

## CURRICULUM VITAE CRISTINA MASOLLER

Departament de Física i Enginyeria Nuclear ([DFEN](#))  
Universitat Politècnica de Catalunya ([UPC](#))  
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Google scholar: <http://scholar.google.com/citations?user=esTS9GsAAAAJ>  
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### Research fields

- Nonlinear photonics (dynamics of semiconductor lasers, optical instabilities and chaos, polarization switching, extreme pulses and rogue waves, applications of nonlinear dynamics)
- Stochastic nonlinear systems (excitable systems, time-delayed systems, multi-stability and hysteresis, stochastic phenomena, stochastic logic gates)
- Dynamical complex systems (synchronization, nonlinear time-series analysis, complex networks, climate networks, entropy and interdependency measures)

### Scientific vita

- 2010 Acreditació de Recerca Avançada de L'Agència per a la Qualitat del Sistema Universitari de Catalunya ([AQU Catalunya](#) Professor Habilitation).
- 2009 – Associated Professor (full-time permanent position) in the research group of Dynamics, nonlinear optics and lasers ([DONLL](#)), DFEN, UPC.
- 2004 – 2009 “Ramon i Cajal” Research Fellow (full-time contract) at DONLL, DFEN, UPC.
- 2003 – 2004 Associated Professor (full time permanent position) at [Physics Department, Universidad de la República](#) (UDELAR), Montevideo, Uruguay.
- 1999 – 2004 Several extended research stays in France, Spain and U.K.
- 1999 PhD degree, [Bryn Mawr College](#), Pennsylvania, USA.  
Thesis: *Nonlinear Dynamics in Semiconductor Lasers with Optical Feedback*  
Supervisor: Prof. Neal B. Abraham.
- 1993 – 2003 Assistant Professor (full-time permanent position) at UDELAR, Montevideo, Uruguay.
- 1991 Master in Physics, UDELAR, Montevideo, Uruguay.
- 1989 Bachelor in Physics, UDELAR, Montevideo, Uruguay.
- 1986 – 1993 Teaching assistant (part-time contract) at UDELAR, Montevideo, Uruguay.

### Honors and awards

- 2014 Fourth research tram (sexenios) recognized by AQU Catalunya (periods: 1990-1995, 1996-2001, 2002-2007, 2008-2013).
- 2009 [ICREA Academia Award](#), [Institució Catalana de Recerca i Estudis Avançats](#)
- 2008 Program I3, Certificación de Trayectoria Investigadora Destacada, Agencia Nacional de Evaluación y Prospectiva (ANEP), Madrid, Spain 23/10/2008.

- 2003 – 2008 Associate Researcher of the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy.
- 1999 – 2004 Researcher Level I (1999-2001) and Level II (2002-2004), of the National Research Council (Fondo Nacional de Investigadores), Montevideo, Uruguay.

## Teaching

At DFEN-UPC Professors teach 8 hours per week of undergrad courses, unless special conditions apply. Because of the ICREA ACADEMIA award, within the last 5 years I taught an average of 3 hs per week at undergrad level. In addition, I have taught several Master courses.

- 2007 – *Master courses* for the [BCN Master in Photonics](#) (UB, UAB, UPC ICFO): Electromagnetic Waves (2007-2009 -discontinued), Computing in Photonics (2010-2013 -discontinued), Laser Systems and Applications (2012-2014).
- 2005 – *Laboratory courses* at [Universidad Nacional de Educacion a Distancia \(UNED\)](#): Mechanics, Mechanics and Waves, Electricity and Optics, Electricity and Magnetism, Optics, Physics I and Experimental Techniques I.
- 2004 – *Undergraduate courses* for the Industrial Engineering and Aeronautic Engineering degrees at [Escola Tècnica Superior d'Enginyeries Industrial i Aeronàutica de Terrassa \(ETSEIAT\)](#): Physics I: Statics and Dynamics; Physics II: Oscillations, Waves and Thermodynamics, and Physics III: Electromagnetism.
- 1986 – 2004 Courses taught at [Faculty of Sciences, Universidad de la República](#), Uruguay  
*Undergraduate courses* for Bachelor degree: General Physics, Electromagnetism, Thermodynamics, Classical Mechanics, Laser Dynamics.  
*Master course* for Master degree in physics: Electromagnetic Theory.  
*Graduate course* for PhD degree in physics: Nonlinear Optics.

## Member of Professional Societies

European Physical Society  
 Optical Society of America  
 Sociedad Uruguaya de Física

## Research Grants

- 2007–2009: *Nonlinear dynamics of novel types of semiconductor lasers*  
 Air Force Office of Scientific Research (AFOSR), Reference number: FA9550-07-1-0238.  
 Principal Investigator: Cristina Masoller
- 2009–2013: *Propietats dinàmiques i no lineals de materials i sistemes fotònics, elèctrics i biològics*; Agència de Gestió d'Ajuts Universitaris i de Recerca, Generalitat de Catalunya, Reference number: 2009 SGR 1168. Principal Investigator: Jordi García Ojalvo
- 2010–2012: *Nonlinear and stochastic dynamics in physical and biophysical systems*  
 Ministerio de Ciencia e Innovación, Reference number: FIS2009-13360-C03-02  
 Principal Investigator: José María Sancho Herrero

- 2009–2011: *Ondas de luz en medios lineales y no lineales en el espacio*  
 Ministerio de Ciencia e Innovación, Reference number: FIS2008-06024-C03-02  
 Principal Investigator: Kestutis Staliunas
- 2010–2011: *Stochastic and nonlinear effects in semiconductor lasers*  
 European Office of Aerospace Research & Development (EOARD)  
 Reference number: FA8655-10-1-3075.  
 Principal Investigator: Cristina Masoller
- 2012-2013: *Spiking excitable semiconductor laser as optical neurons: dynamics, clustering and global emerging behaviors*  
 EOARD Reference number: FA8655-12-1-2140.  
 Principal Investigator: Cristina Masoller
- 2011-2015: *Marie Curie Initial Training Network Learning about Interacting Networks in Climate (LINC)* [www.climatelinc.eu](http://www.climatelinc.eu) [LINC flyer](#).  
 Research Executive Agency, Reference number: FP7-PEOPLE-2011-ITN-289447.  
 Principal Investigator and ITN Coordinator: Cristina Masoller
- 2013-2015: *Stochasticity in Nonlinear Complex Systems*  
 Ministerio de Ciencia e Innovación, Reference number: FIS2012-37655-C02-01.  
 Principal Investigator: Jordi García Ojalvo
- 2014-2015: *Semiconductor laser complex dynamics: from optical neurons to rogue waves*  
 EOARD Reference number: FA9550-14-1-0359.  
 Principal Investigator: Cristina Masoller

## PHD Theses

- TITLE: *Nonlinear and stochastic dynamics of semiconductor lasers: modulation, transient dynamics and synchronization*  
 STUDENT: Jordi Zamora Munt  
 UNIVERSITY: Universitat Politècnica de Catalunya  
 FACULTY/SCHOOL: Departament de Física i Enginyeria Nuclear  
 YEAR: June 2011 (co-supervised with J. Garcia-Ojalvo)
- TITLE: *Exploiting nonlinearity and noise in optical tweezers and semiconductor lasers: from resonant damping to stochastic logic gates and extreme pulses*  
 STUDENT: Sandro Perrone  
 UNIVERSITY: Universitat Politècnica de Catalunya  
 FACULTY/SCHOOL: Departament de Física i Enginyeria Nuclear  
 YEAR: February 2014 (co-supervised with R. Vilaseca)
- TITLE: *Experimental study of feedback-induced dynamics in semiconductor lasers: from symbolic analysis to subwavelength position sensing*  
 STUDENT: Andres Aragonés  
 UNIVERSITY: Universitat Politècnica de Catalunya  
 FACULTY/SCHOOL: Departament de Física i Enginyeria Nuclear  
 YEAR: June 2014 (co-supervised with M. C. Torrent)

- TOPIC: *Climate networks constructed by using information-theoretic measures and ordinal time-series analysis*  
STUDENT: Ignacio Deza  
ONGOING: Start date: February 2012, expected: March 2015, co-supervisor: M. Barreiro
- TOPIC: *Inferring tipping points and disentangling climate interactions by using complex networks*  
STUDENT: Giulio Tirabassi  
ONGOING: Start date: June 2012, expected: July 2015
- TOPIC: *Symbolic dynamics of forced excitable systems: an experimental and numerical study of the dynamics of semiconductor lasers with optical feedback*  
STUDENT: Taciano Sorrentino  
ONGOING: Start: September 2011, expected: July 2015, co-supervisor: M. C. Torrent
- TOPIC: *Nonlinear dynamics of optically coupled semiconductor lasers.*  
STUDENT: Carlos Quintero  
ONGOING: Start: January 2014, expected: February 2017, co-supervisor: M. C. Torrent

### **Membership of international committees**

- Member of the Regional Organizing Committee of the VI Latin American Workshop on Nonlinear Phenomena (LAWNP'99), held in Cordoba, Argentina, October 1999 and of LAWNP 2003, held in Bahia, Brazil, October 2003.
- Member of the International Advisory Committee of [LAWNP 2007](#), held in Arica, Chile, October 2007; [LAWNP 2011](#), held in San Luis Potosi, Mexico, October 2011; [LAWNP 2013](#), held in Carlos Paz, Argentina, October 2013; and of LAWNP 2015, to be held in Cartagena, Colombia, September 2015.
- Member of the Scientific Committee on Dynamics, Instabilities and Patterns of the Conference on Lasers and Electro-Optics (CLEO/EUROPE) 2005, held in Munich, Germany, June 2005; of the Scientific Committee on Semiconductor lasers of CLEO/EUROPE 2007, held in Munich, June 2007; CLEO/EUROPE 2009, held in Munich, June 2009 and of CLEO/EUROPE 2011, held in Munich, June 2011.
- Member of the European Technical Program Committee of the International Semiconductor Laser Conference (ISLC 2008), held in Sorrento, Italy, September 2008; of ISLC 2010, held in Kyoto, Japan, September 2010, and of ISLC 2012, held in San Diego, US, October 2012.
- Member of the Program Committee of the "International Workshop on Physics and Applications of Semiconductor Lasers ([PHASE 2007](#))", Metz, France, March 2007.
- Member of the Scientific Committee in the 5th International Conference on Physics and Control (PhysCon 2011), Leon, Spain, September 2011.
- Member of the International Advisory Committee of Dynamics Days 2012 South America, Cartagena, Colombia, November 2012; and of [Dynamics Days 2014 South America](#), to be held in Viña del Mar, Chile, November 2014.
- Member of the Advisory Committee of the XVIII Conference on Non equilibrium Statistical Mechanics and Nonlinear Physics ([MEDYFINOL 2014](#)), Maceió, Brazil, October 2014.
- Member of the Scientific Committee of [complexitat.cat](#).
- Member of the [IUPAP C17 Commission on Quantum Electronics](#) (secretary since 2011).
- Member of the Prize Committee for the IUPAP C17 Young Scientists Prize (2013).
- Spanish representative in the Management Committee of the [COST MP 1403](#) Nanoscale Quantum Optics (2014-2018).

## Organization of conferences, workshops and schools

- Co-organizer (with O. Rosso, Universidad de Buenos Aires, Argentina and O. Descalzi, Universidad de los Andes, Chile) of the XIII Non-Equilibrium Statistical Mechanics and NonLinear Physics ([MEDYFINOL'02](#)), Colonia, Uruguay, Dec. 2002.
- Co-organizer (with H. Solari, Universidad de Buenos Aires, Argentina) of the [First 'Rio de la Plata' Workshop on Noise, Chaos and Complexity in Lasers and Nonlinear Optics](#), Colonia, Uruguay, December 2003.
- Co-organizer (with A. Hnilo, Centro de Investigaciones en Láseres y Aplicaciones, Argentina) of the [Second 'Rio de la Plata' Workshop on Noise, Chaos and Complexity in Lasers and Nonlinear Optics](#), Colonia, Uruguay, December 2005.
- Co-organizer (with A. Hnilo, Centro de Investigaciones en Láseres y Aplicaciones, Argentina) of the [Third 'Rio de la Plata' Workshop on Noise, Chaos and Complexity in Lasers and Nonlinear Optics](#), Punta del Este, Uruguay, December 2007.
- Co-organizer (with O. Rosso, Universidad de Buenos Aires, Argentina, O. Descalzi, Universidad de los Andes, Chile, and A. Marti, Universidad de la República, Uruguay) of the XVI Non-Equilibrium Statistical Mechanics and NonLinear Physics ([MEDYFINOL'08](#)), Punta del Este, Uruguay, Dec. 2008.
- Co-organizer (with I. Brenner of Sandia National Lab, US) of the [Fourth 'Rio de la Plata' Workshop on Laser Dynamics and Nonlinear Photonics](#), to be held in Piriapolis, Uruguay, December 8-11, 2009.
- Co-organizer (with I. Brenner of Sandia National Lab, US and A. Giacomotti of Laboratoire de Photonique et de Nanostructures, CNRS, France) of the [Fifth 'Rio de la Plata' Workshop on Laser Dynamics and Nonlinear Photonics](#), held in Colonia del Sacramento, Uruguay, December 6-9, 2011.
- Co-organizer (with K. Lüdge of Technische Universität Berlin, Germany) of two mini-symposia [Nonlinear Dynamics in Lasers: Fundamental Issues and Novel Applications I and II](#), held in the Conference XXXIII Dynamics Days Europe, Madrid, Spain, June 2013.
- Co-organizer (with Y. Kivshar of Australia National University and H. Cerdeira of ICTP-SAIFR) of a two-week [School on Nonlinear Optics and Nanophotonics](#) for PhDs and postdocs, held in ICTP-SAIFR, San Paulo, Brazil, from November 25 to December 6, 2013.
- Co-organizer (with A. Giacomotti of Laboratoire de Photonique et de Nanostructures, CNRS, France, and I. Brenner of Sandia National Lab, US) of the [Sixth 'Rio de la Plata' Workshop on Laser Dynamics and Nonlinear Photonics](#), held in Montevideo, Uruguay, December 2013.
- Co-organizer (with Avi Gozolchiani, Bar Ilan University) of the satellite “LINC – learning about interacting networks in climate”, within the European Conference on Complex Systems ([ECCS'14](#)), Lucca, Italy, 2014.
- Co-organizer (with H. Dijkstra of Utrecht University and E. Hernandez-Garcia of Universitat de les Illes Balears) of the Conference on Complex Networks and Climate Variability, to be held in Vienna, Austria, April 2015.

## Editorial activity

- Editor of the Proceedings of the [XIII Conference on Non-Equilibrium Statistical Mechanics and NonLinear Physics](#), Physica A vol. 327, 2003.
- Editor of “[Topics on Non-equilibrium statistical mechanics and nonlinear physics](#)”, Philosophical Transactions of the Royal Society A, vol. 367, 2009.
- Editor of the [Proceedings of the XVI Conference on Non-Equilibrium Statistical Mechanics and Nonlinear Physics](#), International Journal of Bifurcations and Chaos, vol. 20, 2010.

- Editor of the “[Topical Issue on Laser Dynamics and Nonlinear Photonics](#)”, European Physical Journal D, Vol. 28, No. 2, June 2010.
- Editor of the Proceedings of the Fifth Workshop on Laser Dynamics and Nonlinear Photonics, [IEEE Conference Publication 2012](#).
- Editor of the Proceedings of the Sixth Workshop on Laser Dynamics and Nonlinear Photonics, [IEEE Conference Publication 2014](#).
- Editor (with H. Dijkstra of Utrecht University, E. Hernandez-Garcia of Universitat de les Illes Balears, and M. Barreiro of Universidad de la República) of the book *Complex Networks and Climate Variability*, which will contain the results of the LINC project and will be published by Cambridge University Press (2016).

#### Referee for:

Nature Physics, Physical Review Letters, Plos One, EPL, New Journal of Physics, Physical Review A, Physical Review E, Physics Letters A, Physica D, Optics Letters, Journal of the Optical Society of America B, Journal of Optics B, Optics Communications, Photonics Journal, IEEE Journal of Quantum Electron., IEEE Journal of Selected Topics in Quantum Electronics, Photonics Technology Letters, Optics Express, Communications in Nonlinear Science and Numerical Simulation.

#### Conference Communications (recent presentations available [here](#))

- 7th Latin American Workshop on Nonlinear Phenomena (LAWNP01), Cocoyoc, México 2001, Oral contribution.
- 9th International Workshop on Instabilities and Nonequilibrium Structures, Viña del Mar, Chile December 2001, Oral contribution.
- Workshop on Stochastic Systems: From Randomness to Complexity, Erice, Italy, July 2002, **Invited Talk**.
- Rank Prize Symposium on Nonlinear Dynamics in Lasers, Windermere, U.K., August 2002, **Invited Talk**.
- Workshop on Stochastic Systems with Delay and Memory, Wittenberg, Germany, February 2004, **Invited Talk**.
- ESF-STOCHDYN Conference: 100 Years of Brownian Motion, Erice, Italy, July 2005, **Invited Talk**.
- IV Reunión de la Xarxa Temàtica: Dinàmiques no Lineals d'Auto-organització Espai-temporal, Barcelona, Spain, February 2006, Oral contribution
- SPIE Fluctuations and Noise, Florence, Italy, May 2007, Oral contribution.
- The 3<sup>rd</sup> International IEEE Scientific Conference on Physics and Control (PhysCon 2007), Potsdam, Germany, September 2007, **Invited Talk** (symposium on multi-stability).
- The 18th International Laser Physics Workshop (LPHYS'09), Barcelona, Spain, July 2009, Oral contribution.
- The 4<sup>th</sup> International IEEE Scientific Conference on Physics and Control (PhysCon 2009), Catania, Italy, September 2009, **Invited Talk** (symposium on multi-stability).
- XI Latin American Workshop on Nonlinear Phenomena, Búzios, Rio de Janeiro, Brazil, October 2009, **Invited Talk**.
- International Workshop on Delayed Complex Systems, Dresden, Germany, October, 2009, **Invited Talk**.
- XII Workshop on Instabilities and Nonequilibrium Structures, Viña del Mar, Chile, December 2009, **Invited talk**.

- WE-Heraeus-Seminar on Synchronization in Complex Networks (SYNCLINE 2010), Physikzentrum Bad Honnef, Germany, May 2010, Oral Contribution.
- Dynamics Days South America, São José dos Campos, Brazil, July 2010, **Invited Talk**
- Laser Physics Conference (LPHYS'10), Foz de Iguazu, Brazil, July 2010, **Invited Talk** (symposium on Nonlinear Optics).
- European Geosciences Union, General Assembly (EGU 2011), Vienna, April 2011, Oral contribution.
- International Conference on Statistical Physics (SigmaPhi 2011), Larnaca, Cyprus, July 2011, **Invited Talk**.
- 7<sup>th</sup> European Nonlinear Dynamics Conference (ENOC 2011), Rome, Italy, July 2011, **Invited Talk** (symposium on time delayed systems).
- Nonlinear Physics and Applications (NOLPA 2011), Joao Pessoa, Brasil, September 2011, **Invited Talk**.
- 5<sup>th</sup> Rio de la Plata Workshop on Laser Dynamics and Nonlinear Photonics, Colonia, Uruguay, December 2011, Oral contribution.
- International Conference on Delayed Complex Systems DCS12, Palma de Mallorca, Spain, June 2012, **Invited Talk**.
- Workshop 'Nonlinear dynamics in semiconductor lasers', Berlin, Germany, September 2012, **Invited Talk**.
- SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, U.S., May 2013. **Invited Talk** (symposium on delayed stochastic systems).
- XXXIII Dynamics Days Europe Madrid, Spain, June 2013, **Plenary Invited Talk**.
- XIII Latin American Workshop on Nonlinear Phenomena (LAWNP 2013), Villa Carlos Paz, Argentina, Oral contribution.
- 14th Workshop on Instabilities and Non-equilibrium Structures, Viña del Mar, Chile, December 2013, **Invited Talk**.
- Workshop on Abnormal Wave Events (W-AWE 2014), Nice, France, June 2014, **Invited Talk**.
- Dynamics Days Asia Pacific 08 (DDAP 08), Chennai, India, July 2014, **Invited Talk**.
- Dynamics Days 2014, Bayreuth, Germany, September 2014, **Invited Talk** and Oral contribution.

## PhD juries

- Universidad de la República, Montevideo, Uruguay, 2004: Dr. P. Valente, Supervisor: A. Lezama.
- Universitat Politecnica de Catalunya, Spain, 2009: Dr. C. Martinez Gonzalez, Supervisors: J. García Ojalvo and M. C. Torrent.
- University College Cork, Ireland, 2009: Dr. D. Curtin, Supervisors: J. McInerney and G. Huyet.
- Universitat Politecnica de Catalunya, Spain, 2011: Dr. J. Tiana Alsina, Supervisor: J. García Ojalvo and M. C. Torrent.
- Universitat Politecnica de Catalunya, Spain, 2011: Dr. Dhiraj Kumar, Supervisor: Francesc Rocadenbosch.
- Vrije Universiteit Brussel, Belgium, 2012: Dr. W. Coomans, Supervisors: J. Danckaert and L. Gelens.
- Universitat Politecnica de Catalunya, Spain, 2013: Dr. B. San Cristobal, Supervisors: J. García Ojalvo and J. M. Sancho.
- Supélec, Metz, France, 2013: Dr. A. Karsaklian dal Bosco, Supervisors: D. Wolfersberger and M. Sciamanna.

- Universidad Nacional de Colombia, 2013: Luis Alejandro Builes Jaramillo (External evaluator in PhD qualification examination), Supervisor: German Poveda
- University of Aberdeen, U.K., Nov. 2014: Nicolas Rubido, Supervisors: M. S. Baptista and C. Grebogi.

### Scientific Publications (*times cited >1900, h-index: 23*)

1. C. Masoller, A. Sicardi, and L. Romanelli, "Regular and chaotic behavior in the new Lorenz system", Phys. Lett. A **167**, 185-190 (1992). [Download](#)
2. C. Masoller, A. Sicardi, and C. Cabeza, "Chaotic properties of the coherence collapsed state of laser diodes with optical feedback", Opt. Commun. **100**, 331-340 (1993). [Download](#)
3. C. Masoller, "Coexistence of attractors in a laser diode with optical feedback from a large external cavity", Phys. Rev. A **50**, 2569-2578 (1994). [Download](#)
4. C. Masoller, A. Sicardi, and L. Romanelli, "Characterization of strange attractors of Lorenz's model of general circulation of the atmosphere", Chaos, Solitons & Fractals **6**, 357-366 (1995). [Download](#)
5. C. Masoller, A. Sicardi, and C. Cabeza, "The nonlinear gain and the onset of chaos in a semiconductor laser with optical feedback", Chaos, Solitons & Fractals **6**, 347-356 (1995). [Download](#)
6. C. Masoller, C. Cabeza, and A. C. Sicardi, "Effect of the nonlinear gain in the visibility of a semiconductor laser with incoherent feedback in the coherence collapsed regime", IEEE J. Quantum Electron. **31**, 1022-1028 (1995). [Download](#)
7. C. Masoller, "Effect of the external cavity length in the dynamics of a semiconductor laser with optical feedback", Opt. Commun. **128**, 363-376 (1996). [Download](#)
8. A. Figliola and C. Masoller, "Feedback-induced destabilization of a laser diode using wavelets", Phys. Rev. A **56**, 1492-1496 (1997). [Download](#)
9. C. Masoller, "Implications of how the linewidth enhancement factor is introduced on the Lang and Kobayashi model", IEEE J. Quantum Electron. **33**, 796-803 (1997). [Download](#)
10. C. Masoller, "Comparison of the effects of nonlinear gain and weak optical feedback on the dynamics of semiconductor lasers", IEEE J. Quantum Electron. **33**, 804-814 (1997). [Download](#)
11. C. Masoller, "Spatio-temporal dynamics in the coherence collapsed regime of semiconductor lasers with optical feedback", Chaos **7**, 455-462 (1997). [Download](#)
12. C. Masoller and N. B. Abraham, "Stability and dynamical properties of the coexisting attractors of an external cavity semiconductor laser", Phys. Rev. A **57**, 1313-1322 (1998). [Download](#)
13. C. Masoller and N. B. Abraham, "Stability and modulation properties of a semiconductor laser with weak optical feedback from a distant reflector", Quantum Semiclass. Opt. **10**, 519-534 (1998). [Download](#)
14. C. Masoller, A. Figliola, M. Giudici, J. R. Tredicce and N. B. Abraham, "Wavelet analysis of low frequency fluctuations of a semiconductor laser", Opt. Commun. **157**, 115-120 (1998). [Download](#)
15. C. Masoller and N. B. Abraham, "Polarization dynamics in VCSELs with optical feedback through a quarter-wave plate", Appl. Phys. Lett. **74**, 1078-1080 (1999). [Download](#)
16. C. Masoller, N. B. Abraham, "Low frequency fluctuations in vertical-cavity surface-emitting semiconductor lasers with moderate optical feedback", Phys. Rev. A **59**, 3021-3031 (1999). [Download](#)
17. S. Varela, C. Masoller, and A. C. Sicardi, "Numerical simulations of the effect of noise on a delayed pitchfork bifurcation", Physica A **283**, 228-232 (2000). [Download](#)



18. M. S. Torre, C. Masoller, N. B. Abraham, and H. F. Ranea Sandoval, "Carrier dynamics in semiconductor lasers operating in the low-frequency fluctuations regime". *Quantum Semiclass. Opt.* **2**, 563 (2000). [Download](#)
19. C. Masoller, "Anticipation in the synchronization of chaotic semiconductor lasers with optical feedback", *Phys. Rev. Lett.* **86**, 2782-2785 (2001). [Download](#)
20. C. Masoller, "Anticipation in the synchronization of chaotic time-delay systems", *Physica A* **295**, 301-304 (2001). [Download](#)
21. C. Masoller, H. L. D. de Souza Cavalcante, and J. R. Rios Leite, "Delayed coupling of logistic maps", *Phys. Rev. E.* **64**, 037202-1-4 (2001). [Download](#)
22. M. S. Torre and C. Masoller, "Turn-on transient dynamics of a semiconductor laser with optical feedback", *Int. J. Numerical Modelling* (special issue: Laser Device Modeling) **14**, 359-365 (2001).
23. C. Masoller and D. Zanette, "Anticipated synchronization in coupled chaotic maps with delays", *Physica A* **300**, 359-366 (2001). [Download](#)
24. A. Locquet, C. Masoller, P. Mégret, and M. Blondel, "Comparison of two types of synchronization of external-cavity semiconductor lasers", *Opt. Lett.* **27**, 31-33 (2002). [Download](#)
25. C. Masoller, "Noise-induced resonance in delayed feedback systems", *Phys. Rev. Lett.* **88**, 034102 1-4 (2002). [Download](#)
26. M. S. Torre and C. Masoller, "Effects of carrier transport on the transverse-mode selection of index-guided vertical-cavity surface-emitting lasers", *Opt. Commun.* **202**, 311-318 (2002). [Download](#)
27. E. Hernández-García, C. Masoller, and C. R. Mirasso, "Anticipating the dynamics of chaotic maps", *Phys. Lett. A* **295**, 39-43 (2002). [Download](#)
28. A. Locquet, C. Masoller, C. R. Mirasso, "Synchronization regimes of optical-feedback-induced chaos in unidirectionally coupled semiconductor lasers", *Phys. Rev. E* **65**, 056205 1-12 (2002). [Download](#)
29. C. R. Mirasso, J. Mulet and C. Masoller, "Chaos shift keying encryption in chaotic external-cavity semiconductor lasers using a single-receiver scheme", *IEEE Photon. Technol. Lett.* **14**, 456-458 (2002). [Download](#)
30. J. Mulet, C. Masoller and C. R. Mirasso, "Modeling bidirectionally coupled single-mode semiconductor lasers", *Phys. Rev. A.* **65** 063815 1-12 (2002). [Download](#)
31. C. Masoller, "Numerical investigation of noise-induced resonance in a semiconductor laser with optical feedback", *Physica D* **168-169**, 171-176 (2002). [Download](#)
32. M. S. Torre, C. Masoller, and P. Mandel, "Transverse mode dynamics in vertical-cavity surface-emitting lasers with optical feedback", *Phys. Rev. A* **66**, 053817 1-9 (2002). [Download](#)
33. M. Sciamanna, C. Masoller, N.B. Abraham, F. Rogister, P. Mégret and M. Blondel "Different regimes of low-frequency fluctuations in vertical-cavity surface-emitting lasers", *J. Opt. Soc. Am. B* **20**, 37-44 (2003). [Download](#)
34. C. Masoller, "Distribution of residence times of bistable systems with time-delayed feedback driven by noise", *Phys. Rev. Lett.* **90**, 020601 (2003). [Download](#)
35. A. C. Marti and C. Masoller, "Delay-induced synchronization phenomena in an array of globally coupled logistic maps", *Phys. Rev. E* **67**, 056219 1-6 (2003). [Download](#)
36. C. Masoller, A. C. Marti and D. H. Zanette, "Synchronization in an array of globally coupled maps with delayed interactions", *Physica A* **325**, 186-191 (2003). [Download](#)
37. R. Toral, C. Masoller, C. R. Mirasso, M. Ciszak and O. Calvo, "Characterization of the anticipated synchronization regime in the coupled FitzHugh-Nagumo model for neurons", *Physica A* **325**, 192 – 198 (2003). [Download](#)

38. M. Ciszak, O. Calvo, C. Masoller, C. R. Mirasso, and R. Toral, “*Anticipating the response of excitable systems driven by random forcing*”, Phys. Rev. Lett. **90**, 204102 1-4 (2003). [Download](#)
39. C. Masoller and D. H. Zanette, “*Different regimes of synchronization in nonidentical time-delayed maps*”, Physica A **325**, 361-370 (2003). [Download](#)
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### Book Chapters

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### Research visits

1999 – 2004 Several extended research stays at the Institut Non-Lineaire de Nice, Université de Nice Sophia Antipolis (France), Departament de Fisica, Universitat de les Illes Balears (Spain) and at the School of Informatics, Bangor University (Wales, U.K.)

July 2014 Max Planck Institute for the Physics of Complex Systems: Advanced Study Group on [“Optical rare events: a challenge in laser dynamics”](#), July 2014, Dresden, Germany.

## Dissemination of research results in media

Our work on [Optical Rogue Waves](#) (PRL 2011) was featured in the Research Highlights of [Nature Photonics](#) (Vol. 5, No. 10, Page 571 DOI:10.1038/nphoton.2011.240) and in [Optics and Photonics News](#) (February 2012).

The Marie Curie Initial Training Network LINC, of which I am the coordinator, was featured in [Terrassa newspaper](#) (June 2012). The first LINC school was featured in [Mallorca newspaper](#) (September 2012)

Our article in [Scientific Reports](#) (2013) was featured in the printed edition of Terrassa newspaper ([June](#) and [July 2013](#)) and in the digital edition of the national newspaper [El Periodico](#). The first author, Andres Aragoneses, was [interviewed by the radio and TV Terrassa](#).

Our article in [Scientific Reports](#) (2014) was featured in the printed edition of [Terrassa newspaper](#) (September 2014) and in the digital edition of [Investigacion y Ciencia](#). The first author, Andres Aragoneses, was [interviewed by TV Terrassa](#).