Thesis in Economics).  
Complutense University of Madrid (Spain).

## 10. OTHER SCIENTIFIC MERITS

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### 10.1 REFEERING for PEER-REVIEW JOURNALS

- SIAM Journal of Mathematics.
- Nonlinearity.
- Pure and Applied Geophysics.
- Applied Mathematical Letters.
- Journal of Theoretical Biology.
- PLoS ONE.
- Chaos-An interdisciplinary Journal of Nonlinear Science.
- Health.

### 10.2 REVIEWER of Zentralblatt MATH(>2000)

### 10.3 MEMBER of PhD COMMITTEES

- Dec 2016** Quantifying patterns of complexity controlled by parent material at different spatial scales: from drainage network architecture at landscape scale to soil texture  
by Joaquín Cámara Gajate.  
School of Agricultural Engineering, Technical University of Madrid (Spain).

- Oct 2010** Characterization and modeling of soil texture and structure using image processing techniques and fractal geometry. Application to diffusion in porous media.  
by Carlos García-Gutiérrez.  
School of Agricultural Engineering, Technical University of Madrid (Spain).
- Jun 2006** Dimension print and self-similar measures with overlapping.  
by Victor Ruiz Morcillo  
Faculty of Computer Science, Technical University of Madrid (Spain).
- Jun 2004** Continuous Lipschitz dynamic programming. Application to the optimal exploitation of renewable resources under increasing returns.  
by José María Maroto  
Faculty of Economics, Complutense University of Madrid (Spain).
- May 2003** Application of multifractal analysis techniques to mass-size distributions of soil particles obtained by laser diffraction.  
by Eloísa Montero  
School of Agricultural Engineering, Technical University of Madrid (Spain).
- Mar 1999** Efficient strategies in future and option markets.  
by Juan Garrido  
Faculty of Economics, Complutense University of Madrid (Spain).
- Apr 1997** Multifractal Analysis of pore size distribution in soil.  
by Javier Caniego  
School of Agricultural Engineering, Technical University of Madrid (Spain).
- Oct 1995** Fractal modeling of particle size distribution in soil.  
by Francisco Javier Taguas  
School of Agricultural Engineering, Technical University of Madrid (Spain).

## 10.4 EDITORIAL EXPERIENCE

**1998-2002** Editorial Coordinator of Mathematics for the Publishing Company Bruño.

## 10.5 OTHER WRITINGS

### 1. "1+1"

Rubén Pacheco and **José-Manuel Rey** (2015)

Screenplay for the short film "1+1" directed by Rubén Pacheco (2016).

## 10.6 MEDIA COVERAGE

- The research on the mathematical modeling of sentimental relationships in José-Manuel **Rey**. *A mathematical model of sentimental dynamics accounting for marital dissolution*. *PLoS ONE* 5(3) e9881 (2010).  
was covered by media worldwide, e.g.
  - [It Takes 30 \(Harvard Medical School, US\)](#)
  - [PhysOrg.com \(UK\)](#)
  - [The Globe and the Mail \(Canada\)](#)
  - [KLTV \(Texas, US\)](#)
  - [Epoca \(Brasil\)](#)
  - [Mathematics for Planet Earth \(France\)](#)
  - [The Atlantic \(Washington, US\)](#)
  - [Need to Know on PBS \(NY, US\)](#)
  - [I \(Portugal\)](#)
  - [Ingenioren \(Denmark\)](#)



- [Pravda \(Russia\)](#)
- [Público \(Spain\)](#)
- [SINC \(Spain\)](#)
- [El Universal \(Mexico\)](#)
- [ABC \(Spain\)](#)
- [Muy Interesante \(Spain\)](#)
- The mathematical modeling on attractive women and dating in José-Manuel **Rey**. *The Carol Syndrome*. *+Plus Magazine*, **51** (2009) was covered by
  - [Salon.com](#)

## 10.6 MEDIA COLLABORATIONS

- > 2011 "Julia en la Onda" (Radio Station ONDA CERO, Spain)  
Scientific Commentator for social issues.