

CURRICULUM VITAE



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PRESENT POSITION: Profesor Titular de Universidad

ACADEMIC ACHIEVEMENTS

1. EDUCATION AND DEGREES

Batchelor in Physics, Universidad Nacional de La Plata, 1978-1984, Buenos Aires, Argentina

Ph.D. in Physics, Universidad Nacional de La Plata, 1985-1989, Buenos Aires, Argentina

Thesis Title: “Contribution to the study of the order-disorder phase transitions in the mean-field approximation”.

Advisor: Dr. Victor M. Massida.

Place of work: National Atomic Energy Commission, Buenos Aires, Argentina.

Qualification: Excellent (10)

2. TEACHING ACTIVITY

3/82 - 7/83, Student Assistant, Dept. Física, Univ. Nacional de la Plata Argentina.

7/85 - 12 /85, Assistant, Univ. Católica de la Plata Argentina.

3/86 - 7/86, Assistant Univ. Católica de la Plata, Argentina.

3/86 - 7/87, Assistant, Univ. de Buenos Aires, Argentina.

5/87 - 6/89, Assistant, Univ. de Lomas de Zamora, Buenos Aires, Argentina.

8/87 - 10/89, Assistant, Univ. de Buenos Aires, Argentina.

11/89 - 9/90, Associate Professor, Univ. Nacional de Mar del Plata, Argentina.

10/92 - 9/93, Visiting Professor, Univ. de Cantabria, Santander, Spain.

10/93 - 9/94, Visiting Professor, Univ. de las Islas Baleares, Palma de Mallorca, Spain

Since 2/96 - Assistant Professor, Univ. de las Islas Baleares, Palma de Mallorca, Spain

LIST OF PARTICIPATION IN RESEARCH PROJECTS

Principal Investigator

- *“Láseres de Cavidad Vertical para Aplicaciones Tecnológicas y en Comunicaciones Ópticas”*, Proyecto TIC97/0420 CICYT, 1997-1998.
- *“Codificación en Señales Ópticas Caóticas utilizando Diodos Láseres”*, Acción Integrada España/Gran Bretaña, 1997-1998.
- *“Inestabilidades en la emisión de un Láser de Semiconductor Sujeto a Realimentación Óptica”*, Acción Integrada España/Alemania 1998-2000.
- **Coordinador Proyecto: “Optical Chaos Communications Using Laser Diode Transmitters”** (OCCULT, IST-2000-29683), Proyecto Europeo del Programa IST, área FET-Open, 2001-2004.
- *“OCCULT: Optical Chaos communications using laser diode transmitters”*. Proyecto TIC2001-4484-E y TIC2002-10328-E del Ministerio de Ciencia y Tecnología. (2002-2004)
- *“Chaos synchronization and on/off phase shift keying encryption”*, Accion Integrada España/Alemania 2006-2008, Proyecto HA2005-0051.
- *“Dinámica y sincronización de láseres de semiconductor y aplicaciones”* (LASEA) MCyT España y Feder, proyecto TEC-2005- 07799-02-01/MIC, 2005.
- *“Photonic integrated components applied to secure chaos encoded optical communications systems”* (PICASSO IST-2005-34551), Comunidad Europea (2006-2009)

Participant

- *“Problemas dinámicos en la formación de estructuras espaciales en sistemas complejos”*, Proyecto PB89-0424 DGICYT, 1990-93. *Investigador Principal: Maxi San Miguel*
- *“Ruidos en cadena de transmisión óptica coherente”*, Proyecto TIC90/080 CICYT, 1990-93, Coordinado entre la Universidad de las Islas Baleares, Universidad de Cantabria e Instituto de Estructura de la Materia (CSIC). *Investigador Principal: Maxi San Miguel*
- *“Modelización, simulación y caracterización de dispositivos para comunicaciones ópticas por fibras”*, Proyecto TIC93/0744 CICYT, 1993-95, Coordinado entre la Universidad de las Islas Baleares, Universidad de Cantabria e Instituto de Estructura de la Materia (CSIC). *Investigador Principal: Maxi San Miguel.*

- ***“Gigahertz and Picosecond Phenomena”***, proyecto HCM-CHRX-CT94-0594, 1994-1997 del Programa Capital Humano y Movilidad de la Unión Europea. Investigador Principal: Phillip Galion
- ***“Perturbación modal de diodos láser”***. Proyecto de la CICYT. Programa Nacional de Tecnologías de la Información y las Telecomunicaciones 1998-1999. Investigador Principal: S. Balle.
- ***“Microlasers and QED”*** Red del programa ***“Training and Mobility of Researchers”***, Comisión Europea 1996-2000, Investigador Principal: Maxi San Miguel.
- ***“Dinámica no lineal y estocástica en sistemas extendidos”***, Proyecto de la DGESIC 1998-2001, Investigador Principal: Raúl Toral
- ***“Diodos láser con selección modal”*** Proyecto de la CICYT. Programa Nacional de Tecnologías de la Información y las Telecomunicaciones 1999-2002. Investigador Principal: S. Balle.
- ***“VISTA: VCSELS for Information Society Technology Applications”*** Human Potential - Research Training Networks (HP-TMR) financiado por la CE. 2000-2003. Investigador Principal: Maxi San Miguel.
- ***“CONOCE: COoperación y fenómenos NO lineales en sistemas Complejos Extendidos”***, DGES, 2001-2004, Investigador Principal: Maxi San Miguel.
- ***“SINFIBIO: Sincronización en sistemas físicos y biológicos”***, MCyT, 2001-2004, Investigador Principal: Raul Toral.
- ***“CONOCE2: Cooperación y fenómenos no lineales en sistemas complejos extendidos”*** (FIS2004-00953) (2004-2008). Proyecto del Ministerio de Educación y Ciencia Principal Investigator: M. San Miguel

LIST OF RESEARCH PUBLICATIONS

1. "Phase diagram of the "2+4" model in the mean-field approximation without correlation", Claudio R. Mirasso y Vittorio Massidda. Physical Review B, **40**, 7336 (1989).
2. "The ANNNI model, dipole-dipole interactions and the phase transitions of NaNO_2 " Vittorio Massidda y Claudio R. Mirasso, Physical Review B, **40**, 9327 (1989).
3. "Segregation in a thin film of binary alloys A_xB_{1-x} ", Ana Maria Llois y Claudio R. Mirasso, Physical Review B, **41**, 8112 (1990).
4. "Orientational transitions in a one-dimensional lattice of molecules with dipole and quadrupole moments", Claudio R. Mirasso y Vittorio Massidda, Physica A, **172**, 320 (1991).
5. "Lattice covering time problem for k -times visited sites", Claudio R. Mirasso y Hector O. Martin, Z. Phys. B, **82**, 433 (1991).
6. "Many Commensurate Configurations in the Ground State of a 4 model with next-nearest-neighbours interactions", Claudio R. Mirasso y Raúl Toral, J. of Physics: Condensed Matter, **3**, 8999 (1991).
7. "Pulse Statistics in single mode semiconductor lasers modulated at GHz rates", Claudio R. Mirasso, Pere Colet y Maxi San Miguel, Optics Letters, **16**, 1753 (1991).
8. "Least energy configuration in orthorhombic lattices of dipoles", Vittorio Massida y Claudio R. Mirasso, J. of Magnetism and Magnetic Materials, **116**, 277 (1992).
9. "Pattern effects in Time jitter of semiconductor laser", A. Sapia, A. D'Ottavi, P. Spano, P. Colet, C. Mirasso y M. San Miguel, Appl. Phys. Lett. **61**, 1748 (1992).
10. "Analytical calculation of time jitter in single-mode semiconductor lasers under fast periodic modulation", Angel Valle, Miguel Rodriguez y Claudio R. Mirasso, Optics. Lett. **17**, 1523 (1992).
11. "Dependence of time jitter on bias level for single-mode semiconductor lasers under high Speed operation", Claudio R. Mirasso, Pere Colet y Maxi San Miguel, IEEE J. Quantum Electron. **29**, 23 (1993).
12. "Pseudorandom Word Modulation of Single-Mode Semiconductor Lasers at Gigahertz Rates", Claudio R. Mirasso, Pere Colet y Maxi San Miguel, IEE Proc. Optoelectron., **40**, 26 (1993).
13. "Memory diagram of single-mode semiconductor lasers", Pere Colet, Claudio R. Mirasso y Maxi San Miguel, IEEE J. of Quantum Electron. **29**, 1624 (1993).
14. "Analytical Results of the Switch-on Time Statistics in DFB Lasers Diodes Driven by Short Triangular Pulses", Salvador Balle, Claudio R. Mirasso, Adalberto Sapia y Paolo Spano, Appl. Phys. Lett. **63**, 1721, (1993).
15. "Pulse-To-Pulse Frequency Jitter in Diode Lasers and Soliton Transmission", Claudio R. Mirasso, Luis Pesquera y Antonio Mecozzi, IEEE Phot. Tech. Lett. **5**, 1455, (1993).
16. "Turn-on Jitter of External Cavity Semiconductor Lasers", Emilio Hernández-García, Claudio R. Mirasso, Alan Shore y Maxi San Miguel, IEEE J. of Quantum Electron. **30**, 241 (1994).
17. "Simple Method for Estimating the Memory Diagram in Single Mode Semiconductor Laser", Claudio R. Mirasso, Angel Valle, Luis Pesquera y Pere Colet, IEE Proc. Optoelectron., **141**, 109, (1994).
18. "Effects of Current Modulation on Timing Jitter of Single Mode Semiconductor Lasers in Short External Cavities", Claudio R. Mirasso y Emilio Hernández-García, IEEE J. Quantum Electron., **30**, 2281, (1994).

19. "Current Modulation and Transient Dynamics of Single-Mode Semiconductor Lasers Under Different Feedback Conditions", Claudio R. Mirasso, Emilio Hernández-García, Jaume Dellunde, M. C. Torrent y J. M. Sancho, IEE Proc. Optoelectron., **142**, 17, (1995).
20. "Transmission of Solitons Generated under Periodic and Pseudorandom Word Modulation of Laser Diodes", Claudio R. Mirasso y Luis Pesquera, IEEE Phot. Tech. Lett., **7**, 437, (1995).
21. "Analytical Calculations of Switch-on Time and Timing Jitter in Diode Lasers Subjected to Optical Feedback and External Light Injection", M. C. Torrent, Jaume Dellunde, Claudio R. Mirasso, Emilio Hernández-García y J. M. Sancho, Optics Communications, **115**, 523, (1995).
22. "Transient Dynamics of a Single-Mode Semiconductor Laser Subjected to Both Optical Feedback and External Light Injection", J. Dellunde, Claudio R. Mirasso, M. C. Torrent, J. M. Sancho y E. Hernández-García, Optical and Quantum Electron. **27**, 755, (1995).
23. "Mode Partition Noise of Nearly Single Mode Semiconductor Lasers Modulated at Gigahertz Rates", A. Valle, Claudio R. Mirasso y Luis Pesquera, IEEE J. Quantum Electron. **31**, 876 (1995).
24. "Analytical and Numerical Evaluation of Transmission Characteristics of Chirped DFB Lasers in Dispersive Optical Fibers", J. Martínez-Linares, Claudio R. Mirasso, P. García-Fernández y J. Bermejo, Optics Communications **116**, 116, (1995).
25. "Pulse Width Reduction in Single-Mode Semiconductor Lasers via External Injection of Optical Pulses", Claudio R. Mirasso, Applied Phys. Lett. Applied Phys. Lett. **66**, 1880, (1995).
26. "Turn-on Time Statistics of Modulated Lasers Subjected to Resonant Weak Optical Feedback", J. Dellunde, M. C. Torrent, C. R. Mirasso and J. M. Sancho, Physical Review A **52**, 4187, (1995).
27. "Effect of Phase-Conjugate Optical Feedback on Turn-On Jitter in Laser Diodes", J. Revuelta, L. Pesquera, E. Hernández-García y C. R. Mirasso, Optics Lett. **20**, 2213, (1995).
28. "Transmission of Solitons Generated by Direct Modulation of Laser Diodes", Luis Pesquera y Claudio R. Mirasso, Proceedings of the International Workshop: Fluctuation Phenomena: Disorder and Non-Linearity, Ed. por R. A. Bishop, S. Jiménez and L. Vázquez, World Scientific, 406 (1995).
29. "Visualizing the dynamic of a Diode Laser with Optical Feedback", M. Mulder, H. Spoelder, C. R. Mirasso and D. Lenstra, Communiqué Data Explorer Newsletter, IBM **4**, 13, (1996).
30. "Analytical Study of Non-Linear Chirped Pulses: Propagation in Dispersive Optical Fibers", César Lozano, P. García-Fernández y Claudio R. Mirasso, Optics Communications, **123**, 752, (1996).
31. "Synchronization of Chaotic Semiconductor Lasers: Application to Encoded Communications", Claudio R. Mirasso, Pere Colet and Priscila García-Fernández, Phot. Tech. Lett. **8**, 299, (1996).
32. "Improved High Frequency Performance of Quantum Well Lasers with Carrier Transport Effects by Means of Controlled Optical Feedback", M. Homar, C. Mirasso, I. Esquivias and M. San Miguel, Phot. Tech. Lett. **8**, 861, (1996).
33. "Visualization of the Sisyphus Attractor", Claudio R. Mirasso, Martijn Mulder, Hans J. W. Spoelder y Daan Lenstra, Computer in Physics **11**, 282, (1997).
34. "Effect of Optical Feedback on Fast Modulated Semiconductor Lasers", M.V. Homar y C. R. Mirasso, IEE Proceedings Optoelectronics **144**, 30 (1997).
35. "Prevention of Coherence Collapse in Diode Lasers by Dynamic Targeting", J. Wieland, C. R. Mirasso y D. Lenstra, Opt. Lett. **22**, 469 (1997).
36. "Low-Cost Feedback Insensitive DFB Laser / EAM package", Claudio R. Mirasso, J. M. Sancho, J. Dellunde y M. C. Torrent, Phot. Tech. Lett. **9**, 1000 (1997).
37. "Fiber Based Dispersion Compensation Schemes in Nonlinear Fibers for Laser Diodes Pulses in High Bit-Rate IM/DD Systems", A. Sánchez-Díaz, P. García-Fernández, J. Soto-Crespo y C. Mirasso, Opt. Comm. **143**, 294 (1997).

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39. "Effect of Strong Optical Feedback on Vertical Cavity Surface Emitting Lasers", P. Spencer, C. Mirasso y A. Shore, Phot. Tech. Lett. **10**, 191 (1998).
40. "Generator of Ultrashort Optical Pulses for Time Division Multiplexing", J. Dellunde, C. Mirasso, C. Torrent y J. M. Sancho, IEEE Trans. Optoelectron. Devices. **45**, 2122 (1998).
41. "Synchronization of chaotic VCSELs", P. Spencer, C. Mirasso, P. Colet and A. Shore, IEEE J. Quantum Electron. **34**, 1673 (1998).
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43. "A Lyapunov Potential for Laser Dynamics", C. Mayol, R. Toral and C. Mirasso, Proceedings of the VIII Reunión de Física Estadística, FISES'97, Anales de Física, Monografías RSEF Vol. X, pp. 1-2, 1998.
44. "Synchronization of Chaotic diode lasers: Application to Data Encryption", Claudio R. Mirasso, P. Spencer, P. Colet, A. Sánchez-Díaz, K. A. Shore and P. García Fernández, Proc. SPIE vol. **3625**, Physics and Simulation of Optoelectronic Devices VII, San José, USA (1999).
45. "Synchronization of Chaotic Systems by Common Random Forcing", R. Toral, C. Mirasso, E. Hernández-García and O. Piro, Proceedings of the 2nd International Conference on Unsolved Problems of Noise and Fluctuations. D. Abbot and L.B. Kiss, eds., AIP, (1999).
46. "Synchronization in Diode-Laser Arrays with Delayed Global Coupling", J. García-Ojalvo, J. Casademont, C. Mirasso, M.C. Torrent and J.M. Sancho, Intern. J. of Bifurcat. and Chaos, **9**, 2225 (1999).
47. "Encoded Gbit/s Digital Communications with Synchronized Chaotic Semiconductor Lasers", A. Sánchez-Díaz, C. Mirasso, P. Colet and P. García-Fernández, IEEE J. Quantum Electron., **35**, 292 (1999).
48. "Analysis of Optical Chaos Synchronization in Frequency Detuned External Cavity VCSELs", P. Spencer and C. Mirasso, IEEE J. Quantum Electron., **35**, 803, (1999).
49. "Numerical Statistics of Power Drop-Outs based on the Lang-Kobayashi Model", J. Mulet and C. Mirasso, Phys. Rev. E, **59**, 5400 (1999).
50. "Self-Pulsating Frequency of CD Lasers: Theory and Experiment.", C. Mirasso, G. Van Tartwijk, E. Hernández-García, D. Lenstra, S. Lynch, P. Landais, P. Phelan, J. O'Gorman, M. San Miguel and W. Elsasser, IEEE J. Quantum Electron., **35**, 764 (1999).
51. "A Lyapunov Potential Description of Laser Dynamics", C. Mayol, R. Toral and C. Mirasso, Phys. Rev. A. **59**, 4690 (1999).
52. "Statistical Properties of low Frequency Fluctuations under Single Mode Operation in DFB lasers: Experiments and Modelling", T. Heil, J. Mulet, I. Fischer, W. Elsasser, C. Mirasso, Optics Letters **24**, 1275 (1999).
53. "Combined Effects of Semiconductor Gain Dynamics, Spin Dynamics and Thermal Shift in Polarization Selection in VCSELs", M. San Miguel, S. Balle, J. Mulet, C. Mirasso, E. Tolkachova and J. Tredicce, SPIE, Physics and Simulation of Optoelectronic Devices VIII, San José, USA (2000).
54. "Application of Semiconductor Lasers to Secure Communications", Claudio R. Mirasso, Fundamental Issues of Nonlinear Dynamics, Ed. By B. Krauskopf and D. Lenstra, American Institute of Physics, pp. 112-127, (2001).
55. "Transverse and Polarization Mode Selection in Vertical Cavity Surface Emitting Lasers", C. Mirasso, J. Mulet, S. Balle and M. San Miguel, SPIE, Physics and Simulation of Optoelectronic Devices IX, San José, USA, p. 139-149, (2001).
56. "Dynamical Behaviour of Two Distant Mutually Coupled Semiconductor Lasers", C. Mirasso, J. Mulet, T. Heil and I. Fischer, SPIE, Physics and Simulation of Optoelectronic Devices IX, San José, USA, pp. 293-302, (2001).

57. *"Chaos Synchronization and Spontaneous Symmetry Breaking in Symmetrically Delayed Coupled Semiconductor Lasers"*, T. Heil, I. Fischer, W. Elsasser, J. Mulet and C. Mirasso, Phys. Rev. Lett. **86**, 795 (2001).
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59. *"Polarization Resolved Intensity Noise in Vertical-Cavity Surface-Emitting Lasers"*, J. Mulet, C. Mirasso and M. San Miguel, Phys. Rev. A **64**, 023817 (2001).
60. *"Analytical and Numerical Studies of Noise-induced Synchronization of Chaotic Systems"*, R. Toral, C. Mirasso, E. Hernández-García and O. Piro, Chaos **11**, 665 (2001).
61. *"Coherence Resonance in Chaotic Systems"*, C. Palenzuela, R. Toral, C. Mirasso, O. Calvo and J. Gunton, Europhys. Lett. **56**, 347 (2001).
62. *"Effect of External Noise Correlation in Optical Coherence Resonance"*, J. Buldú, J. García-Ojalvo, C. Mirasso, M. C. Torrent and J. M. Sancho, Phys. Rev. E, **64**, 051109 (2001).
63. *"Coherence Resonance in Chaotic Electronic Circuits"*, O. Clavo, C. R. Mirasso and R. Toral, Electronics Lett. **37**, 1062, (2001).
64. *"Experimental Observation of Coherence and Stochastic Resonances in an Electronic Chua Circuit"* O. Calvo, I. Gomes, C. R. Mirasso and R. Toral, Proceedings of the 6th Experimental Chaos Conference, Postdam, Germany, p. 427 (2002).
65. *"Dynamics of Power Distribution in Multimode Semiconductor Lasers with Optical Feedback"*, J. Buldú, F. Rogister, J. Trull, C. Serrat, M. C. Torrent, C. Mirasso and J. García-Ojalvo, SPIE, Physics and Simulation of Optoelectronic Devices X, San José, USA, (2002).
66. *"Dynamical Entrainment of Unidirectionally Coupled Single- Mode Diode Lasers"*, T. Perez, R. Vicente, C. Mirasso and P. Colet, SPIE, Physics and Simulation of Optoelectronic Devices X, San José, USA, (2002).
67. *"Intensity and Polarization Self-Pulsations in VCSELs"*, A. Scire, J. Mulet, C. Mirasso and M. San Miguel, SPIE, Physics and Simulation of Optoelectronic Devices X, San José, USA, (2002).
68. *"Chaos Synchronization and Polarization Encoding in Self-Pulsating VCSELs"*, A. Scire, J. Mulet, J. Danckaert, C. Mirasso and M. San Miguel., SPIE, Physics and Simulation of Optoelectronic Devices X, San José, USA, (2002).
69. *"Influence of Laser Coupling Configuration on Chaotic Synchronization"*, M. Matus, M. Kolesik, J. Moloney and C. Mirasso, SPIE, Physics and Simulation of Optoelectronic Devices X, San José, USA, (2002).
70. *"Synchronization and multi-mode dynamics of mutually coupled semiconductor lasers"*, C. Mirasso, M. Kolesik, M. Matus, J.K. White and J. Moloney, Phys. Rev. A **65**, 013805, (2002).
71. *"Criteria for Chaos Synchronization of Coupled Chaotic External-Cavity Semiconductor Lasers"*, J. Revuelta, C. Mirasso, P. Colet and L. Pesquera, Phot. Tech. Lett. **14**, 140 (2002).
72. *"Theory of Main Resonances in Directly Modulated Diode Lasers"*, C. Mayol, R. Toral, C. Mirasso, S. Turovets and L. Pesquera, IEEE Journal of Quantum Electronics **38**, 260 (2002).
73. *"Dynamics of Modal Power Distribution in a Multimode Semiconductor Laser with Optical Feedback"*, J. M. Buldu, J. Trull, M. C. Torrent, J. García-Ojalvo and C. R. Mirasso, J. Opt. B: Quantum and Semiclass. Opt. **4**, L1 (2002).
74. *"Chaos Shift Keying Encryption in Chaotic External-Cavity Semiconductor Lasers Using a Single-Receiver Scheme"*, C. Mirasso, J. Mulet and C. Masoller, Phot. Tech. Lett. **14**, 456 (2002).
75. *"Intensity and Polarization Self-Pulsations in VCSELs"*, A. Sciré, J. Mulet, C. R. Mirasso and M. San Miguel, Opt. Lett. **27**, 391 (2002).
76. *"Anticipating the dynamics of chaotic maps"*, E. Hernandez-Garcia, C. Masoller and C. R. Mirasso, Phys. Lett. A **295**, 39 (2002).

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80. "Class A lasers with injected signal: Bifurcation set and Lyapunov-potential functions", C. Mayol, R. Toral, C. Mirasso and M. Natielo, Phys. Rev. A **66**, 013808 (2002).
81. "Open vs Closed Loop Performance of Synchronized Chaotic External-Cavity Semiconductor Lasers", R. Vicente, T. Pérez and C. Mirasso, IEEE J. Quantum Electron. **38**, 1197 (2002).
82. "Stochastic Entrainment of Optical Power Dropouts", J.M. Buldú, J. García-Ojalvo, C. Mirasso and M.C. Torrent, Phys. Rev. E **66**, 021106 (2002)
83. "Asymmetric and delayed activation of side modes in multimode semiconductor lasers with optical feedback", J. Buldú, F. Rogister, J. Trull, C. Serrat, M.C. Torrent, J. García-Ojalvo and C. Mirasso, J. of Optics B: Quantum and Semiclass. Opt., **4**, 415 (2002).
84. "Periodic entrainment of power dropouts in mutually coupled semiconductor lasers", J.M. Buldu, Raúl Vicente, Toni Perez, Claudio R. Mirasso, M.C. Torrent and J. Garcia-Ojalvo, Appl. Phys. Lett. **81**, 5105, (2002).
85. "Dynamical Properties of Two Semiconductor Lasers with Bidirectional Optoelectronic Coupling", R. Vicente, J. Mulet, C. Mirasso, S. Tang and J. M. Liu., SPIE, Physics and Simulation of Optoelectronic Devices XI, San José, USA, (2003).
86. "System Size Coherence Resonance in Coupled FitzHugh-Nagumo Models", R. Toral, C. Mirasso and J. Gunton, Europhys. Lett. **61**, 162 (2003)
87. "Vectorial chaos synchronization and polarization message encoding in vertical-cavity surface-emitting lasers", A. Scire, J. Mulet, C. Mirasso, J. Danckaert and M. San Miguel, Phys. Rev. Lett., **90**, 113901 (2003).
88. "Characterization of the anticipated synchronization regime in the coupled FitzHugh--Nagumo model for neurons", R. Toral, C. Masoller, C. Mirasso, M. Ciszak and O. Calvo, Physica A, **235**, 192 (2003).
89. "Entrainment of Optical Low-Frequency Fluctuations is Enhanced by Coupling", J. M. Buldú, J. García Ojalvo, C. Torrent, R. Vicente, T. Pérez and C. Mirasso. Fluctuations and Noise Letters **3**, L127 (2003).
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91. "Experimental Study of High frequency Stochastic Resonance in Chua Circuits", I. Gomes, C. Mirasso, R. Toral and O. Calvo, Physica A **237**, 115 (2003).
92. "Anticipated Synchronization in Neuron Models", M. Ciszak, O. Calvo, C. Masoller, C. Mirasso and R. Toral, Proceedings of the European Symposium on Artificial Neural Networks, Bruges, Belgium (2003).
93. "Ghost resonance in a semiconductor laser operating in an excitable regime", SPIE Meeting on Fluctuation and Noise in Photonics and Quantum Optics, Santa Fe, New Mexico, USA, (2003).
94. "Ghost Resonance in a Semiconductor Laser with Optical Feedback", J. Buldú, D. Chialvo, C. Mirasso, C. Torrent and J. García-Ojalvo, Europhys. Lett. **64**, 178 (2003).
95. "Anticipated synchronization: a metaphorical linear view", O. Calvo, D. Chialvo, V. M. Eguíluz, C. Mirasso and R. Toral, Chaos **14**, 7 (2004).
96. "Synchronization Properties of Two Distant Mutually Coupled Semiconductor Lasers", J. Mulet, C. Mirasso, T. Heil and I. Fischer, J. of Quantum and Semiclassical Optics **6**, p7 (2004).

97. *"Optoelectronic devices for optical chaos communications"*, C. Mirasso, I. Fischer, M. Peil and L. Larger, Proceedings of the SPIE, Information Technology and Communications 2003, Orlando, Florida, USA (2003).
98. *"The role of noise in some physical and biological systems"*, J.D. Gunton, R. Toral, C. R. Mirasso and M.E. Gracheva, Recent Research Developments in Applied Physics (Transworld Research Network), 6, 497-515 (2003).
99. *"Simple interpretation of the dynamics of two mutually coupled lasers with detuning semiconductor lasers"*, R. Vicente, J. Mulet, M. Sciamanna, and C. R. Mirasso, SPIE, Physics and Simulation of Optoelectronic Devices XII, San José, USA, (2004).
100. *"Experimental observation of mutual-coupling effect on semiconductor lasers with optoelectronic feedback"*, S. Tang, R. Vicente, J.-M. Liu and C. Mirasso, SPIE, Physics and Simulation of Optoelectronic Devices XII, San José, USA, (2004).
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- "*Intensity and polarization self-pulsations in Vertical-Cavity Surface-Emitting Lasers*". Alessandro Scirè, Josep Mulet, Claudio R. Mirasso, Maxi San Miguel. VISTA Meeting. París, Francia. 11-13 Junio 2001
- "*Mesoscopic modeling of the tranverse and polarization dynamics in Vertical-Cavity Surface-Emitting Lasers: Influence of thermal lensing*". Josep Mulet, Salvador Balle, Claudio R. Mirasso, Jan Danckaert, Maxi San Miguel.

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- "*Synchronization properties of two mutually coupled semiconductor lasers*". 2nd International Workshop on Dynamics of Nonlinear Optical Systems (PICS Franco-Catalan). Playa de Aro, Gerona, España. 2-6 Septiembre, 2002. J. Mulet, C.R. Mirasso, C. Masoller, T. Heil, I. Fischer, W. Elsasser.
- "*Ghost resonance in a semiconductor lasers operating in an excitable regime*", SPIE Meeting on Fluctuation and Noise in Photonics and Quantum Optics, Santa Fe, New Mexico, USA, June 1-4 (2003).
- "*Vectorial chaos synchronization and polarization encoding in self-pulsating VCSELs*", A. Scire, J. Mulet, M. San Miguel, J. Danckaert and C. Mirasso, EQEC 2003, Munich, Germany June 22-27 (2003).
- "*Performance comparison of different encoding schemes in chaotic optical communication systems*", R. Vicente, Y. Chembo, P. Colet, T. Perez and C. Mirasso, EQEC 2003, Munich, Germany June 22-27 (2003).
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- "Chaos Control and Synchronization of chaotic diode lasers", Optical Society of America Annual Meeting, "Frontiers in Optics", Tucson, Arizona, USA, October 5-9, June 22-27 (2003).

INVITED TALKS

- "*Synchronization of Chaotic diode lasers: Application to Data Encryption*", Photonic West, Physics and Simulation of Optoelectronic Devices VII, San José, USA, January 23-29, 1999.
- "*Low Frequency Fluctuations in a DFB Laser Subject to Optical Feedback: Experiment and Theory*", WIAS Workshop, Dynamics of Semiconductor Lasers, Berlin, Germany, September 9-11, 1999.
- "*Application of Semiconductor Lasers to Secure Communications*", Claudio R. Mirasso, Fundamental Issues of Nonlinear Dynamics, International Spring School, Texel, The Netherlands, April 16-19, 2000.
- "*Chaos Synchronization of Mutually Coupled Semiconductor Lasers: Theoretical Analysis*", WIAS Workshop, Dynamics of Semiconductor Lasers, Berlin, Germany, September 13-15, 2001
- "*Dynamics of Mutually Coupled Semiconductor Lasers: Theoretical Results*", From Gamma-Ray Optics to Semiconductor Laser Dynamics Conference, Bruxelles, Belgium, April 6-7 2001.
- "*Privacy in communications: can chaos do anything for us?*", MEDYFINOL, Nonequilibrium Statistical Mechanics and Nonlinear Physics, Colonia '02, Uruguay, December 9-13, 2002.
- "*Communicating with Chaotic Light*", Hot Topics in Photonics, SPIE International Symposium Photonics Fabrication Europe, Bruges, Belgium, October 28-November 1, 2002

- *"Ghost resonance in an excitable semiconductor laser"*, SIAM Conference on Dynamical Systems, Snowbird, Utah, USA, May 27-31 (2003).
- *"Optoelectronic devices for optical chaos communication"* SPIE Semiconductor Optoelectronic Devices for Lightwave Communication Conference, Florida, USA, September 7-11 (2003).
- *"Chaos control and synchronization in diode lasers"*, Frontiers in Optics, Optical Society of America Annual Meeting, Tucson, Arizona, USA, October 5-9, (2003).
- *"Anticipated Synchronization Forecasts the Response of a Neuron in a Noisy Environment"*, The Sloan-Swartz Center, The Salk Institute for Biological Studies, March 18 (2004).
- *"Dynamics and Synchronization of Bidirectionally Coupled Semiconductor Lasers"*, WIAS Workshop, Dynamics of Semiconductor Lasers, Berlin, Germany, May, 2005.
- *"Synchronization properties of bidirectionally coupled semiconductor lasers"*, International Conference on Control and Synchronization of Dynamical Systems, León, Mexico, October 4-7, 2005.
- *"Chaotic Optical Communications"*, Frontiers in Optics, Optical Society of America Annual Meeting, Tucson, USA, October 16-20, 2005.
- *"Dynamics of Mutually Coupled Semiconductor Lasers"*, Second 'Rio de la Plata' Workshop on Noise, Chaos, and Complexity in Lasers and Nonlinear Optics, Colonia del Sacramento, Uruguay, December 2005.
- *"Chaos Encryption in real life: Field demonstration of telecommunication with a chaotic carrier"*, Nonlinear Dynamics of Spatiotemporal Self-Organization, Barcelona, Febrero 2006.
- *"Chaos Encryption in real life: Field demonstration of telecommunication with a chaotic carrier"*, FISES 2006, Física Estadística y No Lineal, Granada, Septiembre 2006.
- *"Ghost resonante vs. Coincidence detection: when size does matter"*, MEDYFINOL 2006, *Mecánica Estadística del Desequilibrio y Física No Lineal, Mar del Plata, Argentina, Diciembre 2006.*

SUPERVISED MASTER THESIS

Title: Prevention of Coherence Collapse in Diode Lasers by Dynamic Targeting.

Student: Jeroen Wieland

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Year: 1996.

Title: Statistics of Power Dropouts in Semiconductor Lasers with Optical Feedback and Current Modulation

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Year: 1998.

SUPERVISED Ph.D. THESIS

Title: Non-Linear Dynamics of Laser Systems: Lyapunov Potentials and Bifurcation Diagrams
Student: Catalina Mayol Serra
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Title: Semiconductor Laser Dynamics: Compound-Cavity, Polarization and Transverse Modes
Student: Josep Mulet Pol
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Year: 1999-2002.

Title: Dynamics of non-linear systems: application to synchronization of analogue systems.
Student: Iacyel Gomes Silva
Institution: Departament de Física, Universitat de les Illes Balears, Palma de Mallorca, Spain.
Year: s 2000- 2006.

Title: Dynamics and Synchronization of Bidirectionally Coupled Semiconductor Lasers.
Student: Raúl Vicente Zafra
Institution: Departament de Física, Universitat de les Illes Balears, Palma de Mallorca, Spain.
Year: 2001-2006.

Title: Synchronization Anticipated Synchronization: Numerical and Theoretical Study
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Year: 2001-2006

Title: Aynchornization Studies in Non-Linear Systems: from Lasers to Neurons
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STAYS IN FOREING CENTERS

- Comisión Nacional de Energía Atómica, Buenos Aires (Argentina), 1985-89, Ph.D. Student.
- Physics Department, Science Faculty, Universidad Nacional de Mar de Plata, Buenos Aires (Argentina), 1989-90, Associate Professor.
- Department of Physics and Astronomy, Free University, Amsterdam, Holanda, August 1995- January 1996, Post-doc Student.
- Arizona Center for Mathematical Science, University of Arizona, USA, 27/1/2001 – 2/3/2001, Visiting Scientist.

- Department of Electrical Engineering, University of California Los Angeles, USA, 1/9/2003-31/8/2004.
- Department of Physics, Lehigh University, Bethlehem, PA USA, 15/6/2005-15/7/2005.

STAYS IN NATIONAL CENTERS

- Universidad de las Islas Baleares, Physics Department, 10/90 a 9/92, “Estancia Postdoctoral para Científicos y Tecnólogos Extranjeros”, Ministerio de Educación y Ciencia – DGICYT.
- Universidad de Cantabria, Department of Modern Physics, 10/92 a 9/93, Visiting Professor.
- Universidad de las Islas Baleares, Physics Department, 10/93 a 9/94, visiting Professor.
- Consejo Superior de Investigaciones Científicas, Instituto de Estructura de la Materia, 11/94 - 10/95.

OTHER MERITS

FELLOWSHIPS

- Comisión de Investigaciones Científicas de la Provincia de Buenos Aires, Argentina, 1984-1987 (Ph.D., 3 years).
- Comisión de Investigaciones Científicas de la Provincia de Buenos Aires, Argentina, 1987-1989 (Ph.D., 2 years).
- Post Doctoral position, funded by the Ministerio de Educación y Ciencia, España, 1990-1992, Universidad de las Islas Baleares, Spain.
- Post Doctoral position, "Human Capital and Mobility Program" of the European Commission , Holland, August 1995 - January 1996.

OTHERS

- Participant of Ph.D. thesis committees:
 - Lic. Angel Valle, Universidad de Cantabria, Spain, 1993.
 - Lic. Margalida Homar, Universidad de las Islas Baleares, Spain, 1996.
 - Lic. Jaume Dellunde, Universidad de Barcelona, Spain, 1996.
 - Lic. Josep Martín regalado, Universidad de las Islas Baleares, Spain, 1997.
 - Lic. José Revuelta Ceballos, Universidad de Cantabria, Spain, 1998.

Lic. Nasr Mustafa, Universidad de Cantabria, Spain, 1999.
 Lic. Angel Sánchez-Díaz, Universidad Complutense de Madrid, Spain, 1999.
 Lic. Nahed Dokhaned, Universite de Nice, France, 2000.
 Lic. Juan Diego Ania, Universidad de Oviedo, Spain, 2000.
 Lic. Fabien Rogister, Facultat Politècnica du Mons, Bèlgica, 2001.
 Lic. Bob Nagler, Vrije Universiteit Brussel, 2003.
 Lic. Javier Martín Buldú, Universitat Politècnica de Catalunya, 2003.
 Lic. Miguel Cornelles, Free University of Brussels, Bèlgica, 2006.
 Lic. Claudio Tessone, Universitat de les Illes Baears, 2006.
 Lic. Yanne Chembou, Universitat de les Illes Baears, 2006.

- Censor of the journal: IEEE J. of Quantum Electronics, IEEE Photonics Technology Letters, Optics Letters, Applied Physics Letters, Quantum and Semiclassical Optics, IEE Proceedings Optoelectronics., Physical Review, Journal of the Optical Society of America.
- Professor of the Agencia Española de Cooperación Internacional, Acción I, 1996 and 1997.
- Professor Tutor of 2 Intercampus students, Agencia Española de Cooperación Internacional: 1997, 2000.
- Guest Editor of the Special Issue of the IEE Proceedings Optoelectronics “Semiconductor Optoelectronics”, February de 1998.
- Coordinator of the European Project OCCULT (Optical Chaos Communications Using Laser Diode Transmitters, IST-2000-29683), 2001-2004.
- Guest Editor of the Feature Section of the IEEE Journal of Quantum Electronics, “Optical Chaos and Applications to Cryptography”, September, 2002.
- Member of the committee of the conference “Physics and Simulations of Optoelectronics Devices”, Photonics West, SPIE Meetings.
- Member of the committee for evaluation of Marie-Curie fellowships, European Commission.
- Member of the Technical Committee of the conference “European Quantum Electronic Conference”, sub-committee: “Semiconductor Lasers”, Munich, Germany, June 2003.
- Member of the Technical Program Committee of the “Semiconductor Laser and Laser Dynamics Conference” organized as part of SPIE's International Symposium on Photonics Europe, April 2004, Strasbourg, France.
- Member of the Technical Program Committee of the “CLEO Focus meeting, Nonlinear, Quantum and Chaotic Optics: New Directions in Photonics and Optical Communications”, Cannes, September, 2006
- Co-Chairman of teh Symposium ““Cryptographic Techniques in Photonics”, CLEO/Europe-IQEC, Munich 2007.
- Member of the Technical Program Committee of the Solvay Workshop: "Bits, quanta and complex systems: modern approaches to photonics information processing", Brussels,

December 2007.