Name: José A. Cuesta
Date and place of birth: June 1, 1964, Girona (Spain)
Current position: Full Professor, Departamento de Matemáticas, Universidad Carlos III de Madrid, Leganés (Spain)
Address: Avda. de la Universidad 30, 28911 Leganés, Madrid (Spain)
Phone: (+34) 91 624 8751; **fax:** (+34) 91 624 9129; **e-mail:** cuesta@math.uc3m.es

ACADEMIC DEGREES

M.Sc. in Physics, 1987, Universidad Complutense de Madrid (Spain) (with a special mention)
Ph.D. in Physics, 1992, Universidad Complutense de Madrid (Spain) (with a special mention)

PREVIOUS POSITIONS

Teaching Assistant, 1987–1992, Departamento de Física Aplicada I, Universidad Complutense de Madrid (Spain)
Assistant Professor (tenure track), 1992–1995, Departamento de Matemáticas, Universidad Carlos III de Madrid (Spain)
Associate Professor (tenure), 1995–2011, Departamento de Matemáticas, Universidad Carlos III de Madrid (Spain)

SUMMARY OF RESEARCH

Research lines: Statistical physics, complexity in biology and social systems, evolutionary dynamics, evolutionary game theory, theoretical ecology, complex fluids.
Publications: 119 articles in JCR (SCI) journals. Over 5900 citations. H=39 (Google Scholar), H=32 (WoS).
Invited talks at international meetings: 25.
Communications in conferences: Over 100.
Advised thesis: 6 (3 of them awarded an excellence award).
Funded projects: 14 as principal investigator, 13 as participant.

PUBLICATIONS

BOOKS

1. **Proceedings of the VIII Spanish Meeting on Statistical Physics FISES '97**, J. A. Cuesta and A. Sánchez, eds., Anales de Física, Monografías RSEF Vol. 4 (Editorial del CIEMAT, Madrid, 1998).

INVITED ARTICLES (with referee)

1. **From genotypes to organisms: State-of-the-art and perspectives of a cornerstone in evolutionary dynamics**, Susanna Manrubia, José A. Cuesta, Jacobo Aguirre, Sebastian E. Ahnert, Lee Altenberg, Alejandro V. Cano, Pablo Catalán, Ramon Diaz-Uriarte, Santiago F. Elena, Juan Antonio García-Martín, Paulien Hogeweg, Bhavin S. Khatri, Joachim Krug, Ard A. Louis, Nora S. Martin, Joshua L. Payne, Matthew J. Tarnowski, Marcel Weiß, Physics of Life Reviews 38, 55-106 (2021)
2. **Parsimonious scenario for the emergence of viroid-like replicons de novo**, Pablo Catalán, Santiago F. Elena, José A. Cuesta, and Susanna Manrubia, Viruses **11**, 425 (2019)
3. **Statistical theory of phenotype abundance distributions: A test through exact enumeration of genotype spaces**, Juan Antonio García-Martín, Pablo Catalán, Susanna Manrubia, and José A. Cuesta, Europhysics Letters **123**, 28001 (2018)
4. **On the networked architecture of genotype spaces and its critical effects on molecular evolution**, Jacobo Aguirre, Pablo Catalán, José A. Cuesta, and Susanna Manrubia, Open Biology **8**, 180069 (2018)
5. **Huge progeny production during the transient of a quasi-species model of viral infection, reproduction and mutation**, José A. Cuesta, Mathematical and Computer Modelling **54**, 1676–1681 (2011).

6. **Neutral networks of genotypes: Evolution behind the curtain**, Susanna C. Manrubia and José A. Cuesta, AR-BOR **186**, 1051–1064 (2010).

7. **Evolutionary game theory: temporal and spatial effects beyond replicator dynamics**, Carlos P. Roca, José A. Cuesta and Angel Sánchez, Physics of Life Reviews **6**, 208–249 (2009).

8. **Smectic and columnar ordering in length-polydisperse fluids of parallel hard cylinders**, Yuri Martínez-Ratón and José A. Cuesta, Molecular Physics **107**, 415–422 (2009).

9. **Fundamental measure theory for lattice fluids with hard core interactions**, L. Lafuente and J. A. Cuesta, Journal of Physics: Condensed Matter **14**, 12079–12097 (2002).

10. **Close to the edge of Fundamental Measure Theory: density functional for hard sphere mixtures**, J. A. Cuesta, Y. Martínez-Ratón and P. Tarazona, Journal of Physics: Condensed Matter **14**, 11965–11980 (2002).

REFEREED ARTICLES

11. **Beyond Dunbar circles: a continuous description of social relationships and resource allocation**, Ignacio Tamarit, Angel Sánchez, and José A. Cuesta, Scientifc Reports **12**, 2287 (2022)

12. **Evolution of social relationships between first-year students at middle school: from cliques to circles**, Diego Escribano, Victoria Doldán Martelli, Francisco J. Lapuente, José A. Cuesta, and Angel Sánchez, Scientific Reports **11**, 11694 (2021)

13. **Framing in multiple public goods games and donation to charities**, Felipe Maciel Cardoso, Sandro Meloni, Carlos Gracia-Lázaro, Alberto Antonioni, José A. Cuesta, Angel Sánchez, and Yamir Moreno, Royal Society Open Science **8**, 202117 (2021)

14. **Hierarchical clustering of bipartite data sets based on the statistical significance of coincidences**, Ignacio Tamarit, María Pereda, and José A. Cuesta, Physical Review E **102**, 042304 (2020)

15. **The turning point and end of an expanding epidemic cannot be precisely forecast**, Mario Castro, Saúl Ares, José A. Cuesta, and Susanna Manrubia, Proceedings of the National Academy of Sciences (USA) **117**, 26190–26196 (2020)

16. **Populations of genetic circuits are unable to find the fittest solution in a multilevel genotype-phenotype map**, Pablo Catalán, Susanna Manrubia, and José A Cuesta, Journal of the Royal Society Interface **17**, 20190843 (2020)

17. **Epistasis between cultural traits drives paradigm shifts in cultural evolution**, Ignacio Pascual, Jacobo Aguirre, Susanna Manrubia, and José A. Cuesta, Royal Society Open Science **7**, 191813 (2020)

18. **Large scale and information effects on cooperation in public good games**, María Pereda, Ignacio Tamarit, Alberto Antonioni, José A. Cuesta, Penélope Hernándezl, and Angel Sánchez, Scientific Reports **9**, 15023 (2019)

19. **Cognitive resource allocation determines the organization of personal networks**, Ignacio Tamarit, José A. Cuesta, Robin I. M. Dunbar, and Angel Sánchez, Proceedings of the National Academy of Sciences (USA) **115**, 8316–8321 (2018)

20. **Adding levels of complexity enhances robustness and evolvability in a multilevel genotype-phenotype map**, Pablo Catalán, Andreas Wagner, Susanna Manrubia, and José A. Cuesta, Journal of the Royal Society Interface **15**, 20170516 (2018)

21. **Sheldon Spectrum and the Plankton Paradox: Two Sides of the Same Coin—a trait-based plankton size-spectrum model**, José A. Cuesta, Gustav W. Delius, and Richard Law Journal of Mathematical Biology **76**, 67-96 (2018)

22. **Disentangling the effects of selection and loss bias on gene dynamics**, Jaime Iranzo, José A. Cuesta, Susanna Manrubia, Mikhail I. Katsnelson, and Eugene V. Koonin, Proceedings of the National Academy of Sciences (USA) **114**, E5616-E5624 (2017)

23. **Distribution of genotype networks sizes in sequence-to-structure genotype-phenotype maps**, Susanna Manrubia and José A. Cuesta, Journal fo the Royal Society: Interface **14**, 20160976 (2017).

24. **Enumerating secondary structures and structural moieties for circular RNAs José A. Cuesta and Susanna Manrubia**, Journal of Theoretical Biology **419**, 375-382 (2017)

25. **Adaptive multiscapes: an up-to-date metaphor to visualize molecular adaptation**, Pablo Catalán, Clemente F. Arias, José A. Cuesta, and Susanna Manrubia, Biology Direct **12**, 7 (2017)

26. **The growth threshold conjecture: a theoretical framework for understanding T-cell tolerance**, Clemente F. Arias, Miguel A. Herrero, José A. Cuesta, Francisco J. Acosta, Cristina Fernández-Arias, Royal Society Open Science **2**, 150016 (2015)

27. **Fair linking mechanisms for resource allocation with correlated player types**, Agustín Santos, Antonio Fernández Anta, José A. Cuesta, Luis López Fernández, Computing (2015) DOI:10.1007/s00607-015-0461-x

28. **General approach for dealing with dynamical systems with spatiotemporal periodicities**, Jesus Casado-Pascual, José A. Cuesta, Niurka R. Quintero, and Renato Alvarez-Nodarse, Physical Review E **91**, 022905 (2015).

29. **Reputation drives cooperative behaviour and network formation in human groups**, José A. Cuesta, Carlos Gracia-Lázaro, Alfredo Ferrer, Yamir Moreno, and Angel Sánchez, Scientific Reports **5**, 7843 (2015).

30. **Evolution on neutral networks accelerates the ticking rate of the molecular clock**, Susanna Manrubia and José A. Cuesta, Journal fo the Royal Society: Interface **12**, 20141010 (2015).

31. **toyLIFE: a computational framework to study the multi-level organization of the genotype-phenotype map**, Clemente F. Arias, Pablo Catalán, Susanna Manrubia, and José A. Cuesta, Scientific Reports **4**, 7549 (2014).

32. **Fair linking mechanisms for resource allocation with correlated player types**, Agustín Santos, Antonio Fernández Anta, José A. Cuesta, and Luis López Fernández, Proceedings of The International Conference on NETworked sYStems (NETSYS) 2014.

33. **Spreading of intolerance under economic stress: results from a model with reputation**, Luis Martinez-Vaquero and José A. Cuesta, Physical Review E **90**, 022805 (2014).

34. **A comparative analysis of spatial Prisoner's Dilemma experiments: Conditional cooperation and payoff irrelevance**, Jelena Grujić, Carlos Gracia-Lázaro, Manfred Milinski, Dirk Semmann, Arne Traulsen, José A. Cuesta, Yamir Moreno, and Angel Sánchez, Scientific Reports **4**, 4615 (2014).

35. **Gender differences in cooperation: experimental evidence on high school students**, José A. Molina, Carlos Gracia-Lázaro, J. Ignacio Jiménez-Nadal, Yamir Moreno, José A. Cuesta, and Angel Sánchez, PLoS ONE, **8**, e83700 (2013).

36. **Comment on "Ratchet universality in the presence of thermal noise"**, Niurka R. Quintero, Renato Alvarez-Nodarse and José A. Cuesta, Physical Review E **88**, 066101 (2013).

37. **Time-shift invariance determines the functional shape of the current in dissipative rocking ratchets**, José A. Cuesta, Niurka R. Quintero and Renato Alvarez-Nodarse, Physical Review X **2**, 041014 (2013).

38. **Evolutionary stability and resistance to cheating in an indirect reciprocity model based on reputation**, Luis A. Martinez-Vaquero and José A. Cuesta, Physical Review E **87**, 052810 (2013).

39. **Three is a crowd in iterated prisoner's dilemmas: experimental evidence on reciprocal behavior**, Jelena Grujić, Burcu Eke, Antonio Cabrales, José A. Cuesta and Angel Sánchez, Scientific Reports **2**, 638 (2012).

40. **Local-based semantic navigation on a networked representation of information**, José A. Capitán, Javier Borge-Holthoefer, Sergio Gómez, Juan Martinez-Romo, Lourdes Araujo, José A. Cuesta y Alex Arenas, PLoS ONE **7**, e43694 (2012).

41. **Stability and robustness analysis of cooperation cycles driven by destructive agents in finite populations**, Rubén J. Requejo, Juan Camacho, José A. Cuesta and Alex Arenas, Physical Review E **86**, 026105-1–11 (2012).

42. **Heterogeneous networks do not promote cooperation when humans playcl a Prisoner's Dilemma**, Carlos Gracia-Lázaro, Alfredo Ferrera, Gonzalo Ruiz, Alfonso Tarancón, José A. Cuesta, Yamir Moreno and Angel Sánchez, Proceedings of the National Academy of Sciences (USA) **109** 12922–12926 (2012).

43. **Generosity pays in the presence of direct reciprocity: A comprehensive study of 2 x 2 repeated games**, Luis A. Martínez-Vaquero, José A. Cuesta and Angel Sánchez, PLoS ONE **7**, e35135 (2012)

44. **Human behavior in Prisoner's Dilemma experiments suppresses network reciprocity**, Carlos Gracia-Lázaro, José A. Cuesta, Angel Sánchez and Yamir Moreno, Scientific Reports **2**, 325-1–4 (2012).

45. **On the coexistence of cooperators, defectors and conditional cooperators in the multiplayer iterated Prisoner's Dilemma**, Jelena Grujić, José A. Cuesta and Angel Sánchez, Journal of Theoretical Biology **300**, 299–308 (2012).

46. **Individual strategy update and emergence of cooperation in social networks**, Carlos P. Roca, Angel Sánchez and José A. Cuesta, Journal of Mathematical Sociology **36**, 1–21 (2012).

47. **Disentangling categorical relationships trough a graph of co-occurrences**, Juan Martínez-Romo, Lourdes Araujo, Javier Borge-Holthoefer, Alex Arenas, José A. Capitán and José A. Cuesta, Physical Review E **84**, 046108-1–8 (2011).

48. **Ratchet effect on a relativistic particle driven by external forces**, Niurka R. Quintero, Renato Alvarez-Nodarse and José A. Cuesta, Journal of Physics A: Mathematical and General **44**, 425205-1–10 (2011).

49. **Severe hindrance of viral infection propagation in spatially extended hosts**, José A. Capitán, José A. Cuesta, Susanna C. Manrubia and Jacobo Aguirre, PLoS ONE **6**, e23358-1–13 (2011).

50. **Crossed-ratchet effects and domain wall geometrical pinning**, V. I. Marconi, A. B. Kolton, J. A. Capitán, J. A. Cuesta, A. Pérez-Junquera, M. Vélez, J. I. Martín and J. M. R. Parrondo, Physical Review B **83**, 214403-1–13 (2011).

51. **The Joker effect: cooperation driven by destructive agents**, Alex Arenas, Juan Camacho, José A. Cuesta and Rubén Requejo, Journal of Theoretical Biology **279**, 113–119 (2011).

52. **The struggle for space: Viral extinction through competition for cells**, José A. Cuesta, Jacobo Aguirre, José A. Capitán and Susanna C. Manrubia, Physical Review Letters **106**, 028104-1–4 (2011).

53. **Species assembly in model ecosystems, II: Results from the assembly process**, José A. Capitán, José A. Cuesta and Jordi Bascompte, Journal of Theoretical Biology **269**, 344–355 (2011).

54. **Species assembly in model ecosystems, I: Analysis of the population model and the invasion dynamics**, José A. Capitán and José A. Cuesta, Journal of Theoretical Biology **269**, 330–343 (2011).

55. **Social experiments in the mesoscale: Humans playing a spatial Prisoner's Dilemma**, Jelena Grujić, Constanza Fosco, Lourdes Araujo, José A. Cuesta and Angel Sánchez, PLoS ONE **5**, e13749-1–9 (2010).

56. **Catastrophic regime shifts in model ecological communities are true phase transitions**, José A. Capitán and José A. Cuesta, Journal of Statistical Mechanics: Theory and Experiment **10**, P10003-1–19 (2010).

57. **Symmetries shape the current in ratchets induced by a bi-harmonic force**, Niurka R. Quintero, José A. Cuesta and Renato Alvarez-Nodarse, Physical Review E **81**, 030102R-1–4 (2010).

58. **Statistical mechanics of ecosystem assembly**, José A. Capitán, José A. Cuesta and Jordi Bascompte, Physical Review Letters 103, 168101-4 (2009). (Selected for the December 15, 2009 issue of *Virtual Journal of Biological Physics Research*.)

59. **The effect of spatial structure on the emergence of cooperation**, Carlos P. Roca, José A. Cuesta and Angel Sánchez, Physical Review E **80**, 046106-1–16 (2009). (Selected for the December 15, 2009 issue of *Virtual Journal of Biological Physics Research*.)

60. **Phase diagram of a two-dimensional lattice gas model of a ramp system**, Noé G. Almarza, José A. Capitán, José A. Cuesta and Enrique Lomba, Journal of Chemical Physics **131**, 124506-1–12 (2009).

61. **Imperfect imitation can enhance cooperation**, Carlos P. Roca, José A. Cuesta and Angel Sánchez, Europhysics Letters **87**, 47005-1–5 (2009).

62. **Promotion of cooperation on networks? The myopic best response case** Carlos P. Roca, José A. Cuesta and Angel Sánchez, European Physical Journal B **71**, 587–595 (2009).

63. **The shared reward dilemma on structured populations**, R. Jiménez, J. A. Cuesta, H. Lugo and A. Sánchez, Journal of Economic Interaction and Coordination **4**, 183–193 (2009).

64. **Density functional theories of hard particle systems** Pedro Tarazona, José A. Cuesta and Yuri Martínez-Ratón, Lecture Notes in Physics **753**, 247–341 (2008).

65. **Phase behavior of parallel hard cylinders**, José A. Capitán, Yuri Martínez-Ratón and José A. Cuesta, Journal of Chemical Physics **128**, 194901-1–8 (2008).

66. **Fundamental-measure density functional for mixtures of parallel hard cylinders**, Yuri Martínez-Ratón, José A. Capitán and José A. Cuesta, Physical Review E **77**, 051205-1–9 (2008)

67. **Emergence and resilience of cooperation in the spatial Prisoner's Dilemma via a reward mechanism**, R. Jiménez, H. Lugo, J. A. Cuesta and A. Sánchez, Journal of Theoretical Biology **250**, 475–483 (2008).

68. **Fundamental-measure density functional for the fluid of aligned hard hexagons: New insights in fundamental measure theory**, J. A. Capitán and J. A. Cuesta, Physical Review E **76**, 011403–9 (2007).

69. **The importance of selection rate in the evolution of cooperation**, C. P. Roca, J. A. Cuesta and A. Sánchez, European Physical Journal Special Topics **143**, 51–58 (2007).

70. **First-principles derivation of density functional formalism for quenched-annealed systems**, L. Lafuente and J. A. Cuesta, Physical Review E **74**, 041502–9 (2006).

71. **Time scales in evolutionary dynamics**, C. P. Roca, J. A. Cuesta and A. Sánchez, Physical Review Letters **97**, 159701–4 (2006).

72. **A resistivity model for electrophoretic deposition**, B. Ferrari, R. Moreno and J. A. Cuesta, Key Engineering Materials **314**, 175–180 (2006).

73. **Genetic algorithm for burst detection and activity tracking in event streams**, L. Araujo, J. A. Cuesta and J. J. Merelo, PPSN IX, Lecture Notes in Computer Science **4193**, 302–311 (Springer-Verlag, 2006).

74. **Lattice density functional for colloid-polymer mixtures: Comparison of two fundamental measure theories**, J. A. Cuesta, L. Lafuente and M. Schmidt, Physical Review E **72**, 031405–9 (2005).

75. **Cluster density functional theory for lattice models based on the theory of Möbius functions**, L. Lafuente and J. A. Cuesta, Journal of Physics A: Mathematical and General **38**, 7461–7482 (2005).

76. **Altruism may arise from individual selection**, A. Sánchez and J. A. Cuesta, Journal of Theoretical Biology **235**, 233–240 (2005).

77. **Density functional theory for general hard-core lattice gases**, L. Lafuente and J. A. Cuesta, Physical Review Letters **93**, 130603–4 (2004).

78. **General nonexistence theorem for phase transitions in one-dimensional systems with short range interactions, and physical examples of such transitions**, J. A. Cuesta and A. Sánchez, Journal of Statistical Physics **115**, 869–893 (2004).

79. **Density functional theory for nearest-neighbor exclusion lattice gasses in two and three dimensions**, L. Lafuente and J. A. Cuesta, Physical Review E **68**, 066120–12 (2003).

80. **Instabilities in complex mixtures with a large number of components**, Richard P. Sear and José A. Cuesta, Physical Review Letters **91**, 245701–4 (2003). (Selected for the December 15, 2003 issue of *Virtual Journal of Biological Physics Research*.)

81. **Phase behavior of hard-core lattice gasses: A Fundamental Measure approach**, L. Lafuente and J. A. Cuesta, Journal of Chemical Physics **119**, 10832–10843 (2003).

82. **Freezing in the presence of disorder: A lattice study**, Matthias Schmidt, Luis Lafuente and José A. Cuesta, Journal of Physics: Condensed Matter **15**, 4695–4708 (2003).

83. **Overcomplete free energy functional for $D = 1$ particle systems with next neighbor interactions**, C. Tutschka and J. A. Cuesta, Journal of Statistical Physics **111**, 1125–1148 (2003).

84. **Phase diagrams of Zwanzig models: The effect of polydispersity**, Yuri Martínez-Ratón and José A. Cuesta, Journal of Chemical Physics **118**, 10164–10173 (2003).

85. **Apparent phase transitions in finite one-dimensional sine-Gordon lattices**, S. Ares, J. A. Cuesta, A. Sánchez and R. Toral, Physical Review E **67**, 046108–6 (2003).

86. **Enhancement by polydispersity of the biaxial nematic phase in a mixture of hard rods and plates**, Y. Martínez-Ratón and J. A. Cuesta, Physical Review Letters **89** 185701–4 (2002).

87. **Elusiveness of fluid-fluid demixing in additive hard-core mixtures**, L. Lafuente and J. A. Cuesta, Physical Review Letters **89** 145701–4 (2002).

88. **A theorem on the absence of phase transitions in one-dimensional growth models with on-site potentials**, J. A. Cuesta and A. Sánchez, Journal of Physics A: Mathematical and General **35**, 2373–2377 (2002).

89. **Phase transition analogous to Bose-Einstein condensation in systems of noninteracting surfactant aggregates**, J. A. Cuesta and R. P. Sear, Physical Review E **65**, 031406-13 (2002).

90. **Continuous phase transition in polydisperse hard-sphere mixture**, R. Blaak and J. A. Cuesta, Journal of Chemical Physics, **115**, 963–969 (2001).

91. **What do emulsification failure and Bose-Einstein condensation have in common?**, R. P. Sear and J. A. Cuesta, Europhysics Letters, **55**, 451–457 (2001).

92. **Phase equilibria in the polydisperse Zwanzig model of hard rods**, N. Clarke, J. A. Cuesta, R. Sear, P. Sollich and A. Speranza, Journal of Chemical Physics **113**, 5817–5829 (2000).

93. **Phase behaviour of very asymmetric binary mixtures**, J. A. Cuesta and Y. Martínez-Ratón, Journal of Physics Condensed Matter **12A**, 109–114 (2000).

94. **Density functional approach to depletion interaction**, J. A. Cuesta and Y. Martínez-Ratón, Journal of Physics Condensed Matter **11**, 10107–10118 (1999).

95. **Fundamental measure theory for mixtures of parallel hard cubes. II. Phase behaviour of the one-component fluid and of the binary mixture**, Y. Martínez-Ratón and J. A. Cuesta, Journal of Chemical Physics **111**, 317–327 (1999).

96. **Demixing in a single-peak distributed polydisperse mixture of hard spheres**, J. A. Cuesta, Europhysics Letters **46**, 197–203 (1999).

97. **Phase transitions in simple models of rod-like and disc-like micelles**, J. A. Cuesta and R.P. Sear, European Physical Journal B, **8**, 233–244 (1999).

98. **Optimal packing in polydisperse hard-sphere fluids**, Junfang Zhang, Ronald Blaak, Emmanuel Trizak, José A. Cuesta and Daan Frenkel, Journal of Chemical Physics **110**, 5318–5324 (1999).

99. **Analytical solution to a non-separable interaction model for a one-dimensional fluid of anisotropic molecules near a hard wall**, B. Martínez-Haya, J. M. Pastor, and J. A. Cuesta, Physical Review E **59**, 1957-1967 (1999).

100. **Phase behaviour of additive binary mixtures in the limit of infinite asymmetry**, Y. Martínez-Ratón and J. A. Cuesta, Physical Review E **58**, R4080-R4083 (1998).

101. **Fundamental measure theory for mixtures of parallel hard cubes. I. General formalism**, J. A. Cuesta and Y. Martínez-Ratón, Journal of Chemical Physics **107**, 6379–6389 (1997).

102. **Dimensional crossover of the fundamental-measure functional for parallel hard cubes**, J. A. Cuesta and Y. Martínez-Ratón, Physical Review Letters **78**, 3681–3684 (1997).

103. **Fluid Mixtures of Parallel Hard Cubes**, J. A. Cuesta, Physical Review Letters **76**, 3742–3745 (1996).

104. **Self-consistent analysis of electric field effects on Si δ-doped GaAs**, J. A. Cuesta, A. Sánchez and F. Domínguez-Adame, Semiconductor Science and Technology **10**, 1303–1309 (1995).

105. **Domain wall kinetics and tunneling-induced instabilities in superlattices**, S. H. Kwok, T. B. Norris, L. L. Bonilla, J. Galán, J. A. Cuesta, F. C. Martínez, J. M. Molera, H. T. Grahn, K. Ploog and R. Merlin, Physical Review B **51**, 10171–10174 (1995).

106. **Random versus deterministic two-dimensional traffic flow models**, F. C. Martínez, J. A. Cuesta, J. M. Molera and R. Brito, Physical Review E **51**, R835–R838 (1995).

107. **Theoretical approach to two-dimensional traffic flow models**, J. M. Molera, F. C. Martínez, J. A. Cuesta and R. Brito, Physical Review E **51**, 175–187 (1995).

108. **Dynamics of electric field domains and oscillations of the photocurrent in a simple superlattice model**, L. L. Bonilla, J. Galán, J. A. Cuesta, F. C. Martínez and J. M. Molera, Physical Review B **50**, 8644–8658 (1994).

109. **Phase transitions in two-dimensional traffic flow models**, J. A. Cuesta, F. C. Martínez, J. M. Molera and A. Sánchez, Physical Review E **48**, R4175-R4178 (1993).

110. **On One-dimensional Fluids of Anisotropic Molecules Near a Hard Wall**, F. S. Ferrero, B. Martínez-Haya, J. M. Pastor, J. A. Cuesta and C. F. Tejero, Molecular Physics **79**, 709–720 (1993).

111. **Hard-sphere and Hard-disk Freezing from the Differential Formulation of the Generalized Effective Liquid Approximation**, C. F. Tejero and J. A. Cuesta, Physical Review E **47**, 490–495 (1993).

112. **Isotropic-Nematic Transition of *D*-dimensional Hard Convex Bodies within the Effective-Liquid Approach**, J. A. Cuesta, C. F. Tejero and M. Baus, Physical Review A **45**, 7395–7412 (1992).

113. **Effective Liquid Approach to the Generalized Onsager Theories of the Isotropic-Nematic Transition of Hard Convex Bodies**, J. A. Cuesta, C. F. Tejero, H. Xu and M. Baus, Physical Review A **44**, 5306–5309 (1991).

114. **Second Virial Coefficient of the *D*-dimensional Hard Gaussian Overlap Model**, J. A. Cuesta and C. F. Tejero, Physics Letters A **152**, 15–18 (1991).

115. **Direct Correlation Function of a One-dimensional Nematic Fluid**, C. F. Tejero and J. A. Cuesta, Physica A **168**, 942–956 (1990).

116. **Monte Carlo Simulation of Two-Dimensional Hard Ellipses**, J. A. Cuesta and D. Frenkel, Physical Review A **42**, 2126–2136 (1990).

117. **Isotropic-Nematic Transition of Hard Ellipses**, J. A. Cuesta, C. F. Tejero and M. Baus, Physical Review A **39**, 6498–6506 (1989).

118. **Long-ranged Inverse Two-spin Correlations in One-dimensional Potts Lattices**, C. F. Tejero, J. A. Cuesta and R. Brito, Journal of Statistical Physics **56**, 33–42 (1989).

119. **Absence of Dissipative Solutions of the Schrödinger and Klein-Gordon Equations with Logarithmic Nonlinearity**, R. Brito, J. A. Cuesta and A. Fernández-Rañada, Physics Letters A, **128**, 360–366 (1988).

INVITED TALKS

---

1. **Neutral evolution and the acceleration of the molecular clock**, José A. Cuesta and Susanna Manrubia, plenary talk at "BIFI VII National Conference", Zaragoza, 4–6 de febrero de 2015.

2. **Evolution on genotype networks leads to phenotypic entrapment**, Susanna Manrubia y José A. Cuesta, "Net-Works 2013", El Escorial, Madrid, December 12–13, 2013.

3. **Evolution on genotype networks leads to phenotypic entrapment**, Susanna Manrubia and José A. Cuesta, plenary talk at "XXXIII Dynamics Days Europe", Madrid, June 3–7, 2013.

4. **Human behavior in networks: what experiments tell us**, José A. Cuesta, "International Symposium Economy in a complex world: networks, agents and people", Fundación Ramón Areces, Madrid, September 27–28, 2012.

5. **There is no such thing as network reciprocity when humans play a Prisoner's Dilemma**, Carlos Gracia-Lázaro, Alfonso Tarancón, José A. Cuesta, Yamir Moreno and Angel Sánchez, "Physics of Competition and Conflict Closing Meeting", Galway, Ireland, July 11–13, 2012.

6. **Network reciprocity, large-scale experiments and the Prisoner's Dilemma: the last word**, Carlos Gracia-Lázaro, Alfonso Tarancón, José A. Cuesta, Yamir Moreno and Angel Sánchez, "International Workshop on Agent-based models and complex techno-social systems", Zürich, Switzerland, July 2–4, 2012.

7. **How reciprocity renders networks irrelevant for cooperation in social dilemmas**, Carlos Gracia-Lázaro, Alfonso Tarancón, José A. Cuesta, Yamir Moreno and Angel Sánchez, "Workshop on Games, Networks and Markets", Microsoft Research Cambridge, Cambridge, UK, June 28–29, 2012.

8. **Realistic human behavior and prisoner's dilemma on networks**, José A. Cuesta, Carlos Gracia-Lázaro, Yamir Moreno, Angel Sánchez and Alfonso Tarancón, "International Meeting on Behavioral and Experimental Economics", Castellón, Spain, March 8–10, 2012.

9. **Human behavior on networks: lessons and perspectives from game theory**, Angel Sánchez, Jelena Grujić, Constanza Fosco, Lourdes Araújo and José A. Cuesta, "Φ-SOE (División de Física de Sistemas Socioeconómicos de la Sociedad Alemana de Física)", Dresden (Germany), March 13–18, 2011.

10. **Redes neutras: la evolución invisible**, José A. Cuesta, "Evolución: de la observación del cambio a la formalización de los mecanismos", Centro de Astrobiología (INTA-CSIC), Torrejón de Ardoz, Madrid (Spain), October 6–7, 2010.

11. **Huge progeny production during the transient of a quasispecies model of viral infection, reproduction and mutation**, José A. Cuesta, *Plenaria talk* in "Mathematical Models of Addictivie Behaviour, Medicine & Engineering 2010", Valencia (Spain), September 8–10, 2010.

12. **On the emergence of cooperation in social and biological systems**, José A. Cuesta, Minisymposium "Game Theory and Optimization in Cancer Therapy and Social Issues", "Emerging Topics in Dynamical Systems and Partial Differential Equations" (DSPDEs'10), Barcelona (Spain), May 31–July 4, 2010.

13. **Evolutionary game theory on graphs, network reciprocity and emergence of cooperation**, Ángel Sánchez, Carlos P. Roca and José A. Cuesta, "Evolution of Cooperation – Models and Theories", Laxenburg (Austria), September 15–18, 2009.

14. **Matemáticas de la evolución**, José A. Cuesta, "Procesos estocásticos en Física, Biología y Ciencias Sociales", Carmona, Sevilla (Spain), February 12–14, 2009.

15. **Promotion of cooperation in networks? The best response case**, Carlos P. Roca, José A. Cuesta y Angel Sánchez, "The Physics Approach To Risk: Agent-Based Models and Networks", Zurich (Suiza), October 27–29, 2008.

16. **Game theory**, José A. Cuesta, "SIMUMAT Summer School 2007", Castro Urdiales (Spain), July 9–13, 2007.

17. **Density functional theory for fluids in porous media**, José A. Cuesta, "Workshop on Theory and Computer Simulation of Inhomogeneous Fluids", Madrid (Spain), May 16–18, 2007.

18. **Teoría de juegos**, José A. Cuesta, Postgraduate Schoold "Econosociofísica: aplicaciones de la física estadística y no-lineal a la economía y las ciencias sociales", Barcelona (Spain), February 12–16, 2007.

19. **Teoría de Juegos Evolutiva**, José A. Cuesta, II Jornada de Biología Cuantitativa, Madrid (Spain), March 24, 2006.

20. **The importance of time scales in evolutionary game theory**, Angel Sánchez, Carlos P. Roca and José A. Cuesta, "IV Meeting on Nonlinear Dynamics of Spatio-Temporal Selforganization" Barcelona, February 1–3, 2006.

21. **How random is life?**, José A. Cuesta, Joint Madrid–Bayreuth Seminar "Non-equilibrum Phenomena and Phase Transitions in Complex Systems", Bayreuth (Germany), September 28–October 2, 2004.

22. **Individual selection, strong reciprocity and human altruism**, Angel Sánchez and José A. Cuesta, Workshop "Control in games and ratchets", Toledo (Spain), April 29–May 1, 2004.

23. **Introduction to polydispersity**, Carlos Rascón, José A. Cuesta and Yuri Martínez-Ratón, Joint Madrid–Bayreuth Seminar "Non-equilibrum Phenomena and Phase Transitions in Complex Systems", Ávila (Spain), September 24–28, 2002.

24. **Phase behaviour of very asymmetric binary mixtures**, EPS 4th Liquid Matter Conference, Granada (Spain), July 3–7, 1999.

25. **Density functional approach to depletion interaction**, José A. Cuesta, CECAM workshop on "Effective interactions and phase transitions in colloidal suspensions", Lyon (France), June 28–30, 1999.

THESIS ADVISED

---

1. Pablo Catalán, **Models in molecular evolution: the case of toyLIFE**, 24-03-2017. Mark: Cum Laude. Awarded an excellence award, 18-12-2017.

2. Jelena Grujić, **Models of social behaviour based on game theory**, 21-09-2012. Mark: Cum laude. Co-advisor: Dr. Ángel Sánchez Sánchez.

3. José Ángel Capitán, **Self-organization in Biology: From quasispecies to ecosystems**, 12-22-2010. Mark: Cum laude. Awarded an excellence award, 11-18-2011.

4. Carlos P. Roca, **Cooperation in Evolutionary Game Theory: Effects of Time and Structure**, 09-25-2009. Mark: Cum laude. Co-advisor: Anxo Sánchez.

5. Luis Lafuente, **Density functionals for lattice models**, 06-25-2004. Mark: Cum laude. Awarded an excellence award, 10-17-2007.

6. Yuri Martínez-Ratón, **Phase transitions in complex fluids**, 12-21-1998. Mark: Cum laude. Co-advisor: Luis Mederos.

FUNDED PROJECTS

AS PRINCIPAL INVESTIGATOR

1. **Joint Action Towards Digital Transformation (JANO): Probabilistic Design.** Consorcio de Investigación Empresarial Nacional (CIEN), CDTI vía contrato artículo 83 con Siemens-Gamesa. 01/10/2019–31/07/2022. 253.864,71 € .

2. **Social and Biological Complexity (BASIC).** Ministerio de Ciencia, Innovación y Universidades (PGC2018-098186-B-I00). 2019–2022. 102 300 € .

3. **Variación, replicación y adaptación en sistemas evolutivos (VARIANCE).** Ministerio de Economía y Competitividad (FIS2015-64349-P). 2016–2018. 59 290 € .

4. **Modelando la construcción de comunidades ecológicas.** Ministerio de Economía y Competitividad, Programa "Salvador de Madariaga" (PRX12/00124). 01/06/2013–31/08/2013. 10 700 € .

5. **Procesos dinámicos evolutivos: virus, ecosistemas y comportamientos sociales (PRODIEVO).** Ministerio de Ciencia e Innovación (FIS2011-22449). 2012–2014. 39 930 € .

6. **Modelling and simulation of complex systems (MODELICO).** Comunidad de Madrid, Spain (S2009/ESP-1691). Coordinator: Enrique Lomba García (José A. Cuesta is the P.I. of the GISC-UC3M node). 2010–2013. 816 500 € .

7. **Workshop "150 years after Darwin: From molecular evolution to language".** Universidad Carlos III de Madrid, Spain. 2009. 2 500 € .

8. **Workshop "150 years after Darwin: From molecular evolution to language".** Ministerio de Ciencia e Innovación, Spain (FIS2008-05369-E/FIS). 2009. 5 000 € .

9. **Workshop "150 years after Darwin: From molecular evolution to language".** Programme "Trends in Complex Systems", Max Planck Institute for Physics of Complex Systems (MPIPKS, Dresden) and Instituto de Física Interdisciplinar de Sistemas Complejos (IFISC-CSIC). co-PIs: Susanna Manrubia and Alan McKane. 2009. 13 500 € .

10. **Modelling and numerical simulation of inhomogeneous systems in condensed matter (MOSSNOHO).** Comunidad de Madrid, Spain (S-0505/ESP/000299). Coordinator: Guillermo Navascués Palacio (José A. Cuesta is the P.I. of the UC3M node). 2006–2009. 542 900 € .

11. **Confinement and disorder in complex fluids.** Ministerio de Ciencia y Tecnología, Spain (BFM2003–0180). 2004–2006. 36 400 € .

12. **Study of polydispersity in simple models of complex fluids through fundamental-measure-based density functionals.** Ministerio de Ciencia y Tecnología, Spain (BFM2000–0004). 2001–2003. 2 464 000 Spanish pesetas (approx. 14 800€).

13. **Stability of simple models of emulsions and other polydisperse mixtures.** Acción integrada con el Reino Unido (HB1998–0008). Ministerio de Ciencia y Tecnología, Spain. 1999–2001. 570 000 Spanish pesetas (approx. 3 400€).

14. **New approach to discrete orientation models of liquid crystals.** Ministerio de Educación y Ciencia (PR95–558). 04-01-1997–06-30-1997. 825 000 Spanish pesetas (approx. 5 000€).

AS PARTICIPANT

1. **Bridging the gap: from individual behaviour to the socio-technical man (IBSEN).** European Commission, H2020, FET Open (ref. 662725). P.I.: Angel Sánchez Sánchez. 2015–2018. 2.663.238,00 € .

2. **Resilience of Networks in Ecology and Economy (RESINEE).** ERA-NET on Complexity. P.I.: Angel Sánchez Sánchez. 2011–2012. 500 000 € .

3. **Dynamics and Collective Phenomena of Socioeconomic Systems.** Ministerio de Ciencia e Innovación, Spain (FIS2008-01155-E). P.I.: Angel Sánchez Sánchez. 2008–2009. 12 000 € .

4. **Stochastic Models in Physics, Biology, and Social Sciences.** Ministerio de Ciencia e Innovación, Spain (FIS2008-01820-E/FIS). P.I.: Renato Álvarez. 2009. 3 000 € .

5. **Diffusion optimization in social networks.** IBM. P.I.: Esteban Moro. 2007–2009. 50 000 € .

6. **Modelling, simulation and analysis of complex systems (MOSAICO).** Ministerio de Educación y Ciencia (FIS2006-01485). P.I.: Angel Sánchez Sánchez & Juan M. R. Parrondo. 2006–2011. 474 320 € .

7. **The proteome as a multicomponent mixture.** Fundación *The Wellcome Trust,* U.K. (069242/Z/02/Z). P.I.: Richard P. Sear. 2002–2004. £12 210.

8. **Segregation phenomena in complex fluids and growth processes.** Ministerio de Educación y Ciencia (PB96–0119). P.I.: Angel Sánchez. 1997–2000. 2 700 000 Spanish pesetas (approx. 16 200€).

9. **Nonlinear spatio-Temporal structures in statistical mechannics: oscilator systems, semiconductors and superconductor Josephson junctions.** Ministerio de Educación y Ciencia (PB92–0248). P.I.: Luis L. Bonilla. 1993–1996. 5 500 000 Spanish pesetas (approx. 33 000€).

10. **Nonlinear spatio-temporal structures in semiconductors, fluids, and oscillator ensembles.** Mobility and Human Resources Program of the E.U. (ERBCHRXCT930413). P.I.: Luis L. Bonilla. 1993–1995. 300 000€ .

11. **Phase diagrams and structural transitions in colloidal systems.** Ministerio de Educación y Ciencia (PB91–0378). P.I.: Carlos F. Tejero. 1992–1995. 4 150 000 Spanish pesetas (approx. 24 900€).

12. **Phase transitions (liquid crystals and disordered systems) and stability in stochastic dynamical systems.** Ministerio de Educación y Ciencia (PB88–0140). P.I.: Carlos F. Tejero. 1989–1991. 2.750.000 Spanish pesetas (approx. 16 500€).

13. **Analytic and numerical study of some problems in Statistical Mechanics: phases and interfaces in equilibrium and fluctuations in dynamical systems.** Ministerio de Educación y Ciencia (PB85–0024). P.I.: Carlos F. Tejero. 1986–1989. 2.000.000 Spanish pesetas (approx. 12 000€).

OTHER

- Co-Editor of Europhysics Letters. Since April 1, 2015.
- Associate Editor of BMC Evolutionary Biology. June 2012-September 2019.
- Associate researcher of the York Centre for Complex Systems Analysis (YCCSA), The University of York (UK). Since 01-09-2013.
- Member of the Institute for Biocomputation and Physics of Complex Systems (BIFI). Since 03-06-2012.
- Member of the scientific commitee of the conference FisEs, 09-24-2003 – 03-29-2008.
- Member of the board of the Statistical and Nonlinear group of the Spanish Royal Society of Physics. Since 07-06-2006 – 25-07-2017.
- Evaluator of the Spanish Research Agency (ANEP), the Andalucian Research Agency (AECAU), and the Chilean Research Agency (FONDECYT).
- Referee of Physical Review Letters, Physical Review E, PLoS ONE, Europhysics Letters, Journal of Chemical Physics, Journal of Physics: Condensed Matter, Journal of Physics A: Mathematical and General, Molecular Physics, Physica A, Physica D, Central European Journal of Physics, International Journal of Modern Physics C, European Journal of Physics B, and Journal of Biological Physics.
- Director of the postgraduate program "Physics of Complex Systems", 10-17-2002 – 01-21-2005.
- Excellence award in M.Sc. studies, Universidad Complutense de Madrid, 1987.
- Excellence award in Ph.D. studies, Universidad Complutense de Madrid, 1992.
- Excellence award in research, Universidad Carlos III de Madrid, years 2007–2022.
- Languages: native in Spanish, fluent in English, fair in French.