

CURRICULUM VITAE

Emilio Hernández-García

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27 November 2023

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<http://ifisc.uib-csic.es/users/emilio/curri/currieng.html>

PERSONAL DATA

FAMILY NAMES: Hernández-García
FIRST NAME: Emilio

GENDER: Male
BIRTH DATE: 14/April/1963

ORGANISM: Spanish Research Council (C.S.I.C.)
CENTER: Institute for Cross-Disciplinary Physics and Complex Systems (IFISC)
(Joint Research Center CSIC-University of the Balearic Islands)
DEPARTMENT: Complex Systems
POSITION: Research Professor, since 22 October de 2001.
POSTAL ADDRESS:

IFISC - Instituto de Física Interdisciplinar y Sistemas Complejos
CSIC-Universitat de les Illes Balears
E-07122- Palma de Mallorca (Spain).

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Also, September 2015-September 2020, and September 2021- present: Profesor Asociado 1h. Physics Department, University of the Balearic Islands.

RESEARCH LINES

Nonlinear Dynamics, Complex Systems, Statistical Physics, Spatiotemporal Chaos, Pattern Formation, Lagrangian Chaos and Transport in Fluids, Applications to Optical Systems, Ocean Dynamics, and Biological Modelling.

ACADEMIC DEGREES

‘Licenciado’ in Physics, University of Barcelona, June 1986.

PhD in Physics, University of the Balearic Islands, February 1990.
Thesis Advisor: Prof. Maxi San Miguel.

PREVIOUS POSITIONS:

1984-85	Collaboration fellowship. Theoretical Physics Department, University of Barcelona.
January 1987-September 1989	PFPI predoctoral grant. Physics Department, University of the Balearic Islands
October 1989-September 1991	Teaching Assistant. Physics Department, University of the Balearic Islands.
September 1990-September 1991	Research Associate. Center for the Physics of Materials and Department of Physics, McGill University, Montreal, Canada.
October 1991-June 1993	Associate Professor of Condensed Matter Physics (interino). Physics Department, University of the Balearic Islands.
June 1993-October 2001	Associate Professor of Condensed Matter Physics. Physics Department, University of the Balearic Islands.
October 2001-June 2007	CSIC Research Professor. Mediterranean Institute for Advanced Studies (IMEDEA) Department of Cross-Disciplinary Physics CSIC-University of the Balearic Islands.

PARTICIPATION IN RESEARCH PROJECTS

1. *Aplicación de la metodología de los procesos estocásticos al estudio de fluctuaciones y transiciones en sistemas físicos.*
University of the Balearic Islands, University of Barcelona, Universidad de Cantabria.
Project CAICyT 361/84. 1985-1987.
Principal Investigator : M. San Miguel.
2. *Cinética de transiciones de fase.*
University of the Balearic Islands, University of Barcelona, Temple University (Philadelphia), Rutgers University (New Jersey), Courant Institute (New York).
Join Spain-USA Committee, CCB 8402 025. 1985-1987.
Spanish Principal Researcher: J. Marro
3. Collaboration in *Dynamics of Nonlinear Optical Systems.*
Project ST2J-0187-X-X(TT), CEE. 1987-1989.
Spanish Principal Researcher: M. San Miguel.
4. *Mecánica Estadística de sistemas fuera del equilibrio: Dinámica de transiciones y otros procesos dinámicos.* University of the Balearic Islands
Project PB86-0534, DGICyT. 1987-1990.
Principal Investigator : M. San Miguel.
5. *Transient dynamics and pattern formation.*
University of the Balearic Islands, Florida State University, McGill University (Montreal).
Project CRG 890482, NATO Scientific Office, Program *Patterns, Order, and Chaos*. 1989-1993.
Spanish Principal Researcher: M. San Miguel.

6. Proyecto de Investigación Conjunta University of the Balearic Islands, Universidad de Cantabria, Centro Atómico Bariloche (Argentina), Universidad de Córdoba (Argentina).
Programa de Cooperación con Iberoamérica, Ministerio de Educación y Ciencia.
1989-1990.
Spanish Principal Researcher: M. San Miguel.
7. *Complexity and Chaos in Quantum Optics*.
Project Science 89300424, CEE. 1989-1991.
Principal Investigator University of the Balearic Islands: M. San Miguel.
8. *Problemas dinámicos en la formación de estructuras espaciales en sistemas complejos*.
University of the Balearic Islands
Project PB89-0424, DGICyT. 1990-1993.
Principal Investigator : M. San Miguel.
9. *Complexity and Chaos in Quantum Optics*.
Project Science SC1*CT90-0478, CEE. 1991-1993.
Principal Investigator University of the Balearic Islands: M. San Miguel.
10. Proyecto de Investigación Conjunta Universidad de Cantabria, University of the Balearic Islands, Centro Atómico Bariloche (Argentina), Universidad de Córdoba (Argentina).
Programa de Cooperación con Iberoamérica, Ministerio de Educación y Ciencia.
1991-1993.
Spanish Principal Researcher: M. Rodríguez.
11. *Non-Classical Light*.
Project ERB4050PL920887, Program *Human Capital and Mobility*, CEE
(15 participant institutions). 1993-1995.
Principal Investigator University of the Balearic Islands: M. San Miguel.
12. *Dinámica espacio-temporal de sistemas fuera del equilibrio*.
University of the Balearic Islands, CSIC (IEA, Baleares)
Project PB92-0046-C02-02, DGICyT. 1993-1994.
Principal Investigator University of the Balearic Islands: O. Piro.
13. *Modelización, simulación y caracterización de dispositivos para comunicaciones ópticas por fibras*.
University of the Balearic Islands, Universidad de Cantabria, CSIC (IEM, Madrid),
Universidad Politécnica de Madrid.
Project TIC 93-0744-C04-01, CICyT. 1993-1994.
Principal Investigator University of the Balearic Islands: M. San Miguel.
14. *Gigahertz and picosecond optics in semiconductor laser devices*.
Project CHRX-CT94-0594, Program *Human Capital and Mobility*, European Union.
(6 participant institutions). 1994-1996.
Principal Investigator University of the Balearic Islands: M. San Miguel.
15. *Física estadística, fenómenos no-lineales, y sus aplicaciones*.
University of the Balearic Islands.
Project PB94-1167, DGICyT. 1995-1999.
Principal Investigator : M. San Miguel.
16. *Fluctuaciones, caos, y leyes de escala en la dinámica de sistemas no-lineales*.
University of the Balearic Islands.
Project PB94-1172, DGICyT. 1995-1997.
Principal Investigator : R. Toral.
17. *Caracterización y Dinámica de estructuras oceanográficas coherentes físicas y biológicas*.
Instituto Mediterráneo de Estudios Avanzados (IMEDEA), Instituto de Ciencias del Mar de Barcelona.
Project MAR95-1861, CICyT. 1996-1998.
Principal Investigator : **Emilio Hernández-García**.
18. *Quantum Structures*
European TRM Network ERB4061 PL95-1260, European Union
(7 participant institutions). 1996-1999.
Principal Investigator University of the Balearic Islands: M. San Miguel.

19. *Pattern formation, defects, and fronts in nonequilibrium systems.*
Integrated Action Spain-Germany(DGICYT) HA 1995-0112. 1996.
Principal Investigator University of the Balearic Islands: M. San Miguel.
20. Ayuda de infraestructura IN97-0457 del Programa Nacional de Ciencia y Tecnología Marinas (CI-CYT) para la adquisición de un ordenador multiprocesador.
Instituto Mediterráneo de Estudios Avanzados (IMEDEA). 1998.
Principal Investigator : **Emilio Hernández-García.**
21. *Dinàmiques no lineals d'autoorganització espai-temporal,*
Project 1997XT 00003, Program Ajut per al desenvolupament i consolidació de xarxes temàtiques de la Generalitat de Catalunya.
8 Instituciones Participantes. 1997-1999.
Principal Investigator : F. Sagués.
22. *Variabilidad oceánica de alta frecuencia y sus implicaciones en el transporte de propiedades físicas y biológicas.*
Instituto Mediterráneo de Estudios Avanzados (IMEDEA), Instituto de Ciencias del Mar de Barcelona.
Project MAR98-0840, CICyT. 1998-2001.
Principal Investigator : **Emilio Hernández-García.**
23. *Satellite-based Ocean Forecasting (SOFT).*
Project EVK3-2000-00561, Program *Energy, Environment, and Sustainable Development*, V Framework Program, European Union. 2001-2003.
5 participant institutions.
Coordinator: J. Tintoré.
24. *Quantum Imaging (QUANTIM).*
Project IST-2000-26019, Program *Information Society Technologies*, V Framework Program, European Union. 2001-2003. Principal Investigator IMEDEA: M. San Miguel.
25. *Cooperación y fenómenos no lineales en sistemas complejos extendidos (CONOCE).*
Instituto Mediterráneo de Estudios Avanzados (IMEDEA).
Project BFM2000-1108, Ministerio de Ciencia y Tecnología. 2001-2004.
Principal Investigator : M. San Miguel.
26. Xarxa Temàtica de *Dinàmiques no lineals d'autoorganització espai-temporal,*
Project 2000XT 0005. Direcció General de Recerca de la Generalitat de Catalunya.
8 participant institutions. 2001-2002.
Principal Investigator : J.M. Sancho.
27. *Procesos de transporte, campos de velocidades y análisis de estructuras oceánicas mediante imágenes de satélite (IMAGEN).*
Instituto Mediterráneo de Estudios Avanzados (IMEDEA)
Project REN2001-0802-C02-01/MAR, MCyT. 2001-2004.
Principal Investigator and Coordinator: **Emilio Hernández-García.**
28. *Grupo de investigación competitivo de Física Interdisciplinar.*
Subvención del Govern Balear (2002-2005).
Principal Investigator : M. San Miguel.
29. *EXISTENCE: The Network of Excellence for Complex Systems*
Network of Excellence IST-2001-32802, Subprogram FET (Future and Emerging Technologies).
Program Information Society Technologies, V Framework Program, European Union. 2002-2004.
Principal Investigator IMEDEA: M. San Miguel.
30. *Dinàmiques no lineals d'autoorganització espaciotemporal.* Xarxa temàtica de la Generalitat de Catalunya. (2003-2004). Principal Investigator IMEDEA: M. San Miguel.
31. *Dynamical systems approach to ocean transport.*
Integrated Action Spain-Germany(MCyT) HA 2003-0146. 2004-2006.
Principal Investigator : **Emilio Hernández-García.**

32. *Cooperación y fenómenos no lineales en sistemas complejos extendidos 2* (CONOCE2). Instituto Mediterráneo de Estudios Avanzados (IMEDEA). Project FIS2004-00953, Ministerio de Educación y Ciencia. 2004-2007. Principal Investigator : M. San Miguel.
33. *BIOSIM: Biosimulation, a new tool in drug development*. Network of Excellence (LSHB-CT-2004-005137), VI Framework Program, European Union. Priority 1.1 “Genomics and Biotechnology for Health” (2004-2009). Coordinator: Erik Mosekilde (Technical University of Denmark). Principal Investigator IMEDEA: R. Toral.
34. *Chemical or biologically interacting substances transported by chaotic flows*. Integrated Action Spain-Italy(MEC) HI2004-0144. 2005-2006. Principal Investigator : Cristóbal López.
35. *THRESHOLDS: Thresholds of environmental sustainability* Integrated Project (Contract 003933), VI Framework Program, European Union. Priority 6.3 “Global Change and Ecosystems” (2005-2008). Coordinator: C. Duarte (RRNN-IMEDEA). Responsible workpackage S2WP1 ‘Regime modelling’: **E. Hernández-García**.
36. *EUR-OCEANS: European Network of Excellence for Ocean Ecosystems analysis*. Network of Excellence (Contract 511106-2), VI Framework Program, European Union. Priority 6.3 “Global Change and Ecosystems” (2005-2008). Principal Investigator IMEDEA: C.M. Duarte.
37. *Dinàmiques no lineals d’autoorganització espaciotemporal* (Ref. 2004XT 00013). Xarxa temàtica del Departament d’Universitats, Recerca i Societat de la Informació de la Generalitat de Catalunya. (2005-2006). Principal Investigator Jordi García-Ojalvo. Principal Investigator IMEDEA: R. Toral.
38. *Grupo de investigación competitivo de Física Interdisciplinar* (Grupo de Excelencia Coherente). Subvención del Govern Balear (2006-2009). Principal Investigator : M. San Miguel.
39. *Ecological Diversity and Evolutionary Networks (EDEN)* Project 043251 (FP6-2005-NEST-Path-043251), Program *NEST: New and Emerging Science and Technologies*, Pathfinder Call in *Complexity*, VI Framework Program, European Union. 2007-2009. 4 participant institutions. Coordinator: **E. Hernández-García**.
40. *Herramientas avanzadas para el estudio de la dinámica oceánica y la gestión medio-ambiental (OCEANTECH)* Proyecto Intramural de Frontera (PIF06-059), CSIC (2007-2008). Principal Investigator Antonio M. Turiel (ICM). Principal Investigator IMEDEA: Cristóbal López
41. *Transport in chaotic environmental flows*. Integrated Action Spain-Hungary(MEC) HH2006-0031. 2007-2009. Principal Investigator : Cristóbal López.
42. *Física Interdisciplinar de Sistemas Complejos (FISICOS)*. IMEDEA/IFISC. Project FIS2007-60327 (CONSOLIDER C), Ministerio de Educación y Ciencia. 2007-2014. Principal Investigator : M. San Miguel.
43. Acción Complementaria *Ecological Diversity and Evolutionary Networks (EDEN)* FIS2007-29087-E. Ministerio de Educación y Ciencia. 2007-2010. Principal Investigator : **E. Hernández-García**.
44. *Cooperación y Emergencia en Sistemas Complejos (A/013666/07)*. Proyecto de Cooperación Internacional España-Argentina de la AECI, Ministerio de Asuntos Exteriores. 2007-2008. Principal Investigator Spain: H. Wio (IFCA).
45. *Cooperación y Emergencia en Sistemas Complejos (A/018685/08)*. Proyecto de Cooperación Internacional España-Argentina de la AECI, Ministerio de Asuntos Exteriores. 2008-2009. Principal Investigator Spain: H. Wio (IFCA).

46. Subvenció per incorporar personal investigador al sistema d'innovació de les Illes Balears. Govern de les Illes Balears. 2009-2011.
Principal Investigator : **E. Hernández-García**. Postdoc: Els Heinsalu.
47. Impact of Turbulence on Biological Dynamics (TurBiD). Proyecto Intramural Especial CSIC (200450E644). 2009-2012.
Principal Investigator : **E. Hernández-García**.
48. Genética paisagística duma lagoa costeira; uma abordagem empírica e de modelação usando a erva marinha *Zostera noltii* in Ria Formosa (PTDC/MAR/099887/2008).
Fundação para a Ciência e a Tecnologia (FCT, Portugal). 2010-2013.
Principal Investigator : Filipe Alberto (CCMAR, Faro).
49. *Grupo de investigación muy competitivo de Física Interdisciplinar*.
Subvención del Govern Balear (2011-2014).
Principal Investigator : M. San Miguel.
50. Learning about Interacting Networks in Climate (LINC). Marie Curie Initial Training Network 289447 (PITN-GA-2011-289447). VII Framework Program, European Union. 2011-2015.
Principal Investigator : Cristina Masoller (UPC). Principal Investigator IFISC: **Emilio Hernández-García**.
51. *Multilayer Spatiotemporal Generalized Networks (LASAGNE)*
Project FP7-ICT-2011-8 / 318132. Program *ICT-FET Proactive: Dynamics of Multi-Level Complex Systems*, VII Framework Program, European Union. 2012-2015.
Coordinator: Stefan Thurner (MUWien). Principal Investigator CSIC: **E. Hernández-García**.
52. *Complex Systems Physics: Information, Technology, Society and Ecology (INTENSE@COSYP)*.
Project FIS2012-30634, Ministerio de Economía y Competitividad. 2013-2015.
Principal Investigator : M. San Miguel.
53. *Estructuras Coherentes Lagrangianas en la dinámica del Océano (ESCOLA)*.
Project CTM2012-39025-C02-01, Ministerio de Economía y Competitividad. 2013-2015.
Principal Investigator : C. López.
54. *Hydrodynamic networks, population Genetics and oceanic Connectivity for the design of Marine Protected Areas in the Mediterranean Sea (HYDROGENCONNECT)*.
ENVIMED 2014 project (French MAE and Mediterranean Integrated Studies at Regional and Local Scales, MISTRALS). 2015-2016.
Principal Investigator : V. Rossi.
55. *Lagrangian studies of Oceanic Processes: connectivity patterns, barriers to transport and marine populations (LAOP)*.
Project CTM2015-66407-P, Ministerio de Economía y Competitividad. 2016-2018.
Principal Investigator : C. López.
56. *Emergent Social, Technical and Ecological Complex Systems (EsoTECoS)*.
Project FIS2015-63628-C2, Ministerio de Economía y Competitividad. 2016-2018.
Principal Investigator : P. Colet.
57. *Dense particle tracking of inertial and Lagrangian particles in isotropic turbulence flows (DTrack)*.
Project for the *EuHIT facility von Karman Flow Apparatus (GTF3)* at Göttingen Turbulence Facilities (GTF), Germany. 2016.
Principal Investigator : V. Pérez-Muñuzuri.
58. *INCT (Institutos Nacionais de Ciência e Tecnologia) in Interdisciplinary and Transdisciplinary Studies in Ecology and Evolution (IN-TREE)*.
Project of the CNPq, CAPES and FAPESB, Brazil. 2016-2022.
Coordinator: Charbel Niño El-Hani (Institute of Biology, Federal University of Bahia, Brazil).
59. *Sustainability of marine coastal ecosystems in the context of global change in the Mediterranean sea: modeling and simulations (SuMaEco)*.
Project RTI2018-095441-B-C22, Agencia Estatal de Investigación. 2019-2022.
Principal Investigator CSIC: D. Gomila, T. Sintès.

60. Climate Advanced Forecasting of sub-seasonal Extremes (CAFE). Marie Skłodowska-Curie Innovative Training Network 813844 (H2020-MSCA-ITN-2018-813844). H2020, European Union. 2019-2023.
Principal Investigator : Álvaro Corral (CRM). Principal Investigator CSIC: **Emilio Hernández-García**.
61. *Lagrangian transport of marine litter and microplastics in coastal waters: structures of transport and connectivity patterns (LAMARCA-SC)*.
Project PID2021-123352OB-C32, Agencia Estatal de Investigación. 2022-2026.
Principal Investigator : Cristóbal López, **Emilio Hernández-García**.
62. *SEagrass Diversity in the MEditerranean basin in a global change scenario: a machine learNing approach from saTellite images. (SEDIMENT)*.
Project TED2021-131836B-I00, Agencia Estatal de Investigación (Transición Ecológica y Digital 2021). 2022-2024
Principal Investigator : Tomàs Sintès, Manuel Matías.

PUBLICATIONS

Books

- Z. Neufeld and E. Hernández-García
Chemical and Biological Processes in Fluid Flows: A Dynamical Systems Approach.
Imperial College Press, 30 September 2009. Copyright 2010.
ISBN: 978-1-86094-699-8 / 1-86094-699-2 (ebook: 978-1-84816-178-8 / 1-84816-178-6)
- H.A. Dijkstra, E. Hernández-García, C. Masoller, and M. Barreiro
Networks in Climate
Cambridge University Press, February 2019
ISBN: 978-1-31627-575-7

Edited works

- S. Wiggins, A. M. Mancho, E. Hernández García, C. López, A. Turiel, and E. García Ladona, Editors.
Special Issue on *Nonlinear Processes in Oceanic and Atmospheric Flows*.
Nonlinear Processes in Geophysics, 2009-2010.
http://www.nonlin-processes-geophys.net/special_issue103.html
- A. M. Mancho, E. Hernández García, C. López, A. Turiel, S. Wiggins, J. Duan, and U. Feudel, Editors.
Special Issue on *Nonlinear dynamics in oceanic and atmospheric flows: theory and observations*.
Nonlinear Processes in Geophysics, 2013-2014.
http://www.nonlin-processes-geophys.net/special_issue147.html
- R.V. Donner, E. Hernández-García, E. Ser-Giacomi, Editors.
Focus Issue on *Complex network perspectives on flow systems*.
Chaos **27**, March 2017.
<http://dx.doi.org/10.1063/1.4979129>
- A. M. Mancho, E. Hernández-García, C. López, A. Turiel, S. Wiggins, and V. Pérez-Muñuzuri, Editors.
Special Issue on *Current perspectives in modelling, monitoring, and predicting geophysical fluid dynamics*.
Nonlinear Processes in Geophysics, 2017-2018.
http://www.nonlin-processes-geophys.net/special_issue860.html

Papers in Research Journals

1. E. Hernández-García, L. Pesquera, M.A. Rodríguez, M. San Miguel
First-passage time statistics: Processes driven by Poisson noise.
Physical Review **A 36**, 5774-5781 (1987)
2. M. Aguado, E. Hernández-García, M. San Miguel
Dye-laser fluctuations: Comparison of colored loss-noise and white gain-noise models.
Physical Review **A 38**, 5670-5677 (1988)
3. E. Hernández-García, L. Pesquera, M.A. Rodríguez, M. San Miguel
Random walk in dynamically disordered chains: Poisson white noise disorder.
Journal of Statistical Physics **55**, 1027-1052 (1989)
4. M.A. Rodríguez, E. Hernández-García, L. Pesquera, M. San Miguel
Diffusion in random chains: Perturbative expansion around the effective-medium approximation.
Physical Review **B 40**, 4212-4215 (1989). Rapid Communication.
5. E. Hernández-García, M.A. Rodríguez, M. San Miguel
Dynamic disorder, renewal, and anomalous diffusion.
Physical Review **B 40**, 9056-9060 (1989).

6. E. Hernández García, M.O. Cáceres, M. San Miguel
Characterizing strong disorder by the divergence of a diffusion time.
Physical Review **A 41** , 4562-4565 (1990). Rapid Communication.
7. E. Hernández-García, M.O. Cáceres
First-Passage Time statistics in disordered media.
Physical Review **A 42**, 4503-4518 (1990).
8. E. Hernández-García, M.A. Rodríguez, L. Pesquera, M. San Miguel
Transport Properties for Random Walks in disordered one-dimensional media:
Perturbative calculation around the effective-medium approximation.
Physical Review **B 42**, 10653-10672 (1990).
9. E. Hernández-García, R. Toral, M. San Miguel
Intensity correlation functions for the colored gain-noise model of dye lasers.
Physical Review **A 42**, 6823-6830 (1990).
10. J. Viñals, E. Hernández-García, R. Toral, M. San Miguel
Numerical study of the dynamical aspects of pattern selection in the stochastic
Swift-Hohenberg equation in one dimension.
Physical Review **A 44**, 1123-1133 (1991).
11. E. Hernández-García, N.B. Abraham, M. San Miguel, F. de Pasquale
Frequency selection and transient dynamics in single-mode lasers with optical
feedback.
Journal of Applied Physics **72**, 1225-1236 (1992).
12. E. Hernández-García, M. Grant
Fluctuations and overlap distributions in the dynamics of first-order phase transitions.
Journal of Physics **A 25**, L1355-L1362 (1992).
13. E. Hernández-García, M. San Miguel, R. Toral, J. Viñals
Noise and pattern selection in the one-dimensional Swift-Hohenberg equation.
Physica **D 61**, 159-165 (1992).
14. E. Hernández-García, T. Ala-Nissila, M. Grant
Interface roughening with a time-varying external driving force.
Europhysics Letters **21**, 401-406 (1993).
15. A. Amengual, E. Hernández-García, M. San Miguel
Ordering and finite-size effects in the dynamics of transient patterns.
Physical Review **E 47**, 4151-4160 (1993).
16. E. Hernández-García, J. Viñals, R. Toral, M. San Miguel
Fluctuations and pattern selection near an Eckhaus instability.
Physical Review Letters **70**, 3576-3579 (1993).
17. E. Hernández-García, C.R. Mirasso, K.A. Shore, M. San Miguel
Turn-on jitter of external cavity semiconductor lasers.
IEEE Journal of Quantum Electronics **30**, 241-248 (1994).
18. P.A. Pury, M.O. Cáceres, E. Hernández-García
First-Passage time and the fluctuation of the quenched disorder in biased media.
Physical Review **E 49**, R967-R970 (1994).
19. M. San Miguel, A. Amengual, E. Hernández-García
Transient pattern dynamics and domain growth.
Phase Transitions **48**, 65-83 (1994).
20. I.S. Graham, E. Hernández-García, M. Grant
Damage spreading during domain growth.
Physical Review **E 49**, R4763-4766 (1994).
21. R. Montagne, A. Amengual, E. Hernández-García, M. San Miguel
Multiple front propagation into unstable states.
Physical Review **E 50**, 377-385 (1994).

22. C.R. Mirasso, E. Hernández-García
Effects of current modulation on timing jitter of single-mode semiconductor lasers in short external cavities.
IEEE Journal of Quantum Electronics **30**, 2281-2286 (1994).
23. C.R. Mirasso, E. Hernández-García, J. Dellunde, M.C. Torrent, J.M. Sancho
Current modulation and transient dynamics of single-mode semiconductor lasers under different feedback conditions.
IEE Proceedings-Optoelectronics, **142**, 17-22 (1995).
24. J. Dellunde, M.C. Torrent, C.R. Mirasso, E. Hernández-García, J.M. Sancho
Analytical calculations of switch-on time and timing jitter in diode lasers subjected to optical feedback and external light injection.
Optics Communications **115**, 523-527 (1995).
25. J. Dellunde, C.R. Mirasso, M.C. Torrent, J.M. Sancho, E. Hernández-García.
Transient dynamics of a single-mode semiconductor laser subjected to both optical feedback and external light injection.
Optical and Quantum Electronics **27**, 755-760 (1995).
26. J. Revuelta, L. Pesquera, E. Hernández-García, and C.R. Mirasso.
Effect of Phase-conjugate optical feedback on turn-on jitter in laser diodes.
Optics Letters **20**, 2213-2215 (1995).
27. A. Amengual, D. Walgraef, M. San Miguel, and E. Hernández-García
Wave-unlocking transition in resonantly coupled complex Ginzburg-Landau equations.
Physical Review Letters **76** 1956-1959 (1996).
28. R. Montagne, E. Hernández-García, M. San Miguel
Winding number instability in the phase-turbulence regime of the Complex Ginzburg-Landau Equation.
Physical Review Letters, **77**, 267-270 (1996).
29. R. Montagne, E. Hernández-García, and M. San Miguel
Numerical study of a Lyapunov functional for the complex Ginzburg-Landau equation.
Physica **D 96**, 47-65 (1996).
30. A. Amengual, E. Hernández-García, R. Montagne, and M. San Miguel
Synchronization of Spatiotemporal Chaos: The regime of coupled Spatiotemporal Intermittency.
Physical Review Letters **78** 4379-4382 (1997).
31. R. Montagne, E. Hernández-García, A. Amengual, and M. San Miguel
Wound-up phase turbulence in the complex Ginzburg-Landau equation.
Physical Review **E 56** 151-167 (1997).
32. J.H.E. Cartwright, E. Hernández-García, O. Piro
Burridge-Knopoff Models as Elastic Excitable Media.
Physical Review Letters, **79**, 527-530 (1997).
33. A. Álvarez, E. Hernández-García, J. Tintoré
Noise-sustained currents in quasigeostrophic turbulence over topography.
Physica **A 247**, 312-326 (1997).
34. A. Álvarez, E. Hernández-García, J. Tintoré
Noise rectification in quasigeostrophic forced turbulence.
Physical Review **E 58**, 7279-7282 (1998).
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Journal of Geophysical Research: Oceans **124**, 4744–4762 (2019).
152. Henk A. Dijkstra, Paul Petersik, Emilio Hernández-García, Cristóbal López
The application of Machine Learning Techniques to improve El Niño prediction skill
Frontiers in Physics **7**, 153 (1-13) (2019).
153. Lorenzo Caprini, Emilio Hernández-García, Cristóbal López, Umberto M.B. Marconi
A comparative study between two models of active cluster-crystals
Scientific Reports **9**, 16687 (1-13) (2019).
154. E.H. Colombo, R. Martínez-García, C. López, E. Hernández-García
Spatial eco-evolutionary feedbacks mediate coexistence in prey-predator systems
Scientific Reports **9**, 18161 (1-15) (2019).
155. Daniel Ruiz-Reynés, Francesca Schönsberg, Emilio Hernández-García, Damià Gomila
A general model for vegetation patterns including rhizome growth
Physical Review Research **2**, 023402 (1-8) (2020).
156. Alessandro Sozza, Gabor Drótos, Emilio Hernández-García, Cristóbal López
Accumulated densities of sedimenting particles in turbulent flows
Physics of Fluids **32**, 075104 (1-11) (2020).
157. Jonas Rønning, Audun Skaugen, Emilio Hernández-García, Cristóbal López, Luiza Angheluta
Classical analogies for the force acting on an impurity in a Bose-Einstein condensate
New Journal of Physics **22**, 073018 (1-14) (2020).
158. Daniel Ruiz-Reynés, Luis Martín, Emilio Hernández-García, Edgar Knobloch, Damià Gomila
Patterns, localized structures and fronts in a reduced model of clonal plant growth
Physica D **414**, 132723 (1-11) (2020).
159. Vivian Dornelas, Eduardo H. Colombo, Cristóbal López, Emilio Hernández-García, Celia Anteonodo
Landscape-induced spatial oscillations in population dynamics
Scientific Reports **11**, 3470 (1-11) (2021)

160. Rebeca de la Fuente, Gábor Drótos, Emilio Hernández-García, Cristóbal López, Erik van Sebille
Sinking microplastics in the water column: Simulations in the Mediterranean Sea
Ocean Science, **17**, 431-453 (2021).
161. Gábor Drótos, Emilio Hernández-García, Cristóbal López
Local characterization of transient chaos on finite times in open systems
Journal of Physics: Complexity **2**, 025014 (1-15) (2021)
162. Enrico Ser-Giacomi, Alberto Baudena, Vincent Rossi, Mick Follows, Sophie Clayton, Ruggero Vasile, Cristóbal López, Emilio Hernández-García
Lagrangian betweenness as a measure of bottlenecks in dynamical systems with oceanographic examples
Nature Communications **12**, 4935 (1-14) (2021).
163. Noémie Ehstand, Reik V. Donner, Cristóbal López, Emilio Hernández-García
Characteristic signatures of Northern Hemisphere blocking events in a Lagrangian flow network representation of the atmospheric circulation.
Chaos **31**, 093128 (1-10) (2021).
164. Rebeca de la Fuente, Gábor Drótos, Emilio Hernández-García, Cristóbal López
Network and geometric characterization of three-dimensional fluid transport between two layers
Physical Review E **104**, 065111 (1-12) (2021).
165. Violeta Calleja-Solanas, Nagi Khalil, Jesús Gómez-Gardeñes, Emilio Hernández-García, Sandro Meloni
Structured interactions as a stabilizing mechanism for competitive ecological communities
Physical Review E **106**, 064307 (1-12)(2022).
166. Ricardo Martínez-García, Ciro Cabal, Justin M. Calabrese, Emilio Hernández-García, Corina E. Tarnita, Cristóbal López, Juan A. Bonachela
Integrating theory and experiments to link local mechanisms and ecosystem-level consequences of vegetation patterns in drylands
Chaos, Solitons and Fractals **166**, 112881 (1-13) (2023).
167. D. Ruiz-Reynés, E. Mayol, T. Sintés, I.E. Hendriks, E. Hernández-García, C.M. Duarte, N. Marbà and D. Gomila
Self-organized sulfide-driven traveling pulses shape seagrass meadows
Proceedings of the National Academy of Sciences (PNAS) **120**, e2216024120 (1-6) (2023).
168. Eduardo H. Colombo, Cristóbal López, Emilio Hernández-García
Pulsed interaction signals as a route to biological pattern formation
Physical Review Letters **130**, 058401 (1-5) (2023)
169. Camila de Mello, Marcelo Barreiro, Emilio Hernández-García, Romina Trinchina and Gastón Manta
A Lagrangian study of summer upwelling along the Uruguayan coast
Continental Shelf Research **258**, 104987 (1-11) (2023).
170. Noémie Ehstand, Reik V. Donner, Cristóbal López, and Emilio Hernández-García
Network percolation provides early warnings of abrupt changes in coupled oscillatory systems: an explanatory analysis
Physical Review E **108**, 054207 (1-11) (2023).
171. Roeland C. van de Vijssel, Emilio Hernández-García , Alejandro Orfila and Damià Gomila
Optimal wave reflection as a mechanism for seagrass self-organization
Scientific Reports **13**, 20278 (1-15) (2023).

Book Chapters

1. E. Hernández-García, L. Pesquera, M.A. Rodríguez, M. San Miguel
Exact results for diffusion in a medium with dynamic disorder.
en *Synergetics, Order and Chaos*, pp. 580–589.
M.G. Velarde, editor. World Scientific (Singapore, 1988).

2. E. Hernández-García, M. Aguado, M. San Miguel
Gain noise in dye lasers: Intensity fluctuations and correlation functions.
en *Dynamics of Non-linear Optical Systems*, pp. 285–290.
L. Pesquera and F.J. Bermejo, editores. World Scientific (Singapore,1989).
3. E. Hernández-García, M. San Miguel, R. Toral, M. Aguado
Gain noise in dye lasers.
en *Coherence and Quantum Optics VI*, pp. 483–488.
J.H. Eberly, L. Mandel, E. Wolf, editors. Plenum (New York,1989).
4. M. San Miguel, M.O. Cáceres, P. Colet, F. de Pasquale, E. Hernández-García
Passage-time description of dynamic processes.
en *Instabilities and non-equilibrium structures III*.
E. Tirapegui , W. Zeller, editores. Kluwer (Dordrecht, 1991).
5. R. Montagne, E. Hernández-García, and M. San Miguel
Computational studies of the complex Ginzburg-Landau equation and its non-equilibrium potential.
en *3rd Granada Lectures in Computational Physics*, pp. 317–318.
P.L. Garrido, J. Marro, editors. Springer-Verlag (Heidelberg, 1995).
6. M. San Miguel, R. Montagne, A. Amengual, E. Hernández-García
Multiple front propagation in a potential non-gradient system.
en *Instabilities and non-equilibrium structures V*, pp. 85–97.
E. Tirapegui , W. Zeller, editores. Kluwer (Dordrecht, 1996).
7. V.M. Eguíluz, E. Hernández-García, O. Piro, S. Balle
Boundary induced frozen chaos.
en *FISES'97, Proceedings of the VIII Spanish Meeting on Statistical Physics*, pp. 215–216.
J.A. Cuesta, A. Sánchez, editores. CIEMAT (Madrid, 1998).
8. E. Hernández-García, T. Ala-Nissilä, P. Colet, M. Dubé, S. Majaniemi
Stochastic resonance in adatom diffusion on crystal surfaces.
en *FISES'97, Proceedings of the VIII Spanish Meeting on Statistical Physics*, pp. 239–240.
J.A. Cuesta, A. Sánchez, editores. CIEMAT (Madrid, 1998).
9. R. Toral, C. R. Mirasso, E. Hernández-García, O. Piro
Synchronization of chaotic systems by common random forcing.
en *Unsolved Problems of Noise and Fluctuations: UPON'99: second international conference*, pp. 255–260.
D. Abbott, L.B. Kish, editors. American Institute of Physics (Melville, NY, 2000).
10. P. Colet, R. Gallego, E. Hernández-García, M. Hoyuelos, G.L. Oppo, M. San Miguel, M. Santagiustina
Two-dimensional vectorial localized structures in optical cavities.
en *Nonlinear guided waves and their applications*, pp. 47–49. Optical Society of America (Washington DC, 1999).
11. A. Pascual, A. Orfila, A. Álvarez, E. Hernández, D. Gomis, A. Barth, J. Tintoré
SOFT PROJECT: A new ocean forecasting system based on satellite data.
en *Remote Sensing of the Ocean and Sea Ice 2001*, pp. 11-23.
C.R. Bostater Jr. and R. Santoleri, editors. SPIE–The International Society for Optical Engineering (Bellingham, 2002).
12. E. Hernández-García, C. López, and Z. Neufeld
Spatial Patterns in Chemically and Biologically Reacting Flows.
Chaos in Geophysical Flows, pp. 35-61, Ed. by G. Boffetta, G. Lacorata, G. Visconti, and A. Vulpiani. OTTO Editore (Torino, 2003).
13. Alberto Álvarez, Emilio Hernández-García, Joaquín Tintoré
On the topographic rectification of ocean fluctuations.
Instabilities and Nonequilibrium Structures VII & VIII, pp. 133-139, Ed. by Orazio Descalzi, Javier Martínez, and Enrique Tirapegui. Kluwer Academic Publishers (Dordrecht , 2004).

14. Victor M. Eguíluz, Emilio Hernández-García, Oreste Piro
Boundary-forced spatial chaos.
Instabilities and Nonequilibrium Structures VII & VIII, pp. 205-212, Ed. by Orazio Descalzi, Javier Martínez, and Enrique Tirapegui. Kluwer Academic Publishers (Dordrecht , 2004).
15. R. Montagne, Emilio Hernández-García
On some localized solutions of coupled Ginzburg-Landau equations.
Instabilities and Nonequilibrium Structures VII & VIII, pp. 273-279, Ed. by Orazio Descalzi, Javier Martínez, and Enrique Tirapegui. Kluwer Academic Publishers (Dordrecht , 2004).
16. E. Hernández-García, C. López
Logistic population growth and beyond: The influence of advection and nonlocal effects.
The Logistic Map and the Route to Chaos, pp. 117-129, Ed. by M. Ausloos and M. Dirickx. Springer-Verlag (Berlin, 2006).
17. E. Hernández-García, E. A. Herrada, A. F. Rozenfeld, C. J. Tessone, V. M. Eguíluz, C. M. Duarte, S. Arnaud-Haond, and E. Serrão
Evolutionary and Ecological Trees and Networks.
Nonequilibrium Statistical Mechanics And Nonlinear Physics: XV Conference on Nonequilibrium Statistical Mechanics and Nonlinear Physics, Ed. by O. Descalzi, O.A. Rosso and H.A. Larrondo. AIP Conference Proceedings Volume 913, American Institute of Physics (New York, 2007), pp. 78-83.
18. A.P. Masucci, A. Kalampokis, V.M. Eguíluz, E. Hernández-García
Semantic Space as a Metapopulation System: Modelling the Wikipedia Information Flow Network.
Towards a Theoretical Framework for Analyzing Complex Linguistic Networks, Ed. by A. Mehler, A. Lücking, S. Banisch, Ph. Blanchard, B. Job, pp. 133–151, Springer (Berlin, 2016).
19. Vincent Rossi, Enrico Ser-Giacomi, Mélodie Dubois, Pedro Monroy, Manuel Hidalgo, Emilio Hernández-García, Cristóbal López
Lagrangian Flow Networks: a new framework to study the multi-scale connectivity and the structural complexity of marine populations
CIESM Workshop Monograph 48: Marine connectivity – migration and larval dispersal, Ed. by F. Briand, pp. 39–51, CIESM Publisher (Monaco, 2016).
20. S. Canals, F. Bartumeus, A. Gomez-marin, L. Martinez-Otero, C. Marquez, s. Valverde, E. Hernandez-Garcia, C. Lopez, C. Mirasso, D. del Castillo, E. Rocon, F. Criado-Boado, J.R.B. Palmer, N. Castellanos, G. Diex, F. Maestu
Cognition, collective behaviors & consciousness
in *Brain, Mind and Behaviour*, edited by E. Herrera and J.A. Esteban, pp. 41-57, Editorial CSIC (Madrid, 2021).
21. R. Logares, J. Alos, I. Catalan, A. Crespo Solana, J. del Campo, G. Ercilla, R. Fablet, A. Fernandez-Guerra, M. Gali, J.M. Gasol, A.F. Gonzalez, E. Hernandez-Garcia, C. Lopez, R. Massana, L. Montiel, M. Palmer, A. Pascual, S. Pascual, F. Perez, M. Portabella, J.J. Ramasco, et al.
Oceans of big data and artificial intelligence
in *Ocean Science Challenges for 2030*, edited by A. Pascual, and D. Macias, pp. 162-179, Editorial CSIC (Madrid, 2021).

Dissemination papers

1. E. Hernández-García, A. Amengual, R. Montagne, M. San Miguel, P. Colet, M. Hoyuelos
Moving pictures.
Europhysics News **29**, 184-187 (1998).
2. Emilio Hernández-García, Cristóbal López
Bichos que se reproducen y amontonan, y su descripción macroscópica.
Revista Española de Física **18**, 49-52 (2004).
3. Claudio R. Mirasso, Emilio Hernández-García
50 años del efecto mariposa
ENKI. Revista científico-cultural, Marzo, 54-58 (2013).

STAYS ABROAD
(longer than four weeks)

1-30 March 1990: Center for the Physics of Materials and Department of Physics, McGill University, Montreal, Canada. Invited stay.

September 1990-September 1991: Center for the Physics of Materials and Department of Physics, McGill University, Montreal, Canada. Postdoctoral stay.

SEMINARS GIVEN

1. *Tiempos de paso para difusión por ruido de Poisson.*
Departamento de Física, Universidad Autónoma de Barcelona.
March 1987.
2. *Difusión en sistemas estática y dinámicamente desordenados.*
Departamento de Estructura y Constituyentes de la Materia, Universidad de Barcelona.
2 November 1989.
3. *Anomalous diffusion in random chains.*
Center for the Physics of Materials, McGill University.
March 1990.
4. *Propagación múltiple de frentes sobre estados inestables.*
Departamento de Estructura y Constituyentes de la Materia, Universidad de Barcelona.
13 January 1994.
5. *Transient pattern formation by multiple front propagation.*
Center for the Physics of Materials, McGill University.
July 1994.
6. *Orden y Caos en la Ecuación Vectorial Compleja de Ginzburg-Landau.*
Departamento de Física Moderna, Universidad de Cantabria.
14 June 1995.
7. *Wound-up Phase Turbulence in the Complex Ginzburg-Landau Equation*
Institut für Theoretische Physik und Synergetik, Universität Stuttgart.
20 December 1996.
8. *Regular and Chaotic Behavior in a Vector Complex Ginzburg-Landau Equation*
Center for Chaos and Turbulence Studies, Niels Bohr Institute.
11 July 1997.
9. *Corrientes sostenidas por ruido en flujos geofísicos sobre topografía*
Instituto de Física, Universidad de la República, Uruguay.
10 December 1997.
10. *Advección, caos, y la inhomogeneidad de la distribución del plancton en la superficie del mar*
Facultad de Ciencias, Universidad de Málaga.
23 March 1999.
11. *Caos, excitabilitat, transport, i les inhomogeneitats en la distribució de plancton*
Departament d'Ecologia, Universitat de Barcelona, i Societat Catalana de Biologia.
7 March 2002.
12. *Chaos and excitability in simple reactive flows*
Laboratoire de Météorologie Dynamique, École Normale Supérieure, Paris.
3 April 2002.

13. *Caos, excitabilidad, i las inhomogeneidades en distribuciones de plancton*
Departamento de Física de la Materia Condensada (Universidad de Zaragoza) e Instituto de Ciencia de Materiales de Aragón (Universidad de Zaragoza-CSIC)
25 June 2002.
14. *Caos y excitabilidad en flujos reactivos simples*
Departamento de Matemáticas y Física Aplicadas y Ciencias de la Naturaleza, Universidad Rey Juan Carlos, Móstoles, Madrid.
28 November 2002.
15. *Caos, mescla en fluids, i les inhomegeneïtats en la distribució de plàncton*
Facultad de Ciencias, University of the Balearic Islands. 20 November 2003.
16. *Plankton models in chaotic flows*
Institute for Chemistry and Biology of the Marine Environment, Carl von Ossietzky Universität Oldenburg (Germany). 29 January 2004.
17. *Pattern formation in a model of bugs that live, reproduce, and cluster*
Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos (USA). 6 July 2004.
18. *Pattern formation in a model of bugs that live, reproduce, and cluster*
Institute of Physics and Center for the Dynamics of Complex Systems, Universität Potsdam (Germany). 2 November 2004.
19. *Sobre el uso de algoritmos evolutivos para encontrar leyes a partir de datos: Éxitos y límites*
Instituto de Investigaciones Biomédicas “Alberto Sols” (CSIC-UAM), Madrid. 23 October 2009.
20. *Una ullada a l’entorn: Formes i forces a la natura*
Universitat de les Illes Balears, Conferència de *Física i Vida* dins el cicle “La nostra Ciència de cada Dia”. 19 November 2009.
21. *Mirant a l’entorn: Formes i forces a la natura*
Universitat de les Illes Balears, seminari de divulgació dins del *Curs d’Introducció a la Física Interdisciplinària i Sistemes Complexos*. 15 December 2011.
22. *Competitive Lévy and Brownian walkers: Patterns, clusters and survival*
Institut für Physik, Humboldt Universität, Berlin (Germany). 21 November 2013.
23. *Oportunidades de modelagem em Ciências da vida e da terra: Uma panorâmica*
Instituto de Biologia, Universidade Federal da Bahia, Salvador (Brazil). 23 April 2014.
24. *Lyapunov lines and flow networks: Impact of ocean transport on biological dynamics*
Instituto de Física, Universidade Federal da Bahia, Salvador (Brazil). 24 April 2014.
25. *Lyapunov exponents in the sea: On the impact of ocean transport on biological dynamics*
Departament de Física i Enginyeria Nuclear, Universitat Politècnica de Catalunya, Terrassa. 25 February 2015.
26. *Network-theory approach to geophysical fluid transport*
Institute for Theoretical Physics, Eötvös University, Budapest (Hungary). 12 December 2018.
27. *Lines on the sea: connectivity, surface stirring and biological dynamics*
Centro Oceanográfico de Baleares, Instituto Español de Oceanografía. 1 April 2019
28. *Fairy circles under the sea: Pattern formation in meadows of marine plants*
Departament de Física i Enginyeria Nuclear, Universitat Politècnica de Catalunya, Terrassa. 3 April 2019.
29. *Pattern formation in seagrasses: Fairy circles under the sea (webinar)*
Centre for Complex Systems Studies, Utrecht University (The Netherlands). 29 May 2020.
30. *Characterizing physical and ecological connectivity by Lagrangian flow networks: Dispersion, mixing and marine provinces (webinar)*
ICBM - Institut für Chemie und Biologie des Meeres, Carl von Ossietzky Universität, Oldenburg (Germany). 21 January 2021.

31. *Network-theory tools to characterize physical and ecological connectivity in fluid flows* (webinar)
Departamento de Física, PUC-Rio (Brazil). 30 September 2021.
32. Mesa redonda en *Nuevos métodos en meteorología y climatología*. With Marcelo Barreiro, Ileana Bladé and Cristina Masoller.
Outreach activity during the conference *Weather and Climate Extremes and their Predictability*.
Barcelona, September 2022.

ORAL COMMUNICATIONS IN CONFERENCES

1. *Gain noise in dye lasers: Intensity fluctuations and correlation functions.*
Workshop on ‘Dynamics of Nonlinear Optical Systems’. Santander, October 1988.
2. *Caracterización de desorden fuerte por la divergencia de un tiempo de difusión.*
III Congreso de Física Estadística, Badajoz, April 1990.
3. *Fluctuations and overlap distributions in the dynamics of non-equilibrium systems.*
II Twinning of the European Network on ‘Complexity and Chaos in Quantum Optics’.
Nice, February 1992.
4. *Transient pattern dynamics and few mode truncations.*
III Twinning of the European Network on ‘Complexity and Chaos in Quantum Optics’.
Palma de Mallorca, March 1993.
5. *Crecimiento de superficies rugosas en un campo dependiente del tiempo.*
V Congreso de Física Estadística.
El Escorial, May 1993.
6. *Transient pattern formation by multiple front propagation.*
The Geometry of Forms in Equilibrium and Nonequilibrium Systems.
St. John’s (Canada), July 1994.
7. *Effect of optical feedback and light injection on transient dynamics of single-mode semiconductor lasers.*
CLEO/Europe-EQEC (paper CTuL4).
Amsterdam, August 1994.
8. *Regular and Chaotic Behavior in the Vector Complex Ginzburg-Landau Equation. **Invited conference***
Chaos: Towards the next century.
Como (Italy), June 1995.
9. *Una Inestabilidad tipo Eckhaus para Ondas Turbulentas.*
VII Congreso de Física Estadística.
Zaragoza, May 1996.
10. *Interfases y Ecuaciones de Fase: el caso de la ecuación de Ginzburg-Landau compleja.*
Reunión Española sobre Procesos de Crecimiento y Fenómenos Interfaciales.
Leganés, Madrid, July 1996.
11. *Caos espacio-temporal en ecuaciones complejas de Ginzburg-Landau. **Invited conference.***
No-lineal 97.
Avila, April 1997.
12. *Spatio-Temporal Chaos in the Complex Ginzburg-Landau Equation.*
Meeting of the Computational Physics Board of the European Physical Society.
Palma de Mallorca, September 1997.
13. *Noise-sustained currents in geophysical flow over topography.*
7th Workshop on Instabilities and Nonequilibrium Structures.
Valparaíso, Chile, December 1997.
14. *Spatiotemporal chaos in the Vector Complex Ginzburg-Landau equation.*
STATPHYS 20, XX IUPAP International Conference on Statistical Physics.
Paris, July 1998.
15. *Noise rectification in ocean dynamics.*
Meeting of the Network *Nonlinear Dynamics of Spatio-temporal Selforganization*, Barcelona, February 1999.
16. *Filaments and multifractals in advected chemicals and planktonic communities.*
European Science Foundation Study Center on *Transport in the Atmosphere and the Oceans (TAO)*.
Palma de Mallorca, September 1999.

17. *Noise rectification in quasigeostrophic forced turbulence.*
European Science Foundation Study Center on *Transport in the Atmosphere and the Oceans* (TAO).
Palma de Mallorca, September 1999.
18. *Spatial structures in relaxing and in excitable plankton models under chaotic advection*
XXV General Assembly of the European Geophysical Society. Nice, France, April 2000.
19. *Ondas, defectos y paredes en la dinámica de medios autooscilantes.* **Invited conference.**
NoLineal2000. Almagro (Ciudad Real). May 2000.
20. *Patchiness, excitability, and nonlinear dynamics in plankton distributions.* **Series of three invited conferences.**
2nd Latin American Summer School on Instabilities and Nonlinear Dynamics: Applications in
Natural and Socio-Economical Systems. Valparaíso (Chile). December 2000.
21. *Spatial structures in reacting systems.* **Series of three invited conferences.**
International Summer School on Dynamical Barriers, Stirring and Mixing in Geophysical Flows -
Mathematical Models and Applications (GEOMIX 2001). Cargèse (France). August 2001.
22. *Spatial patterns in reacting flows: biological and chemical applications.* **Series of two invited conferences.**
International Summer School on Atmospheric and Oceanic Sciences (ISSAOS 2001): Chaos in
geophysical flows. L'Aquila, Italy. September 2001.
23. *Excitable media in open flows.*
Chemical and Biological Activity in Flows (ACTIFLOW Workshop). Dresden, Germany, September
2002.
24. *A reminder on empirical orthogonal function analysis.*
2nd workshop of the EU project SOFT: Satellite-based ocean forecasting. Calanova (Mallorca),
October 2002.
25. *Reactive media in open and closed chaotic flows: the case of excitable dynamics.* **Invited conference.**
MEDYFINOL'02: XIII Meeting on Nonequilibrium Statistical Mechanics and Nonlinear Physics.
Colonia del Sacramento, Uruguay, December 2002.
26. *Excitable dynamics in open chaotic flows.*
European Geophysical Society/American Geophysical Union Joint Assembly, Nice, France, April
2003.
27. *Excitable population dynamics under fluid stirring: Plankton models in open flows.*
2nd International Conference on Mathematical Ecology (AICME II). Alcalá de Henares, September
2003.
28. *Population dynamics in flows: Excitability, persistence, and patterns.* **Invited conference.**
Kolmogorov's Legacy in Physics: One Century of Chaos, Turbulence and Complexity. Trieste, Italy,
September 2003.
29. *Clustering and advection in simple models of population dynamics .*
Dynamics Days Europe 2003, Palma de Mallorca, September 2003.
30. *Plankton models in chaotic flows.*
Minisymposium on *Interaction of biological growth and mixing processes in fluids.* Oldenburg
(Germany), January 2004.
31. *Searching for manifolds in the Mediterranean sea: Some simple dynamical systems approaches .*
Invited conference.
London Mathematical Society Meeting on 'Scalar mixing in fluid flows and mappings'. Bristol
(United Kingdom), May 2004.
32. *Biological dynamics in stirred fluids: Logistic growth and beyond.* **Invited conference.**
Verhulst 200 on Chaos. Brussels (Belgium), September 2004.
33. *Pattern formation in a model of bugs that live, reproduce, and cluster.* **Invited conference.**
MEDYFINOL'04: XIV Meeting on Nonequilibrium Statistical Mechanics and Nonlinear Physics.
La Serena, Chili, December 2004.

34. *Nonlinear scenarios for planktonic dynamics in chaotic flows.*
International Cross-Disciplinary Symposium on Physics and Biology. Oslo, Norway, March 2005.
35. *Dinámica de poblaciones en flujos turbulentos: caos, orden y excitabilidad. Invited conference.*
FISES2005, XIII Congreso de Física Estadística. Madrid, June 2005.
36. *Excitability Threshold for Plankton in Open Flows.*
1st Annual Assembly of the THRESHOLDS Integrated Project. Madrid, February 2006
37. *Networks of genetic relationship between clonal plants.*
Dynamics on Complex Networks and Applications (DYONET06 2nd week Seminar). Dresden, Germany, February 2006.
38. *Networks of Genetic Similarity in Populations of Clonal Plants.*
Workshop on Social and Ecological Networks, European Conference on Complex Systems (ECCS06). Oxford, United Kingdom, September 2006.
39. *Genetic Similarity and Evolutionary Networks. Invited conference.*
MEDYFINOL'06: XV Meeting on Nonequilibrium Statistical Mechanics and Nonlinear Physics. Mar del Plata, Argentina, December 2006.
40. *Transport dynamics in the Western Mediterranean: Stretching fields and hyperbolic lines . Invited conference.*
Session NP6.01, European Geosciences Union General Assembly 2007. Vienna(Austria), April 2007.
41. *Stretching fields and lines in the transport dynamics of the Western Mediterranean. Invited conference.*
Minisymposium on *Mixing in Industry and the Environment*, 6th International Congress on Industrial and Applied Mathematics (ICIAM07). Zürich, (Switzerland), July 2007.
42. *Genetic similarity networks: Weak and strong links in populations and in metapopulations.*
European Conference on Complex Systems (ECCS07). Dresden, Germany, October 2007.
43. *Universal scaling in phylogenetic branching.*
European Conference on Complex Systems (ECCS07). Dresden, Germany, October 2007.
44. *Ecological Diversity and Evolutionary Networks: The EDEN project.*
Showcase of European Complexity Science Projects (CRP Forum). Dresden, Germany, October 2007.
45. *Genetic Similarity Networks in Populations and in Metapopulations.*
Workshop on Dynamics and Evolution of Biological and Social Networks. Palma de Mallorca, Spain, February 2008.
46. *Characterizing ocean processes with finite-size Lyapunov exponents. Invited conference.*
Session NP3.01, European Geosciences Union General Assembly 2008. Vienna(Austria), April 2008.
47. *Universal branching in phylogenetic trees. Invited conference*
International Conference "Modelling and Computation on Complex Networks and Related Topics", Net-Works 2008. Pamplona, Spain, June 2008.
48. *Species clustering in models of biological evolution. Invited conference.*
MEDYFINOL'08: XVI Conference on Nonequilibrium Statistical Mechanics and Nonlinear Physics. Punta del Este, Uruguay, December 2008.
49. *Synchronization and stochasticity in circadian oscillators ensembles.*
BioSim workshop on Methodological Challenges for Systems Biology: linking networks, crossing scales. Venice, Italy, 30 March -3 April 2009.
50. *Ocean transport dynamics characterized by stretching fields and lines.*
RTRA-STAE Workshop on Geometrical and multiscale approaches for predictability and analysis of complex data in astrophysics and geophysics. Montaut-Sur-Save, France, May 2009.
51. *Stretching fields and lines in ocean transport dynamics. Invited conference.*
EPSRC Symposium Capstone Conference. Minisymposium on *Lagrangian structure, Lagrangian data*. University of Warwick, United Kingdom, July 2009.

52. *Frigatebirds follow Lagrangian Coherent Structures.*
Lagrangian Analysis and Prediction of Coastal and Ocean Dynamics (LAPCOD) 2009. La Londe-des-Maures, France, September 2009.
53. *Stretching structures from finite-size Lyapunov exponents: their impact across all biological scales.*
Thematic Institute on *Lyapunov analysis: from theory to geophysical applications*. Institut des Systemes Complexes (ISC-PIF), Paris, France, October 2009.
54. *Stretching fields and lines from finite-size Lyapunov exponents: ocean transport and biological impact. Invited conference.*
Workshop on *Exploring Complex Dynamics in High-Dimensional Chaotic Systems: From Weather Forecasting to Oceanic Flows (ECODYC10)*. Dresden, Germany, January 2010.
55. *Biological impact of ocean transport: A finite-size Lyapunov characterization*
3rd Conference on Nonlinear Science and Complexity (NSC10). Ankara, Turkey, July 2010.
56. *Savanna-Fire Model: Combined effects of tree-tree establishment competition and spatially explicit fire on the spatial pattern of trees in savannas.*
Emergence and Design of Robustness (ROBUST). Palma de Mallorca, September 2010.
57. *Stretching structures in the ocean surface: transport and biological impacts. Invited conference.*
Coherent Structures in Dynamical Systems. Leiden (The Netherlands), May 2011.
58. *Following the line: Marine birds fly on top of ocean coherent structures. Invited conference.*
Search and stochastic phenomena in complex physical and biological systems. Palma de Mallorca, May 2012.
59. *Heterogeneity effects on the synchronization and entrainment of coupled circadian oscillators.*
2012 International Symposium on Nonlinear Theory and its Applications, NOLTA2012. Palma de Mallorca, October 2012.
60. *Lines in the ocean: Impacts of chaotic stirring across biological scales. Invited conference.*
MEDYFINOL 2012: XVII Conference on Nonequilibrium Statistical Mechanics and Nonlinear Physics. Santiago, Chili, December 2012.
61. *Anticipating climatic tipping points and regime shifts. Invited conference.*
2nd LINC (Learning about Interacting Networks in Climate) School. Soesterberg, The Netherlands, April 2013.
62. *Patterns and survival of competitive Lévy and Brownian walkers*
Dynamics Days Europe 2013. Madrid, June 2013.
63. *Mobility and flow effects across biological scales. Invited conference.*
Models in Population Dynamics and Ecology, MPDE'13. Osnabrück, Germany, August 2013.
64. *Competitive patterns of interacting random walkers. Invited conference.*
Third Summer School on Statistical Physics of Complex and Small Systems. Palma de Mallorca, September 2013.
65. *Network approaches to transport and mixing. Invited conference.*
Workshop on Mixing, Transport, and Coherent Structures, Mathematisches Forschungsinstitut Oberwolfach, Germany, January 2014.
66. *Líneas de Lyapunov y redes de flujo: impacto del transporte oceánico en procesos biológicos. Invited conference.*
NoLineal 2014. Badajoz, June 2014.
67. *Stretching fields in the ocean from finite-size Lyapunov exponents: Biological impacts of fluid transport Invited conference.*
10th AIMS Conference on Dynamical Systems, Differential Equations and Applications. Madrid, July 2014.
68. *Large-scale transport in oceans: statistical and dynamical systems approaches. Series of five invited conferences.*
IV Summer School on Statistical Physics of Complex and Small Systems. Palma de Mallorca, September 2014.

69. *Networks of geophysical transport*. **Invited conference**.
LINC - “Learning about Interacting Networks in Climate” Satellite in the European Conference on Complex Systems (ECCS14). Lucca, Italy, September 2014.
70. *Dominant transport pathways in oceanic and atmospheric flows*
European Geosciences Union General Assembly 2015. Vienna, Austria, April 2015.
71. *Lagrangian flow networks: dispersion, mixing and coherence through connectivity measures*
CONFLOW 2015: Complex network perspectives on flow systems. Potsdam, Germany, September 2015.
72. *Birth, death, diffusion and repulsion: a variety of pattern forming instabilities arising from non-local interactions*
XX Congreso de Física Estadística. Badajoz, October 2015.
73. *Fairy circles under the sea: Pattern formation in meadows of marine plants*. **Invited conference**.
CSNDD’2016: Third International Conference on Structural Nonlinear Dynamics and Diagnosis. Minisymposium on Nonlinear dynamics in spatially extended systems: theory and experiments. Marrakech, Morocco, May 2016.
74. *Network approaches to oceanic and atmospheric transport*. **Invited conference**.
DAMES 2016: Data Analysis and Modeling in Earth Sciences. Hamburg, Germany, September 2016.
75. *Lagrangian Flow Networks: Theory and applications*.
2nd HYDROGENCONNECT workshop. Erdemli, Turkey, October 2016.
76. *Stretching fields in the ocean: Transport and coherent structures*. **Invited conference**.
EarthFlows2017 workshop on Interface Dynamics in Geophysical Flows. Oslo, Norway, June 2017.
77. *Lyapunov lines and flow networks: impact of ocean transport on biological dynamics*. **Invited conference**.
VIII Escola de Física da Universidade Federal da Bahia. Salvador, Brazil, September 2017.
78. *Clustering together with your competitors: Cluster crystals in passive and active matter*. **Invited conference**.
II Encontro Nacional de Física Estatística, ENFE 2017. Ilhéus, Brazil, September 2017.
79. *Competing but close together: Cluster crystals in passive and active matter*. **Invited conference**.
LAWNP2017, XV Latin American Workshop on Nonlinear Phenomena. La Serena, Chile, November 2017.
80. *Percolation and network indicators of network transitions*. **Invited conference**.
International Workshop “Predicting transitions in complex systems”. Dresden, Germany, April 2018.
81. *Stretching fields in ocean transport*
“Mixing Day”. Barcelona, May 2018.
82. *Ocean transport, coherent structures and their impact on chemical and ecological marine processes*. **Series of three invited conferences**.
CNRS Summer School on “Active transport in the Ocean: Turbulence, Chemistry and Biology”. Wimereux, France, July 2018.
83. *Vegetation patterns under the sea*. **Invited conference**.
Dynamics Days Europe 2018, Minisymposium on “Pattern Formation”. Loughborough, United Kingdom, September 2018
84. *Modeling the connectivity of marine populations by Lagrangian flow networks*.
Physics and ecology: Challenges at the frontier. Maó, Menorca, October 2018.
85. *Underwater pattern formation in marine plants*. **Invited conference**.
Advances in Pattern Formation: New Questions Motivated by Applications. Sede Boqer, Israel, February 2019.

86. *On the sinking of biogenic particles in ocean flows.*
Turbulence Effects on Active Species in Atmosphere and Ocean (TEASAO) workshop. St-Ferréol, France, October 2019.
87. *Large-scale transport in the oceans. Invited conference*
1st CAFE (Climate Advanced Forecasting of sub-seasonal Extremes) School. Sitges, Barcelona, November 2019.
88. *Patterns and fronts in underwater clonal vegetation. Invited conference*
XVII International Workshop on Instabilities and Nonequilibrium Structures. Valparaiso, Chile, December 2019.
89. *Anticipating climatic tipping points and regime shifts. Classical and Network methods of anticipation. Invited conference.*
1st CAFE (Climate Advanced Forecasting of sub-seasonal Extremes) online workshop. September 2020 (webinar).
90. *Optimal monitoring of the ocean surface by observing the transport crossroads.*
European Geosciences Union General Assembly 2021 (vEGU21: Gather Online). April 2021.
91. *Lagrangian flow networks, connectivity and betweenness of marine populations.*
ECONET2021: V Symposium on Ecological Networks. Palma de Mallorca, November 2021.
92. *Lagrangian Flow Networks. Combining network theory and dynamical systems to characterize physical and ecological connectivity in fluid flows. Invited conference*
XVIII International Workshop on Instabilities and Nonequilibrium Structures (online), December 2021.
93. *Patterns and fronts in underwater vegetation. Invited conference*
International Symposium on Nonlinear Dynamics and Complex Structures in the Geosciences. Oldenburg, Germany, July 2022.
94. *Flow-Network Characterization of Transient Chaos in Open Systems. Invited conference.*
Dynamics Days Europe 2022, Minisymposium on “Transient Chaos”. Aberdeen, United Kingdom, August 2022
95. *Linking network theory, dynamical systems and fluid flows: the Lagrangian betweenness.*
Conference on Complex Systems 2022 (CCS2022). Palma de Mallorca, October 2022.
96. *Connectivity bottlenecks in ocean flows characterized by the Lagrangian betweenness.*
Resilience and recovery in aquatic systems. ASLO Aquatic Sciences Meeting 2023. Palma de Mallorca, June 2023.
97. *Lagrangian betweenness: connecting network theory, dynamical systems and fluid flows. Invited conference.*
Nolineal2023, 13th Conference on Nonlinear Mathematics and Physics. Centre de Recerca Matemàtica, Univ. Autònoma de Barcelona, June 2023.
98. *Competitive non-local interactions as a route to pattern formation. Invited conference.*
StatPhys28, the 28th International Conference on Statistical Physics. Tokyo, Japan, August 2023.

Partial list of poster (P), or oral communications presented by a collaborator

1. E. Hernández-García, L. Pesquera, M.A. Rodríguez, M. San Miguel.
Tiempos de paso para difusión por ruido de Poisson. (P)
I Reunión de Física Estadística. Barcelona, April 1987.
2. E. Hernández-García, L. Pesquera, M.A. Rodríguez, M. San Miguel.
Caminos aleatorios en cadenas con desorden dinámico. (P)
II Congreso de Física Estadística. Palma, November 1988.

3. E. Hernández-García, M. Aguado, M. San Miguel
Transición de primer orden y funciones de correlación en láseres con fluctuaciones de ganancia. (P)
II Congreso de Física Estadística. Palma, November 1988.
4. E. Hernández-García, M.A. Rodríguez, L. Pesquera, M. San Miguel.
New results for random walk in disordered chains. (P)
9th General Conference of the Condensed Matter Division of the European Physical Society. Nice, March 1989.
5. E. Hernández-García, M.A. Rodríguez, L. Pesquera, M. San Miguel.
New results for random walk in disordered chains. (P)
NATO Advanced Research Workshop on Noise and Chaos in Nonlinear Dynamical Systems. Torino, March 1989.
6. E. Hernández-García, M. San Miguel, R. Toral, M. Aguado
Gain noise in dye lasers. (P)
Sixth Rochester Conference on Coherence and Quantum Optics.
Rochester, June 1989.
7. E. Hernández-García, L. Pesquera, M.A. Rodríguez, M. San Miguel.
Random walk in dynamically disordered chains. (P)
17th IUPAP International Conference on Thermodynamics and Statistical Mechanics.
Rio de Janeiro, August 1989.
8. M.A. Rodríguez, E. Hernández-García, L. Pesquera, M. San Miguel.
Diffusion in strong disordered chains.
17th IUPAP International Conference on Thermodynamics and Statistical Mechanics.
Rio de Janeiro, August 1989.
9. E. Hernández-García, M. San Miguel, R. Toral, M. Aguado.
Fluctuaciones de ganancia en láseres de colorante. (P)
XXII Reunión Bienal de la RSEF. Palma, October 1989.
10. E. Hernández-García, M.A. Rodríguez, L. Pesquera, M. San Miguel.
Caminos aleatorios en sistemas con desorden estático y dinámico. (P)
XXII Reunión Bienal de la RSEF. Palma, October 1989.
11. E. Hernández-García, J. Viñals, R. Toral, M. San Miguel.
Study of the Swift-Hohenberg equation in the presence of noise. (P)
Statistical physics at the 45th parallel. Montreal, October 1990.
12. E. Hernández-García, J. Viñals, R. Toral, M. San Miguel.
Noise and pattern selection in the one-dimensional Swift-Hohenberg equation. (P)
March Meeting of the APS. Cincinnati, March 1991.
13. E. Hernández-García, J. Viñals, R. Toral, M. San Miguel.
Noise, pattern selection and the Eckhaus instability. (P)
IV Congreso de Física Estadística. Gijón, September 1991.
14. E. Hernández-García, M. San Miguel, N.B. Abraham, F. de Pasquale.
Frequency selection and transient dynamics in single-mode lasers with optical feedback. (P)
IV Congreso de Física Estadística. Gijón, September 1991.
15. E. Hernández-García, J. Viñals, R. Toral, M. San Miguel.
Fluctuaciones críticas y selección de estructuras en la inestabilidad de Eckhaus. (P)
V Congreso de Física Estadística. El Escorial, May 1993.
16. A. Amengual, E. Hernández-García, M. San Miguel.
Efectos de tamaño finito en la dinámica de estructuras transitorias unidimensionales. (P)
V Congreso de Física Estadística. El Escorial, May 1993.
17. E. Hernández-García, J. Viñals, R. Toral, M. San Miguel.
Fluctuations effects near an Eckhaus instability. (P)
Chaos, order and patterns, Como, Italy, September 1993.

18. R. Montagne, A. Amengual, E. Hernández-García, M. San Miguel.
Secondary front propagation into unstable states. (P)
Chaos, order and patterns, Como, Italy, September 1993.
19. C.R. Mirasso, E. Hernández-García.
Effects of Current Modulation of Diode Lasers in Short External Cavities.
Semiconductor and Integrated Optoelectronics (SIOE '94), Cardiff, United Kingdom, March 1994.
20. J. Revuelta, L. Pesquera, E. Hernández-García, C.R. Mirasso.
Turn-on Jitter of Laser Diodes with Phase Conjugate Feedback. (P)
Semiconductor and Integrated Optoelectronics (SIOE '94), Cardiff, United Kingdom, March 1994.
21. I.S. Graham, E. Hernández-García, M. Grant.
Damage spreading during domain growth (P)
25 years of Statistical Mechanics. Sitges, June 1994.
22. R. Montagne, A. Amengual, E. Hernández-García, M. San Miguel.
Transient pattern formation by multiple front propagation. (P)
25 years of Statistical Mechanics. Sitges, June 1994.
23. J. Revuelta, L. Pesquera, E. Hernández-García, C.R. Mirasso.
Effect of phase-conjugate optical feedback on turn-on jitter in laser diodes (P)
CLEO/Europe-EQEC. Amsterdam, August 1994.
24. E. Hernández-García, I.S. Graham, M. Grant.
Damage propagation out of equilibrium. (P)
VI Congreso de Física Estadística. Sevilla, October 1994.
25. J. Revuelta, L. Pesquera, E. Hernández-García, C.R. Mirasso.
Efecto del feedback conjugado en la dispersión del tiempo de encendido de un diodo láser. (P)
VI Congreso de Física Estadística. Sevilla, October 1994.
26. J. Dellunde, J.M. Sancho, M.C. Torrent, C.R. Mirasso, E. Hernández-García.
Estadística de tiempos de paso en un láser semiconductor con feedback y señal inyectada. (P)
VI Congreso de Física Estadística. Sevilla, October 1994.
27. R. Montagne, E. Hernández-García, M. San Miguel.
Study of the disordered regimes in the complex Ginzburg-Landau equation and its non-equilibrium potential. (P)
VI Congreso de Física Estadística. Sevilla, October 1994.
28. E. Hernández-García, O. Piro.
Terremotos lubricados en medios excitables elásticos.
VI Congreso de Física Estadística. Sevilla, October 1994.
29. A. Alvarez, J. Tintoré, E. Hernández-García.
Implications of Langevin topographic turbulence on large-scale ocean modelling. (P)
XX General Assembly of the European Geophysical Society. Hamburgo, April 1995.
30. A. Amengual, M. San Miguel, R. Montagne, E. Hernández-García.
Polarization Pattern Dynamics in the Laser Vector Complex Ginzburg-Landau Equation. (P)
Nonlinear Dynamics in Optical Systems'95. Rochester, June 1995.
31. M. San Miguel, A. Amengual, E. Hernández-García, R. Montagne.
Polarization Pattern Dynamics in a Laser.
International Workshop on Measures of Spatio-Temporal Dynamics. Bryn Mawr, June 1995.
32. M. San Miguel, R. Montagne, E. Hernández-García. *Numerical Analysis of a Lyapunov Functional for the Complex Ginzburg-Landau Equation.* (P)
International Workshop on Measures of Spatio-Temporal Dynamics. Bryn Mawr, June 1995.
33. E. Hernández-García, O. Piro.
Lubricated Earthquakes in Excitable Media.
Chaos: Towards the Next Century. Como, June 1995.

34. A. Amengual, E. Hernández-García, R. Montagne, M. San Miguel, D. Walgraef.
Regular and Chaotic Behavior in the Vector Complex Ginzburg-Landau Equation. (P)
Dynamics Days'95. Lyon, June 1995.
35. E. Hernández-García, O. Piro.
Lubricated Earthquakes in Elastic Excitable Media. (P)
Dynamics Days'95. Lyon, June 1995.
36. R. Montagne, E. Hernández-García, and M. San Miguel.
Survey on an Approximate Non-Equilibrium Potential for the Complex Ginzburg-Landau Equation.
(P)
Dynamics Days'95. Lyon, June 1995.
37. A. Alvarez, E. Hernández-García, J. Tintoré.
Renormalization Group Analysis of Beta-plane Turbulence.
XXI General Assembly of the European Geophysical Society. The Hague, May 1996.
38. A. Alvarez, E. Hernández-García, J. Tintoré.
Corrientes sostenidas por ruido en turbulencia cuasigeostrófica sobre topografía. (P)
VII Congreso de Física Estadística. Zaragoza, May 1996.
39. R. Montagne, E. Hernández-García, and M. San Miguel.
Eckhaus-like instability in the phase-turbulence regime of the Complex Ginzburg-Landau equation.
(P)
Dynamics Days'96. Lyon, July 1996.
40. A. Alvarez, E. Hernández-García, J. Tintoré.
Noise-induced average currents in quasigeostrophic turbulence over bottom topography. (P)
Dynamics Days'96. Lyon, July 1996.
41. V. Martínez, E. Hernández-García, O. Piro, S. Bal.le.
Caos espacial inducido por contornos ondulados. (P)
No-lineal 97. Avila, 10-12 April 1997.
42. J. Cartwright, E. Hernández-García, O. Piro.
Stick-slip dynamics, elastic excitable media, and active transmission lines. (P)
No-lineal 97. Avila, 10-12 April 1997.
43. A. Alvarez, E. Hernández-García, J. Tintoré.
Noise-sustained structures in quasigeostrophic turbulence. (P)
XXII General Assembly of the European Geophysical Society. Viena, April 1997.
44. C. Mirasso, E. Hernández-García, M. San Miguel, D. Lenstra, G. van Tartwijk, S. Lynch, P. Landais,
P. Phelan, J. O'Gorman.
Self pulsation frequency dependence of CD lasers: a comparison between experiment and theory.
Semiconductor and Integrated Optoelectronics Conference SIOE'97. Cardiff, April 1997.
45. V. Martínez Eguíluz, E. Hernández-García, O. Piro, S. Bal.le.
Caos espacial inducido por contornos ondulados. (P)
VII Congreso de Física Estadística, FISES'97. Getafe, September 1997.
46. T. Ala-Nissilä, P. Colet, M. Dubé, E. Hernández-García, S. Majaniemi.
Resonancia estocástica en difusión de adátomos sobre superficies cristalinas. (P)
VII Congreso de Física Estadística, FISES'97. Getafe, September 1997.
47. C. López, A. Álvarez, E. Hernández-García.
EOF analysis of satellite and simulation data of the Mediterranean Sea. (P)
7th Geophysical and Enviromental Fluid Dynamics Summer School, Cambridge, United Kingdom,
September 1997.
48. E. Hernández-García, A. Amengual, R. Montagne, M. San Miguel, P. Colet, M. Hoyuelos.
Spatiotemporal intermittency in a complex Ginzburg-Landau equation. (P)
Patterns, non-linear dynamics and stochastic behaviour in spatially extended, complex systems
(PNS'97). Budapest (Hungary), October 1997.

49. V.M. Eguíluz, E. Hernández-García, O. Piro, S. Balle.
Boundary induced frozen chaos. (P)
Patterns, non-linear dynamics and stochastic behaviour in spatially extended, complex systems (PNS'97). Budapest (Hungary), October 1997.
50. V.M. Eguíluz, E. Hernández-García, O. Piro, S. Balle.
Boundary induced frozen chaos. (P)
7th Workshop on Instabilities and Nonequilibrium Structures. Valparaíso (Chile), December 1997.
51. E. Hernández-García, A. Amengual, R. Montagne, M. San Miguel, P. Colet, M. Hoyuelos, D. Walgraef.
Spatiotemporal intermittency in a complex Ginzburg-Landau equation. (P)
7th Workshop on Instabilities and Nonequilibrium Structures. Valparaíso (Chile), December 1997.
52. C. López, E. Hernández-García.
Empirical orthogonal function analysis of altimetry data of the Algerian current: towards a low-dimensional dynamical system model. (P)
XXIII General Assembly of the European Geophysical Society. Nice (France), April 1998.
53. E. Hernández-García, A. Amengual, R. Montagne, M. San Miguel, M. Hoyuelos, P. Colet.
Spatiotemporal chaos in polarized light waves. (P)
Euroconference on Patterns in Nonlinear Optical Systems. Alicante, May 1998.
54. V. M. Eguíluz, E. Hernández-García, O. Piro.
Boundary effects in the complex Ginzburg-Landau equation.
Synchronization, Pattern Formation, and Spatio-Temporal Chaos in Coupled Chaotic Oscillators. Santiago de Compostela, June 1998.
55. E. Hernández-García, M. Hoyuelos, P. Colet, R. Montagne, M. San Miguel.
Spatiotemporal chaos, localized structures, and synchronization in the vector complex Ginzburg-Landau equation.
Synchronization, Pattern Formation, and Spatio-Temporal Chaos in Coupled Chaotic Oscillators. Santiago de Compostela, June 1998.
56. V. Martínez-Eguíluz, E. Hernández-García, O. Piro, P. Alstrom.
Boundary induced average patterns and frozen chaos. (P)
STATPHYS 20, XX IUPAP International Conference on Statistical Physics. Paris (France), July 1998.
57. E. Hernández-García, A. Álvarez, J. Tintoré.
Noise rectification in quasigeostrophic forced turbulence. (P)
STATPHYS 20, XX IUPAP International Conference on Statistical Physics. Paris (France), July 1998.
58. R. Montagne, V. Caselles, E. Hernández-García, M. San Miguel.
Localized solutions in coupled complex Ginzburg-Landau equations. (P)
STATPHYS 20, XX IUPAP International Conference on Statistical Physics. Paris (France), July 1998.
59. E. Hernández-García, A. Amengual, R. Montagne, M. San Miguel, M. Hoyuelos, P. Colet.
Spatiotemporal Chaos in Polarized Light Waves.
CLEO/EQEC. Glasgow, United Kingdom, September 1998.
60. J. Tintoré, M. Riera, V. Fernández, E. Hernández-García, A. Álvarez, D. Gomis, S. Monserrat, C. Reus, P. Ballester, J.L. López-Jurado, X. Jansà, J. Font.
Interaction between local, sub-basin and basin scale dynamics in the western Mediterranean: observations and modelling.
3rd Mediterranean Target Project Meeting. Rhodes, Grecia, October 1998.
61. A. Álvarez, E. Hernández-García, J. Tintoré.
Large scale circulations induced by small and mesoscale forcings.
XXIV General Assembly of the European Geophysical Society. The Hague, The Netherlands, April 1999.

62. Z. Neufeld, C. López, P.H. Haynes, E. Hernández-García.
Smooth-filamental transition of active tracer fields stirred by chaotic advection. (P)
XXIV General Assembly of the European Geophysical Society. The Hague, The Netherlands, April 1999.
63. C. López, Z. Neufeld, E. Hernández-García, P.H. Haynes.
Transición suave filamentosa para estructuras espaciales de trazadores químicamente activos mezclados por advección caótica. (P)
VIII Congreso de Física Estadística, FISES'99. Santander, May 1999.
64. R. Toral, C.R. Mirasso, E. Hernández-García, O. Piro.
Synchronization of chaotic systems by common random forcing. (P)
VIII Congreso de Física Estadística, FISES'99. Santander, May 1999.
65. E. Hernández-García, M. Hoyuelos, P. Colet, M. San Miguel.
Spatiotemporal chaos in the vector complex Ginzburg-Landau equation. (P)
VIII Congreso de Física Estadística, FISES'99. Santander, May 1999.
66. V.M. Eguíluz, E. Hernández-García, O. Piro.
Paredes y esquinas en la dinámica de medios auto-oscilantes. (P)
VIII Congreso de Física Estadística, FISES'99. Santander, May 1999.
67. V.M. Eguíluz, E. Hernández-García, O. Piro.
Boundary effects on complex Ginzburg-Landau dynamics. (P)
Fifth SIAM Conference on Applications of Dynamical Systems 1999. Snowbird, Utah, USA, May 1999.
68. E. Hernández-García, P. Colet, M. San Miguel, M. Hoyuelos.
Defect dynamics in the vector complex Ginzburg-Landau equation. (P)
Fifth SIAM Conference on Applications of Dynamical Systems 1999. Snowbird, Utah, USA, May 1999.
69. M. Santagiustina, M. San Miguel, E. Hernández-García, G-L. Oppo, A. Scroggie.
Dynamics and stabilization of vectorial defects in type-II optical parametric oscillators. (P)
Quantum Optics X, Mallorca, October 1999.
70. Víctor M. Eguíluz, Emilio Hernández-García, and Oreste Piro.
Boundary effects in extended dynamical systems. (P)
LAWN'99, Córdoba, Argentina, 1999.
71. M. Santagiustina, M. San Miguel, Emilio Hernández-García, G-L. Oppo, A. Scroggie.
Dynamics and stabilization of vectorial defects in type-II optical parametric oscillators. (P)
COCOS 99, Münster, Germany, 1999.
72. A. Álvarez, C. López, M. Riera, E. Hernández-García, J. Tintoré.
A satellite based ocean forecasting system using genetic algorithms. (P)
XXV General Assembly of the European Geophysical Society. Nice, France, April 2000.
73. C. López, E. Hernández-García, O. Piro, A. Vulpiani, E. Zambianchi.
Spatial inhomogeneities in discrete predator-prey models advected by chaotic flows. (P)
XXV General Assembly of the European Geophysical Society. Nice, France, April 2000.
74. A. Orfila, A. Álvarez, J. Tintoré, E. Hernández-García.
Extracting dynamics from empirical data: an evolutionary computation approach.
XXV General Assembly of the European Geophysical Society. Nice, France, April 2000.
75. Cristóbal López, E. Hernández-García, A. Álvarez.
Predicción de dinámica espaciotemporal mediante algoritmos genéticos. (P)
NoLineal2000. Almagro (Ciudad Real). May 2000.
76. M. Santagiustina, E. Hernández-García, M. San Miguel, G-L. Oppo, A. Scroggie.
Vectorial Vortices in Type-II Optical Parametric Oscillators.
CLEO/EUROPE IQEC 2000. Nice, France, September 2000.

77. Cristóbal López, Zoltán Neufeld, Emilio Hernández-García, Oreste Piro, Angelo Vulpiani, E. Zambianchi.
Estructuras espaciales en modelos de transporte de plancton. (P)
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210. V. Rodríguez-Méndez, J.J. Ramasco, V.M. Eguíluz, E. Hernández-García
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228. S. Keller-Schmidt, M. Tuğrul, V.M. Eguíluz, E. Hernández-García, K. Klemm
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234. F.S. Bacelar, D. Kiziridis, C. López, E. Hernández-García
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236. D. Ruiz-Reynés, D. Gomila¹, T. Sintes, E. Hernández-García, N. Marbà and C. M. Duarte
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237. J.-B. Delfau, C. López, E. Hernández-García
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238. N. Khalil, C. López, E. Hernández-García
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239. Pedro Monroy, Vincent Rossi, Enrico Ser-Giacomi, Cristóbal López Emilio Hernández-García
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240. Vincent Rossi, Pedro Monroy, Cristóbal López and Emilio Hernández-García
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243. Jean-Baptiste Delfau, Emilio Hernández-García and Cristóbal López
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247. Ehsan Sadighrad, Vincent Rossi, Manuel Hidalgo, Enrico Ser-Giacomi, Bettina Fach, and Emilio Hernández-García
Modelling the connectivity of early-life stages for exploited species: a new approach for the delimitation of fishery assessment units in the Mediterranean Sea
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248. João Bettencourt, Vincent Rossi, Emilio Hernández-García, Martinho Marta-Almeida, and Cristóbal López
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249. Gabor Drotos, Pedro Monroy, Emilio Hernández-García, and Cristóbal López
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250. Enrico Ser-Giacomi, Emilio Hernández-García, Cristóbal López, Vincent Rossi, Ruggero Vasile, Alberto Baudena, Francesco d’Ovidio
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251. Rebeca de la Fuente, Cristóbal López, Emilio Hernández-García
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252. Rebeca de la Fuente, Cristóbal López, and Emilio Hernández-García
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253. Daniel Ruiz-Reynés, Francesca Schönsberg, Emilio Hernández-García, and Damià Gomila
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254. Cristóbal López, Gabor Drótos, Pedro Monroy, and Emilio Hernández-García
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258. Eduardo H. Colombo, Ricardo Martínez-García, Cristóbal López, Emilio Hernández-García.
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260. Violeta Calleja-Solanas, Sandro Meloni, Emilio Hernández-García.
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261. Álvaro Corral and the CAFE-H2020-MSCA-ITN Team (M. Barreiro, A. Corral, C. Deandreis, R.
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262. G. Drótos, R. de la Fuente,E. Hernández-García, C. López
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263. V. Calleja-Solanas, S. Meloni, E. Hernández-García, N. Khalil, J. Gómez-Gardeñes
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264. N. Ehstand, R. Donner, C. López, E. Hernández-García
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265. R. de la Fuente, G. Drótos, E. Hernández-García, C. López, E. van Sebille
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269. Violeta Calleja-Solanas, Emilio Hernández-García, Sandro Meloni
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270. Tomás Sintés, Eva Llabrés, Daniel Ruiz-Reynés, Damià Gomila, Emilio Hernández-García, Núria
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272. Enrico Ser-Giacomi, Alberto Baudena, Vincent Rossi, Mick Follows, Sophie Clayton, Ruggero Vasile, Cristóbal López and Emilio Hernández-García
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273. Noémie Ehstand, Reik V. Donner, Cristóbal López, and Emilio Hernández-García
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274. Gábor Drótos, Emilio Hernández-García and Cristóbal López
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275. Noémie Ehstand, Reik Donner, Cristóbal López, Emilio Hernández-García
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276. Noémie Ehstand, Reik Donner, Cristóbal López, Emilio Hernández-García
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Weather and Climate Extremes and their Predictability. Barcelona, September 2022.
277. Noémie Ehstand, Reik Donner, Cristóbal López and Emilio Hernández-García
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A percolation framework to anticipate fast changes in irregular climate oscillations.
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280. R.C. van de Vijzel, E.Hernández-García, A. Orfila, D. Gomila
Optimal wave reflection as a mechanism for seagrass self-organization
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281. Elvira Mayol, Daniel Ruiz-Reynés, Damià Gomila, Alex Gimenez, Carlos Morell, Manuel Matías, Tomàs Sintès, Emilio Hernández-García, Carlos Duarte, Iris Hendriks, Núria Marbà
*Dynamics of seagrass (*Posidonia oceanica*) fairy rings* (P)
Resilience and recovery in aquatic systems. ASLO Aquatic Sciences Meeting 2023. Palma de Mallorca, June 2023.
282. Iago Perez, Marcelo Barreiro, Noémie Ehstand, Emilio Hernández-García, and Cristóbal López
Wave Breaking Events and their link to Rossby Wave Packets and Atmospheric Blockings during Southern Hemisphere Summer
EMS2023, European Meteorological Society Annual Meeting 2023. Bratislava, Slovakia, September 2023.
283. Noémie Ehstand, Reik Donner, Cristóbal López, Emilio Hernández-García, Marcelo Barreiro
Sea surface temperature modulation of the Madden-Julian oscillation: a stochastic skeleton model approach (P)
Dynamics Days Europe 2023. Naples, Italy, September 2023.
284. Eduardo H. Colombo, Cristóbal López, and Emilio Hernández-García
A pattern-formation mechanism arising from pulsed interaction signals (P)
FISES'23, XXIV Congreso de Física Estadística. Pamplona, October 2023.

THESIS DIRECTED

PhD Thesis

1. *Dynamics of disordered regimes in spatially extended systems: The complex Ginzburg-Landau equation*. University of the Balearic Islands. Student: Raúl Montagne Dugrós. Dissertation presented on 25 November 1996. Qualification: Apto *cum laude* (codirected with M. San Miguel).
2. *Complex dynamics of physical, biological, and socio-economical systems*. University of the Balearic Islands. Student: Víctor Martínez Eguíluz. Dissertation presented on 13 December 1999. Qualification: Sobresaliente *cum laude* (codirected with O. Piro).
3. *Some applications of nonlinear physics to ocean dynamics: from Lagrangian chaos to genetic algorithms*. University of the Balearic Islands. Student: Cristóbal López Sánchez. Dissertation presented on 13 November 2000. Qualification: Sobresaliente *cum laude*.
4. *Nonlinear Dynamics and Regime Shifts in Ecosystems*. University of the Balearic Islands. Student: Flora Souza Bacelar. Dissertation presented on 24 November 2010. Qualification: Sobresaliente *cum laude*.
5. *A complex network approach to phylogenetic trees: From genes to the Tree of Life*. University of the Balearic Islands. Student: E. Alejandro Herrada. Dissertation presented on 4 February 2011. Qualification: Sobresaliente *cum laude*. (codirected with V.M. Eguíluz & C.M. Duarte).
6. *Horizontal transport and mixing and their connection with dynamical and biological processes in the ocean*. University of the Balearic Islands. Student: Ismael Hernández-Carrasco. Dissertation presented on 28 May 2013. Qualification: Apto *cum laude*. (codirected with C. López).
7. *Three Dimensional Lagrangian Structures in Turbulent Flows: Application to Oceanic Processes*. University of the Balearic Islands. Student: João H. Bettencourt. Dissertation presented on 27 November 2014. Qualification: Sobresaliente *cum laude*. (codirected with C. López).
8. *A complex network theory approach to oceanic and atmospheric transport phenomena*. University of the Balearic Islands. Student: Enrico Ser-Giacomi. Dissertation presented on 21 December 2015. Qualification: Sobresaliente *cum laude*. (codirected with C. López).
9. *Lagrangian studies of sedimentation and transport. Impact on marine ecosystems*. University of the Balearic Islands. Student: Pedro Monroy. Dissertation presented on 17 September 2019. Qualification: Sobresaliente *cum laude*. (codirected with C. López).
10. *Lagrangian transport of sinking particles. From theoretical characterization to oceanic applications*. University of the Balearic Islands. Student: Rebeca de la Fuente. Dissertation presented on 30 May 2022. Qualification: Sobresaliente *cum laude*. (codirected with C. López).
11. *Aproximación numérica y lagrangiana aplicada al estudio de procesos costeros en Uruguay*. Universidad de La Republica, Montevideo, Uruguay. Student: Camila de Mello. Dissertation presented on 9 February 2023. (codirected with Marcelo Barreiro & Leonardo Ortega).
12. *Exploring ecological and social interactions through the lens of complex systems*. University of the Balearic Islands. Student: Violeta Calleja-Solanas. Dissertation presented on 19 July 2023. Qualification: Sobresaliente *cum laude* (codirected with Sandro Meloni).

Master Thesis

1. *Bifurcation analysis of a marine food chain*. University of the Balearic Islands. Student: Flora Souza Bacelar. Dissertation presented on 19 September 2008.
2. *Simple Branching Models for Macroevolution*. University of the Balearic Islands. Student: Murat Tugrul. Dissertation presented on 3 September 2009 (codirected with V.M. Eguíluz).
3. *Scaling properties and robustness of finite-size Lyapunov exponents*. University of the Balearic Islands. Student: Ismael Hernández-Carrasco. Dissertation presented on 25 September 2009 (codirected with C. López).
4. *Lagrangian study of an atmospheric blocking event*. University of the Balearic Islands. Student: Irene Recuerda. Dissertation presented on 29 September 2014 (codirected with C. López).

5. *Evolution of movement strategies under competitive interactions*. University of the Balearic Islands. Student: Diogenis Kiziridis. Dissertation presented on 3 October 2014 (codirected with C. López).
6. *Network properties of genotype-phenotype mappings*. University of the Balearic Islands. Student: Rebeca de la Fuente. Dissertation presented on 20 September 2016.
7. *Pattern formation in clonal plants*. University of the Balearic Islands. Student: Francesca Schönsberg. Dissertation presented on 30 September 2016 (codirected with D. Gomila).
8. *Dynamics of attracting Brownian particles*. University of the Balearic Islands. Student: Adrián García. Dissertation presented on 31 July 2017 (codirected with C. López).
9. *Cluster crystals under an external flow*. University of the Balearic Islands. Student: Martín E. Maza-Cuello. Dissertation presented on 26 July 2018 (codirected with C. López).
10. *Collective motion of Brownian walkers in a birth-death gradient*. University of the Balearic Islands. Student: Alberto Pueyo Wagner. Dissertation presented on 27 September 2018 (codirected with C. López).
11. *Network description of dynamical systems: The clustering coefficient*. University of the Balearic Islands. Student: Àlex Arcas. Dissertation presented on 27 September 2019.
12. Precipitation sources and moisture transport in atmospheric rivers from a Lagrangian perspective. University of the Balearic Islands. Student: Alfredo Crespo. Dissertation presented on 27 July 2022 (codirected with C. López).

COMMITTEES, ORGANIZATION OF R+D ACTIVITIES, AND MANAGEMENT

Director Instituto de Física Interdisciplinar y Sistemas Complejos (IFISC), 2021-present
 Deputy Director, Instituto de Física Interdisciplinar y Sistemas Complejos (IFISC), 2007-2021

Member of the Editorial Advisory Board of the journal *Ecological Complexity* (2012-).
 Subdirector Revista Española de Física (November 2012-November 2014)

Member of Organizing Committee: European Science Foundation Study Center on *Transport in the Atmosphere and the Oceans* (TAO). Palma de Mallorca, 7 September -1 October 1999.

Member of Scientific Committee: Reunión Española de Física Estadística (FISES), 1999-2003.

Member of Governing Board: Grupo Especializado de Física Estadística y No Lineal de la Real Sociedad Española de Física, May 2001 - May 2006.

Convener of session NP.9 *Transport and Mixing: Theory, Modelling and Observations*, XXVI General Assembly of the European Geophysical Society. Nice, France, March 2001.

Member of Scientific Committee: Conference *Waves and Wave Turbulence*, Nyborg, Denmark, August 2001.

Convener of session *Pattern Formation*, Dynamics Days Europe 2003. Palma de Mallorca, September 2003.

Member of Organizing Committee: 1st and 2nd Conferences of the BioSim Network of Excellence. Cala Viñas (Mallorca), 6-8 October 2005, 18-21 October 2006

Member of Organizing Committee: Workshop on *Dynamics and evolution of biological and social networks*. Palma de Mallorca, February 2008.

Convener of session NP6.01 *Mixing, Transport and Diffusion in the Environment*, European Geosciences Union General Assembly 2008. Vienna, Austria, April 2008.

Member of Scientific Committee, Member of Organizing Committee: Workshops on *Nonlinear processes in oceanic and in atmospheric flows (NLOA2008)*. Castro Urdiales, Cantabria, July 2008.

Member of Scientific Committee, Member of Organizing Committee: Workshop on *Living Organisms in Flows: From Small-scale Turbulence to Geophysical Flows (Orflow10)*. IFISC, Palma de Mallorca, June 2010.

Convener of session *Lagrangian Coherent Structures in fluids*, Dynamics Days Europe 2011. Oldenburg, Germany, September 2011.

Member of Scientific Committee, Member of Organizing Committee: Workshop on *Nonlinear processes in oceanic and in atmospheric flows (NLOA2012)*. Madrid, July 2012.

Member of Organizing Committee: 1st LINC School "Learning about Interacting Networks in Climate". IFISC, Palma de Mallorca, September 2012.

Member of Organizing Committee: FISES2012, XVIII Reunión de Física Estadística. Palma de Mallorca, October 2012.

Member of Scientific Committee: Workshop Mathematics of Planet Earth: Land, Sea and Air, Ciudad Real, 24 April 2013.

Convener of session *Complex networks in climate dynamics*, Dynamics Days Europe 2013. Madrid, June 2013.

Member of Scientific Committee: Simposio en "Física de los Sistemas Complejos". XXXIV Reunión Bial de la Real Sociedad Española de Física, Valencia, 17-18 July 2013.

Member of Scientific Committee, Member of Organizing Committee: Conference on *Complex networks and climate variability*. Vienna, Austria, 11-12 April 2015.

Member of Scientific Committee: CONFLOW 2015: Complex network perspectives on flow systems. Potsdam, Germany, 21-22 September 2015.

Member of Scientific Committee: COMPLEXIS 2016: 1st International Conference on Complex Information Systems. Rome, Italy, 22-24 April 2016.

Member of Scientific Committee, Member of Organizing Committee: Workshop on *Nonlinear processes in oceanic and in atmospheric flows (NLOA2016)*. Madrid, July 2016.

Member of Scientific Committee, Member of Organizing Committee: Crossroads in Complex Systems. Mallorca, June 2017.

Member of Scientific Committee: ECC15, 15th Experimental Chaos and Complexity Conference. Madrid, June 2018.

Member of Scientific Committee: Weather and Climate Extremes and their Predictability. Barcelona, September 2022.

Member of the Program Committee: CCS2022, Conference on Complex Systems 2022. Mallorca, October 2022.

OTHER

Short stays (less than four weeks) in

Department of Chemistry, University of California at San Diego (USA).

Departamento de Estructura y Constituyentes de la Materia, Universidad de Barcelona.

Departamento de Física Moderna, Universidad de Cantabria, Santander.

Center for the Physics of Materials, McGill University, Montreal, Canada.

Instituto de Ciencias del Mar (CSIC, Barcelona).

Institut für Theoretische Physik und Synergetik, Universität Stuttgart, Stuttgart, Germany.

Center for Chaos and Turbulence Studies, Niels Bohr Institute, University of Copenhagen, Copenhagen, Denmark.

Instituto de Física, Universidad de la República, Montevideo, Uruguay.

Departamento de Física Aplicada I, Universidad de Málaga.

Departamento de Física de la Materia Condensada, Universidad de Santiago de Compostela.

Departament d'Ecologia, Universitat de Barcelona.

Laboratoire de Météorologie Dynamique, École Normale Supérieure, Paris.

Departamento de Física de la Materia Condensada (Universidad de Zaragoza) e Instituto de Ciencia de Materiales de Aragón (Universidad de Zaragoza-CSIC)

Departamento de Matemáticas y Física Aplicadas y Ciencias de la Naturaleza, Universidad Rey Juan Carlos, Móstoles, Madrid.

Max-Planck-Institut für Physik komplexer Systeme, Dresden (Germany).

Institute for Chemistry and Biology of the Marine Environment, Carl von Ossietzky Universität Oldenburg (Germany).

Department of Mathematics, Bristol University (United Kingdom).

Center for Nonlinear Studies, Los Alamos National Laboratory (USA).

Institute of Physics and Center for the Dynamics of Complex Systems, Universität Potsdam, (Germany).

Departamento de Matemáticas, Instituto de Matemáticas y Física Fundamental (IMAFF), CSIC, Madrid.

Institute for Environment and Sustainability, Joint Research Center of the European Commission, Ispra (Italy).

Center of Marine Sciences (CCMAR), Faro, Portugal.

Institute for Informatics. Leipzig University, Germany

Centre of Excellence in Computational Complex Systems Research, Department of Biomedical Engineering and Computational Science, Helsinki University of Technology, Finland

School of Mathematical Sciences, University College Dublin (Ireland)

Departamento de Biología del Cáncer, Instituto de Investigaciones Biomédicas “Alberto Sols” (CSIC-UAM), Madrid.

Departament de Física i Enginyeria Nuclear, Universitat Politècnica de Catalunya, Terrassa.

Institut für Physik, Humboldt Universität, Berlin (Germany).

Departamento de Física, Universidade Federal de Pernambuco, Recife (Brazil).

Instituto de Física & Instituto de Biología, Universidade Federal da Bahia, Salvador (Brazil).

Institute of Theoretical Physics, Eötvös University, Budapest (Hungary).

Centre de Recherche INRIA Bordeaux Sud-Ouest (France)

Referee for the Agencia Nacional de Evaluación y Prospectiva (ANEP, España), National Science Foundation (NSF, USA), European Research Council (ERC), Agencia Nacional de Promoción Científica y Tecnológica (ANPCyT, Argentina), Israeli Science Foundation (ISF, Israel), Fonds voor Wetenschappelijk Onderzoek (FWO, Belgium), Fondo Nacional de Desarrollo Científico y Tecnológico (FONDECYT, Chile), Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI, Romania), Estonian Research Council (ETAg, Estonia), among others.

Referee for, among other journals, PNAS, Physical Review Letters, Physical Review E, Physical Review A, Geophysical Research Letters, Nonlinear Processes in Geophysics, Ecological Complexity, Physica A, Physica D, Nonlinearity, PloS One, Scientific Reports, Chaos, Journal of the Royal Society Interface, ...

Attendance to Conferences

1. Recent Developments in Nonequilibrium Thermodynamics: Fluids and related topics. San Feliu de Guíxols (Girona, Spain), September 16-20, 1985.
2. XX Reunión Bienal de la RSEF Sitges, Spain, October 1985.
3. Determinismo y Libertad. Figueres, Spain, November 1-3, 1985.
4. IX Sitges Conference: Fluctuations and Stochastic Phenomena in Condensed Matter. Sitges, Spain, May 1986.
5. NATO Advanced Study Institute and EPS Liquid State Summer School on Physicochemical Hydrodynamics: Interfacial Phenomena. La Rábida (Huelva, Spain). July 1-11 1986.
6. NATO Advanced Study Institute on Time-Dependent Effects in Disordered Materials. Geilo (Norway). 29 March -9 April 1987.
7. I Reunión de Física Estadística. Barcelona, Spain, 21-23 April 1987.
8. II Escuela Ibérica de Física de la Materia Condensada. Fenómenos Cooperativos. Figueira da Foz (Portugal). 14-25 September 1987.
9. Workshop de Estadística Cuántica: Láseres. Palma de Mallorca, Spain, 19-21 October 1987.
10. Workshop "External Noise and its Interaction With Spatial Degrees of Freedom in Nonlinear Dissipative Systems." Los Alamos (New Mexico, USA). 28-30 March 1988.
11. Workshop on "Dynamics of Nonlinear Optical Systems". Santander, Spain, 24-26 October 1988.
12. II Congreso de Física Estadística. Palma de Mallorca, Spain, 9-11 November 1988.
13. European Physical Society, 9th General Conference of the Condensed Matter Division. Nice (France) March 6-9 1989.
14. NATO Advanced Study Institute on Patterns, Defects, and Materials Instabilities. Cargèse (France) September 4-16 1989.
15. XXII Reunión Bienal de la RSEF. Palma de Mallorca, 2-6 October 1989.
16. III Congreso de Física Estadística. Badajoz, Spain, 5-7 April 1990.
17. Statistical Physics at the 45th parallel, IV. Montreal (Canada), 19-20 October 1990.
18. 1991 March meeting of the American Physical Society. Cincinnati (Ohio, USA), 18-22 March 1991.

19. IV Congreso de Física Estadística. Gijón, Spain, 18-20 September 1991.
20. II Meeting of the European Twinning Network on "Complexity and Chaos in Quantum Optics", Nice (France), 27-29 February 1992.
21. III Meeting of the European Twinning Network on "Complexity and Chaos in Quantum Optics", Mallorca, Spain, 31 May -2 April 1993.
22. V Congreso de Física Estadística. El Escorial, Spain, 4-7 May 1993.
23. Chaos, Order and Patterns: The Grand Finale. Como, Italy, 5-10 September 1993.
24. IV Meeting of the European Twinning Network on "Complexity and Chaos in Quantum Optics", Lille (France), 28-30 March 1994.
25. XIII Sitges Conference: 25 Years of Non-Equilibrium Statistical Mechanics. Sitges, Spain, 13-17 June 1994.
26. The Geometry of Forms in Equilibrium and Nonequilibrium Systems. St. John's (Canada), 15-20 July 1994.
27. Conference on Lasers and Electro-Optics and European Quantum Electronics Conference (CLEO/Europe-EQEC). Amsterdam (The Netherlands), 28 August -2 September 1994.
28. VI Congreso de Física Estadística. Sevilla, Spain, 6-8 October 1994.
29. Chaos: Towards the Next Century. Como (Italy), 5-9 June 1995.
30. Dynamics Days'95. Lyon (France), 28 June -1 July 1995.
31. XXI General Assembly of the European Geophysical Society. The Hague(The Netherlands), 6-10 May 1996.
32. VII Congreso de Física Estadística. Zaragoza, Spain, 23-25 May 1996.
33. Reunión Española sobre Procesos de Crecimiento y Fenómenos Interfaciales. Leganés, Madrid, Spain, 4-5 de July 1996.
34. Dynamics Days'96. Lyon (France), 9-13 July 1996.
35. No-Linear 97. Avila, Spain, 10-12 April 1997.
36. Meeting of the Computational Physics Board of the European Physical Society. Palma de Mallorca, Spain, 5 September 1997.
37. VIII Congreso de Física Estadística, FISES'97. Getafe, Spain, 25-27 September 1997.
38. Patterns, non-linear dynamics and stochastic behaviour in spatially extended, complex systems (PNS'97). Budapest (Hungary), 23-28 October 1997.
39. IV Reunión anual de la Sociedad Uruguaya de Física. Piriápolis (Uruguay), 1-2 December 1997.
40. 7th Workshop on Instabilities and Nonequilibrium Structures. Valparaíso (Chili), 15-19 December 1997.
41. XXIII General Assembly of the European Geophysical Society. Nice (France), 10-24 April 1998.
42. STATPHYS 20, XX IUPAP International Conference on Statistical Physics. Paris (France), 20-24 July 1998.
43. Workshop on small-scale mixing in strongly stratified flows. Cambridge (UK), 10-12 December 1998.
44. Meeting of the Network *Nonlinear Dynamics of Spatio-temporal Selforganization*. Barcelona, Spain, 10-12 February 1999.
45. IX Congreso de Física Estadística, FISES'99. Santander, Spain, 6-8 May 1999.
46. Fifth SIAM Conference on Applications of Dynamical Systems 1999. Snowbird, Utah, USA, 23-27 May 1999.

47. European Science Foundation Study Center on *Transport in the Atmosphere and the Oceans* (TAO). Palma de Mallorca, Spain, 7 September -1 October 1999.
48. XXV General Assembly of the European Geophysical Society. Nice (France), 24-29 April 2000.
49. NoLineal2000. Almagro (Ciudad Real, Spain). 31 May -3 June 2000.
50. FISES2000, X Reunión de Física Estadística. Santiago de Compostela, Spain, 21-23 September 2000.
51. 2nd Latin American Summer School on Instabilities and Nonlinear Dynamics: Applications in Natural and Socio-Economical Systems. Valparaíso (Chili). 11-15 December 2000.
52. 1st workshop of the EU project SOFT: Satellite-based ocean forecasting. Esporles (Mallorca,Spain). 15-16 February 2001.
53. XXVI General Assembly of the European Geophysical Society. Nice (France), 25-30 March 2001.
54. Waves and Wave Turbulence. Nyborg (Denmark), 12-15 August 2001.
55. International Summer School on Dynamical Barriers, Stirring and Mixing in Geophysical Flows - Mathematical Models and Applications (GEOMIX 2001). Cargèse (France). 19 August -1 September 2001.
56. International Summer School on Atmospheric and Oceanic Sciences (ISSAOS 2001): Chaos in geophysical flows. L'Aquila, Italy. 10-14 September 2001.
57. II Meeting of the Network *Nonlinear Dynamics of Spatio-temporal Selforganization*. Barcelona, Spain, 6-8 February 2002.
58. FISES2002, XI Congreso de Física Estadística. Tarragona, Spain, 23-25 May 2002.
59. Chemical and Biological Activity in Flows (ACTIFLOW Workshops and Seminar). Dresden, Germany, 26 August -27 September 2002.
60. 2nd workshop of the EU project SOFT: Satellite-based ocean forecasting. Calanova (Mallorca,Spain). 28-30 October 2002.
61. MEDYFINOL'02: XIII Meeting on Nonequilibrium Statistical Mechanics and Nonlinear Physics. Colonia del Sacramento, Uruguay, 9-13 December , 2002.
62. European Geophysical Society/American Geophysical Union Joint Assembly. Nice (France), 7-11 April 2003.
63. Alcalá 2nd International Conference on Mathematical Ecology (AICME II). Alcalá de Henares, Spain, 5-9 September 2003.
64. Kolmogorov's Legacy in Physics: One Century of Chaos, Turbulence and Complexity. Trieste, Italy, 8-12 September 2003.
65. Dynamics Days Europe 2003. Palma de Mallorca, 24-27 September 2003.
66. Minisymposium on *Interaction of biological growth and mixing processes in fluids*. Oldenburg (Germany), 29 January 2004.
67. III Jornades de la Xarxa Temàtica *Nonlinear Dynamics of Spatio-Temporal Selforganization*. Barcelona, Spain, 5-7 February 2004.
68. London Mathematical Society Meeting on 'Scalar mixing in fluid flows and mappings'. Bristol, United Kingdom, 4 May 2004.
69. Verhulst 200 on Chaos. Brussels (Belgium), 16-18 September 2004.
70. MEDYFINOL'04: XIV Meeting on Nonequilibrium Statistical Mechanics and Nonlinear Physics. La Serena, Chili, 6-10 December 2004.
71. Thresholds kick-off meeting. Palma de Mallorca, Spain, 11-12 January 2005.
72. International Cross-Disciplinary Symposium on Physics and Biology. Oslo, Norway, 4-7 March 2005.

73. Eur-Oceans kick-off meeting. Paris, France, 14-15 April 2005.
74. Workshop on Network Analysis of Genetic Structures. Universidade do Algarve, Faro, Portugal, 2-3 June 2005.
75. FISES2005, XIII Congreso de Física Estadística. Madrid, Spain, 27-29 June 2005.
76. Dynamics Days Europe 2005. Berlin (Germany), 25-28 July 2005.
77. 1st Conference of the BioSim Network of Excellence. Cala Viñas (Mallorca, Spain), 6-8 October 2005.
78. IV Jornades de la Xarxa Temàtica *Nonlinear Dynamics of Spatio-Temporal Selforganization*. Barcelona, Spain, 1-3 February 2006.
79. 1st Annual Assembly of the THRESHOLDS Integrated Project. Madrid, Spain, 14-15 February 2006
80. Dynamics on Complex Networks and Applications (DYONET06 2nd week Seminar), Dresden, Germany, 27 February -3 March 2006
81. Eur-Oceans annual PIs meeting. Barcelona, Spain, 15-16 March 2006.
82. BioSim workshop. Potsdam, Germany, 24-25 April 2006.
83. FISES2006, XIV Congreso de Física Estadística. Granada, Spain, 14-16 September 2006.
84. Workshop on Social and Ecological Networks, European Conference on Complex Systems (ECCS06). Oxford, United Kingdom, 28-29 September 2006.
85. 2nd Conference of the BioSim Network of Excellence. Cala Viñas (Mallorca, Spain), 18-21 October 2006.
86. MEDYFINOL'06: XV Meeting on Nonequilibrium Statistical Mechanics and Nonlinear Physics. Mar del Plata, Argentina, 4-8 December 2006.
87. 2nd Annual Assembly of the THRESHOLDS Integrated Project, Helsinki, Finland, 22-24 January 2007
88. European Geosciences Union General Assembly 2007. Vienna, Austria, 15-20 April 2007.
89. 6th International Congress on Industrial and Applied Mathematics (ICIAM07). Zürich, Switzerland, 16-20 July 2007.
90. European Conference on Complex Systems (ECCS07), and Showcase of European Complexity Science Projects. Dresden, Germany, 1-6 October 2007.
91. 3th Conference of the BioSim Network of Excellence. Potsdam, Germany, 10-12 October 2007.
92. 3th Annual Assembly of the THRESHOLDS Integrated Project, Rome, Italy, 15-16 January 2008.
93. Workshop on Dynamics and Evolution of Biological and Social Networks. Palma de Mallorca, Spain, 18-20 February 2008.
94. FISES2008, XV Congreso de Física Estadística. Salamanca, Spain, 27-29 March 2008.
95. European Geosciences Union General Assembly 2008. Vienna, Austria, 13-18 April 2008.
96. International Conference "Modelling and Computation on Complex Networks and Related Topics", Net-Works 2008. Pamplona, Spain, 9-11 June 2008.
97. Workshop on "Nonlinear processes in oceanic and atmospheric flows", NLOA2008. Castro Urdiales, Cantabria, Spain, 2-4 July 2008.
98. 4th Conference of the BioSim Network of Excellence. Budapest, Hungary. 24-26 September 2008.
99. MEDYFINOL'08: XVI Conference on Nonequilibrium Statistical Mechanics and Nonlinear Physics. Punta del Este, Uruguay, 1-5 December 2008.
100. Final Assembly of the THRESHOLDS Integrated Project, Madrid, 23 March 2009.

101. BioSim workshop on Methodological Challenges for Systems Biology: linking networks, crossing scales. Venice, Italy, 30 March -3 April 2009.
102. RTRA-STAE Workshop on Geometrical and multiscale approaches for predictability and analysis of complex data in astrophysics and geophysics. Montaignut-Sur-Save, France, 18-19 May 2009.
103. EPSRC Symposium Capstone Conference. University of Warwick, United Kingdom, 30 June -3 July 2009.
104. 5th Conference of the BioSim Network of Excellence. Copenhagen, Denmark. 25-29 August 2009.
105. Lagrangian Analysis and Prediction of Coastal and Ocean Dynamics (LAPCOD) 2009. La Londe-des-Maures, France, 7-11 September 2009.
106. Thematic Institute on *Lyapunov analysis: from theory to geophysical applications*. Institut des Systemes Complexes (ISC-PIF), Paris, France, 26-30 October 2009.
107. International Workshop on *150 Years after Darwin: From Molecular Evolution to Language*. Trends in Complex Systems series. Palma de Mallorca, 23-27 November 2009.
108. Workshop on *Exploring Complex Dynamics in High-Dimensional Chaotic Systems: From Weather Forecasting to Oceanic Flows (ECODYC10)*. Dresden, Germany, 25-29 January 2010.
109. IFISC Exploratory Workshop on *How does Information Processing emerge in the Brain?*. Palma de Mallorca, 9-10 March 2010.
110. International Workshop on *Living Organisms in Flows: From Small-scale Turbulence to Geophysical Flows (Orflow10)*. Palma de Mallorca, 7-11 June 2010.
111. 3rd Conference on Nonlinear Science and Complexity (NSC10). Ankara, Turkey, 28-31 July 2010.
112. Emergence and Design of Robustness (ROBUST). Palma de Mallorca, 21-25 September 2010.
113. Workshop on *Coherent Structures in Dynamical Systems*. Leiden (The Netherlands). 16-20 May 2011.
114. FISES2011, XVII Congreso de Física Estadística. Barcelona, Spain, 2-4 June 2011.
115. Dynamics Days Europe 2011. Oldenburg, Germany, 12-16 September 2011.
116. Reunión del Nodo Español del proyecto FuturICT. Barcelona, 5-6 October 2011.
117. Jornada de Complejidad y Nolinealidad en Geociencia. Barcelona, 6 October 2011.
118. Search and stochastic phenomena in complex physical and biological systems. Palma de Mallorca, 28 May - 1 June 2012.
119. International Conference on Delayed Complex Systems (DCS 2012). Palma de Mallorca, 4-8 June 2012.
120. 2nd International Workshop on “Nonlinear Processes in Oceanic and Atmospheric Flows”, NLOA2012. Madrid, 3-6 July 2012.
121. 1st LINC (Learning about Interacting Networks in Climate) School and Workshop. IFISC, Palma de Mallorca, 10-12, and 13 September 2012.
122. FISES2012, XVIII Congreso de Física Estadística. Palma de Mallorca, 18-20 October 2012.
123. 2012 International Symposium on Nonlinear Theory and its Applications, NOLTA2012. Palma de Mallorca, 22-26 October 2012.
124. MEDYFINOL 2012: XVII Conference on Nonequilibrium Statistical Mechanics and Nonlinear Physics. Santiago, Chili, 3-7 December 2012.
125. NDA13: Nonlinear Data Analysis and Modeling: Advances, Applications, Perspectives. Potsdam, Germany, 21-22 March 2013.
126. 2nd LINC (Learning about Interacting Networks in Climate) School and Workshop. Soesterberg, The Netherlands, 21-30 April 2013.

127. Dynamics Days Europe 2013. Madrid, 3-7 June 2013.
128. Models in Population Dynamics and Ecology MPDE'13. Osnabrück, Germany, 26-29 August 2013.
129. 3rd LINC (Learning about Interacting Networks in Climate) Workshop. Potsdam, Germany, 17-20 November 2013.
130. Workshop on Mixing, Transport, and Coherent Structures. Mathematisches Forschungsinstitut Oberwolfach, Germany, 26 January -1 February 2014.
131. World Climate Research Programme (WCRP) Conference for Latin America and Caribbean: Developing, linking and applying climate knowledge. Montevideo, Uruguay, 17-21 March 2014.
132. 4th LINC (Learning about Interacting Networks in Climate) Workshop. Montevideo, Uruguay, 24-26 March 2014.
133. FISES2014, XIX Congreso de Física Estadística. Ourense, 2-4 April 2014.
134. NoLineal 2014. Badajoz, 4-6 June 2014.
135. 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications. Madrid, 7-11 July 2014.
136. Strolling on Chaos, Turbulence and Statistical Mechanics. Rome, Italy, 22-24 September 2014.
137. Conference on Complex Networks and Climate Variability. Vienna, Austria, 11-12 April 2015.
138. European Geosciences Union General Assembly 2015. Vienna, Austria, 12-17 April 2015.
139. CONFLOW 2015: Complex network perspectives on flow systems. Potsdam, Germany, 21-22 September 2015.
140. FISES2015, XX Congreso de Física Estadística. Badajoz, 5-7 October 2015.
141. CSNDD'2016: Third International Conference on Structural Nonlinear Dynamics and Diagnosis. Marrakech, Morocco, 23-25 May 2016.
142. 3rd International Workshop on "Nonlinear Processes in Oceanic and Atmospheric Flows", NLOA2016. Madrid, 6-8 July 2016.
143. DAMES 2016: Data Analysis and Modeling in Earth Sciences. Hamburg, Germany, 26-28 September 2016.
144. 2nd HYDROGENCONNECT workshop. Erdemli, Turkey, 12-13 October 2016.
145. FISES2017, XXI Congreso de Física Estadística. Sevilla, 30 March - 1 April 2017.
146. Crossroads in Complex Systems. Palma de Mallorca, 5-8 June 2017.
147. EarthFlows2017, Workshop on Interface Dynamics in Geophysical Flows. Oslo, Norway, 15-16 June 2017.
148. ENFE2007, II Encontro Nacional de Física Estatística. Ilhéus, Brazil, 17-20 September 2017.
149. LAWNP2017, XV Latin American Workshop on Nonlinear Phenomena. La Serena, Chile, 6-10 November 2017.
150. International Workshop "Predicting transitions in complex systems". Dresden, Germany, 23-37 April 2018.
151. "Mixing Day". Barcelona, 28 May 2018.
152. Trends in Non-equilibrium Physics. Barcelona, 22 June 2018.
153. CNRS Summer School on "Active transport in the Ocean: Turbulence, Chemistry and Biology". Wimereux, France, 2-6 July 2018.
154. Dynamics Days Europe 2018. Loughborough, United Kingdom, 3-7 September 2018.
155. Physics and ecology: Challenges at the frontier. XXXIV Trobades científiques de la Mediterrània Josep Miquel Vidal. Maó, Menorca, 9-11 October 2018.

156. FISES2018, XXII Congreso de Física Estadística. Madrid, 18-20 October 2018.
157. Primeres Jornades sobre Canvi Climàtic a les Illes Balears. Palma de Mallorca, 25-26 October 2018.
158. Advances in Pattern Formation: New Questions Motivated by Applications. Sede Boqer, Israel, 18-21 February 2019.
159. Turbulence Effects on Active Species in Atmosphere and Ocean (TEASAO) workshop. St-Ferréol, France, 28-31 October 2019.
160. 1st CAFE (Climate Advanced Forecasting of sub-seasonal Extremes) School. Sitges, Barcelona, 13-22 November 2019.
161. XVII International Workshop on Instabilities and Nonequilibrium Structures. Valparaiso, Chili, 2-6 December 2019.
162. European Geosciences Union General Assembly 2021 (vEGU21: Gather Online), 19-30 April 2021.
163. 16th Granada Seminar: New Frontiers in Nonequilibrium Statistical Physics: from fundamentals, fluctuations and hydrodynamics to biology and quantum nonequilibrium (online), 7-17 June 2021.
164. 3rd CAFE (Climate Advanced Forecasting of sub-seasonal Extremes) Workshop. Toulouse, France, 3-5 November 2021.
165. ECONET2021: V Symposium on Ecological Networks. Palma de Mallorca, 10-12 November 2021.
166. 100xCiencia.5. The international dimension of science. Santiago de Compostela, 26-27 November 2021.
167. XVIII International Workshop on Instabilities and Nonequilibrium Structures (online), 6-10 December 2021.
168. FISES2022, XXIII Congreso de Física Estadística. Zaragoza, 12-14 May 2022.
169. International Symposium on Nonlinear Dynamics and Complex Structures in the Geosciences. Oldenburg, Germany, 15 July 2022.
170. Dynamics Days Europe 2022. Aberdeen, United Kingdom, 22-26 August 2022.
171. Weather and Climate Extremes and their Predictability. CAFE (Climate Advanced Forecasting of sub-seasonal Extremes) Final Conference. Barcelona, 27-29 September 2022.
172. Conference on Complex Systems CCS2022. Palma de Mallorca, 17-21 October 2022.
173. 100xCiencia.6. Ciencia para el futuro: Construyendo un horizonte más justo y sostenible. Barcelona, 3-4 November 2022.
174. Resilience and recovery in aquatic systems. ASLO Aquatic Sciences Meeting 2023. Palma de Mallorca, 4-9 June 2023.
175. Nolineal2023, 13th Conference on Nonlinear Mathematics and Physics. Centre de Recerca Matemàtica, Univ. Autònoma de Barcelona, 26-28 June 2023
176. StatPhys28, the 28th International Conference on Statistical Physics. Tokyo, Japan, 7-11 August 2023
177. 100xCiencia.7. 7 Preguntas para cambiar el mundo; el estado del arte de la ciencia del futuro. Granada, 23-24 October 2023.
178. FISES'23, XXIV Congreso de Física Estadística. Pamplona, 25-27 October 2023.