

MARIO CARLOS MARCONI

PRESENT POSITION:

Professor. Electrical and Computing Engineering Department. Colorado State University.

EDUCATION:

1985 Ph.D. Physics, Buenos Aires University, (Argentina)
1980 Physics Diploma, Buenos Aires University (Argentina)

PROFESSIONAL CAREER:

2001- 2004 Associate Professor Department of Physics, Buenos Aires University
1997-2001. Adjoin Department Head. Physics Department
1992-2000 Assistant Professor Department of Physics, Buenos Aires University
1986-1991 Visiting Scientist. Electrical Engineering Dept. Colorado State University
1978-1985 Teaching Assistant. Department of Physics. Buenos Aires University
1992- 2004 Member of the Argentinean National Research Council (CONICET)

Visiting Scientist. Electrical and Computer Engineering Department, Colorado State University during the following periods: July 1994 to January 1995, August 1996 to January 1997, October 1997 to February 1998, January 1999 to March 1999, January 2002 to March 2002, January 2003 to June 2003

PROFESSIONAL SOCIETIES

- Optical Society of America. Fellow (2011) for "*significant contributions to the development of compact soft x-ray lasers and for pioneering their use in table-top coherent lithography, holography, and interferometry*"
- IEEE (Photonics Society). Fellow (2012) for "*for contributions to development and use of compact soft x-ray lasers*"
- American Physical Society

PROFESIONAL SERVICE

- Chair of the organizing committee of the IV National Workshop in Photophysics, Buenos Aires, 1993.
- Member of the organizing committee "Soft X-Ray Lasers and Applications", San Diego, California, 9-14 de July 1995 and July 1997.
- Member of the Executive Committee of the Photophysics Division. Argentinean Physical Society
- Member of the Regional Committee of the ICO (International Committee for Optics)
- Member of the organizing committee "Soft X-Ray Lasers and Applications", Denver, Colorado, 18-23 July 1999.
- Member of the organizing committee of the VII OPTILAS and IV RIAO in Tandil, Argentina (2001).
- Co-Editor, SPIE Journal Vol. 4419, (2001)
- Reviewer for multiple scientific journals, among them Applied Physics Letters, Journal of Applied Physics, Optics Letters, Optics Express, IEEE JQE, IEEE Transactions in Nanotech,

Mario C. Marconi

IEEE STQE.

- Reviewer in NSF panels, Czech Scientific Foundation, Argentinean Agency for Research, Argentinean Research Council, Center for Functional Nanomaterials Brookhaven National Laboratory.
- Chair of the Denver IEEE-LEOS Chapter (2006-2008)
- Secretary of the Denver chapter IEEE Photonics Society (2009-2011)
- Associate Editor for IEEE Photonics Journal. (2011)
- Topical Editor for Applied Optics (2011)
- Co-chair of the International Conference on X-Ray Lasers. Colorado, May 2014

TECHNICAL PUBLICATIONS In REFEREED JOURNAL: 2689 citations. H index: 28

1. "Fractional Talbot lithography with extreme ultraviolet light". Hyun-su Kim, W. Li, S. Danylyuk, W. S. Brocklesby, M. C. Marconi and L. Juschk. Accepted for publication in Optics Letters, October 2014.
2. "Image-plane holography with a table top soft X-ray Laser". J. Nejd, I. D. Howlett, D. Carlton, E.H. Anderson, W. Chao, M. C. Marconi, J. J. Rocca, and C.S. Menoni. IEEE Photonics Journal. Accepted for publication October 2014
3. "Recording oscillations of sub-micron size cantilevers by extreme ultraviolet Fourier transform holography". Nils C. Monserud, Erik B. Malm, Przemyslaw W. Wachulak, Vakhtang Putkaradze, Ganesh Balakrishnan, Weilun Chao, Erik Anderson and Mario C. Marconi. Optics Express, **22**, 4165, (2014).
4. "Design of a phase shifting interferometer in the EUV for high precision metrology" M.G. Capeluto, M.C. Marconi, C.C. Lemmi. Applied Optics, **53**, 1274, (2014).
5. "Single-shot soft x-ray laser linewidth measurement using a grating interferometer". Y. Wang, L. Yin, S. Wang, M.C. Marconi, J. Dunn, E. Gullikson, J. J. Rocca. Optics Letters, **38**, 5004-5007, (2013).
6. "Hour-long continuous operation of a table-top soft x-ray laser at 50-100 Hz repetition rate". B.A. Reagan, W Li, L. Urbanski, K.A. Wernsing, C. Salisbury, C. Baumgarten, M. C. Marconi, C.S. Menoni, J. J. Rocca. Optics Express, **21**, 28380, (2013).
7. "Defect free periodic structures using extreme ultraviolet Talbot lithography in a table top system". W. Li, V. Martinez Esquiroz, L. Urbanski, D. Patel, C.S. Menoni, M. C. Marconi, A. Stein, W. Chao, E.H. Anderson. Journal of Vacuum Science and Technology B 31, 06F604-1 (2013). Also this article was a selected as a key scientific article contributing to excellence in engineering scientific and industrial research by Advances in Engineering Ltd (<http://advanceseng.com>)
8. "Breakthroughs in Photonics: Nano-structuring and nano-fabrication". M.C. Marconi. IEEE Photonics Journal **5**, 0700604 (2013). Invited paper.
9. "Tabletop single-shot extreme ultraviolet Fourier transform holography of an extended object". Erik B. Malm, Nils Monserud, Chris G. Brown, Przemyslaw W. Wachulak, Huiwen Xu, Ganesh Balakrishnan, Weilun Chao, Erik Anderson and Mario C. Marconi. Optics Express, **21**, 9959, (2013). Article selected for the Virtual Journal of Biomedical Optics (VJBO) in June 2013.
10. "Intrinsic Localized Modes in two-dimensional Vibrations of Crystalline Pillars and their Application for Sensing". D. Brake, H. Xu, A. Hollowell, G. Balakhrisnan, C. Hains, M. Marconi, V. Putkaradze. Journal of Applied Physics, **112**, 104326 (2012).
11. "Defect Tolerant Extreme Ultraviolet Nanoscale Printing". L. Urbanski, A. Isoyan, A. Stein, J.J. Rocca, C.S. Menoni, M.C. Marconi. Optics Letters **37**, 3633, (2012).
12. "Defect Tolerant Extreme Ultraviolet Lithography Technique". L. Urbanski, W. Li, J. Rocca, C.S. Menoni, M.C. Marconi, A. Isoyan, A. Stein. Journal of Vacuum Science and Technology B, **30**, 06F502-1, (2012).
13. "Sequential single Shot Imaging of Nanoscale Dynamic Interactions with a Table top Soft X-ray Laser". S. Carbajo, I.D. Howlett, F. Brizuela, K.S. Buchanan, M.C. Marconi, W. Chao, E.H. Anderson, I. Artioukov, A. Vinogradov, J.J. Rocca, C.S. Menoni. Optics Letters, **37**, 2994, (2012). This article was selected for publication in the Virtual Journal for Biomedical Optics in August 2012.

14. "Spectral linewidth of a Ne-like Ar capillary discharge soft x-ray laser and its dependence on amplification beyond gain-saturation". L. Urbanski, M.C. Marconi, L.M. Meng, M. Berrill, O. Guilbaud, A. Klisnick, J.J. Rocca. *Physical Review A* **85**, 033837, (2012)
15. "Aspects of nanometer scale imaging with extreme ultraviolet (EUV) laboratory sources". P.W. Wachulak, M.C. Marconi, A. Isoyan, L. Urbanski, A. Bartnik, H. Fiedorowicz, R.A. Bartels. *Invited Paper. Opto-Electronics Review* , **20**, 1-14 (2012).
16. "Analysis of a scheme for de-magnified Talbot lithography." L. Urbanski, M.C. Marconi, A. Isoyan, A. Stein, C.S. Menoni, J.J. Rocca. *Journal of Vacuum Science and Technology B*, **29**, 06F504 (2011)
17. "Imaging at the nanoscale with practical table-top EUV full field microscopes". C.S. Menoni, F. Brizuela, I. Howlett, S. Carbajo, D. Peterson, M.C. Marconi, J.J. Rocca, A. Sakdinawat, Y. Liu, D.T. Attwood. (Invited paper). *IEEE Selected topics on Quantum Electronics*, **18**, 434, (2011)
18. "Demonstration of Nanomachining with Focused Extreme Ultraviolet Laser Beams". H. Bravo, B.T. Szapiro, P.W. Wachulak, M.C. Marconi, W. Chao, E.H. Anderson, C.S. Menoni, J.J. Rocca. *IEEE Selected topics on Quantum Electronics*, **18**, 443, (2011)
19. "Extreme Ultraviolet Lithography with Table Top Lasers". (Invited Review) M.C. Marconi and P.W. Wachulak. *Progress in Quantum Electronics*. **34**, 173-190, (2010).
20. "Holographic imaging with nanometer resolution using compact table top EUV laser". P. Wachulak, M.C. Marconi, R.A. Bartels, C.S. Menoni, J.J. Rocca. *Optoelectronic Review*, **18**, 80-90, (2010)
21. Wachulak, P. W., Marconi, M. C., Menoni, C. S., Rocca, J. J., Fiedorowicz, H., Bartnik, A., "Imaging and Patterning on Nanometer Scale Using Coherent EUV Light ". *Acta Physica Polonica A*, **117**, 403-407(2010)
22. "Talbot lithography: Self-imaging of complex structures." A. Isoyan, F. Jiang, Y.C. Cheng, P. Wachulak, L. Urbanski, J. Rocca, C. Menoni, M.C. Marconi, F. Cerrina. *Journal of Vacuum Science and Technology B*, **B27**, 2931-2936, (2009)
23. "Microscopy of extreme ultraviolet lithography masks with 13.2 nm table top laser illumination". F. Brizuela, Y. Wang, C.A. Brewer, F. Pedaci, W. Chao, E.H. Anderson, Y. Liu, K.A. Goldberg, P. Naulleau, P. Wachulak, M.C. Marconi, D.T. Attwood, J.J. Rocca, C.S. Menoni. *Optics Letters*, **34**, 271, (2009).
24. "New opportunities in Interferometric Lithography using Extreme Ultraviolet Table top Lasers". P. W. Wachulak, L. Urbanski, M.G. Capeluto, D. Hill, W. Rockward , C. Lemmi, E. Anderson, C. S. Menoni, J. J. Rocca, M. C. Marconi. *Journal of Micro/Nanolithography, MEMS, and MOEMS*, **8**, 021206, (2009).
25. "Diffusion-viscosity decoupling in supercooled aqueous trehalose solutions". H. Corti, G. Frank and M. C. Marconi. *J. Phys. Chem B*, **112**, 12899-12906, (2008)
26. "An alternative solution of fluorescence recovery kinetics after spot bleaching for measuring diffusion coefficients. 1: Theory and numerical analysis". G.A. Frank, M.C. Marconi and H.R. Corti. *Journal of Solution Chemistry*, **37**, 1575-1591, (2008)
27. "An alternative solution of fluorescence recovery kinetics after spot bleaching for measuring diffusion coefficients. 2: Diffusion of fluorescein in aqueous sucrose solutions". H.R. Corti, G.A. Frank and M.C. Marconi. *Journal of Solution Chemistry*, **37**, 1593-1608, (2008)
28. "Soft x-ray laser holography with wavelength resolution". Wachulak P.W., M.C. Marconi. R. Bartels, C.S. Menoni, J.J. Rocca. *JOSA B*. **25**, 1811-1814, (2008).
29. "Soft X-ray laser interferometry of a dense plasma jet". J. Grava, M.A. Purvis, J. Filevich, M.C. Marconi, J. Dunn, S.J. Moon, V.N. Shlyaptsev, J.J. Rocca. *IEEE Trans. on Plasma Science* **36**, 1286, (2008).

30. "Nanopatterning in a compact set up using table top extreme ultraviolet lasers". P.W. Wachulak, M.G. Capeluto, C.S. Menoni, J.J. Rocca and M.C. Marconi. *Optoelectronic Review* **16**, 444-450, (2008).
31. "Soft X-ray laser interferometry of colliding laser-created plasmas in semicylindrical cavities". M.A. Purvis, J. Grava, J. Filevich, M.C. Marconi, J. Dunn, S.J. Moon, V.N. Shlyaptsev, E. Jankowska, J.J. Rocca. *IEEE Trans. on Plasma Science* **36**, 1134, (2008).
32. "Dynamics of a dense laboratory plasma jet investigated using soft x-ray laser interferometry". Grava, J, Purvis, M. A., Filevich, J., Marconi, M. C., Rocca, J. J., Dunn, J., Moon, S. J., Shlyaptsev, V. N.. *Physical Review E*, **78**, 016403, (2008).
33. "Single-shot extreme ultraviolet laser imaging of nanostructures with wavelength resolution". C. A. Brewer, F. Brizuela, P. Wachulak, D. H. Martz, W. Chao, E.H. Anderson, D.T. Attwood, A. V. Vinogradov, I. A. Artyukov, A.G. Ponomareko, V.V. Kondratenko, M.C. Marconi, J.J. Rocca, C.S. Menoni. *Optics Letters*, **33**, 518, (2008). This article was also published in *Virtual Journal for Biomedical Optics*, 3, 4, (2008) and in *Virtual Journal of Nanoscale Science & Technology*, 17, 15, (2008)
34. "Desk-top EUV interferometric lithography tool based on an amplitude division interferometer". P. Wachulak, M. Grisham, D. Martz, S. Heinbuch, W. Rockward, D. Hill, J. Rocca, C.S. Menoni, E. Anderson, M.C. Marconi. *JOSA B* **25**, B104, (2008). This article was also published in *The Virtual Journal for Biomedical Optics*, 3, 8, (2008)
35. "Analysis of extreme ultraviolet microscopy images of patterned nanostructures based on a correlation method". P.W. Wachulak, C.A. Brewer, F. Brizuela, W. Chao, E. Anderson, R. A. Bartels, C.S. Menoni, J.J. Rocca, M.C. Marconi. *Journal of the Optical Society of America B*, **25**, B20, (2008).
36. "High numerical aperture tabletop soft x-ray diffraction microscopy with 70 nm resolution". R.L. Sandberg, C. Song, P.W. Wachulak, D.A. Raymondson, A. Paul, B. Amirbekian, E. Lee, A. Sakdinawat, C.L. Vorakiat, M.C. Marconi, C.S. Menoni, M.M. Murnane, J.J. Rocca, H.C. Kapteyn, J. Miao. *Proceedings of the National Academy of Science*, **105**, (1), 24-27, (2008)
37. "Nanoscale patterning in high resolution HSQ photoresist by interferometric lithography with table top EUV lasers". P. W. Wachulak, M.G. Capeluto, M. C. Marconi, D. Patel, C. S. Menoni, J.J. Rocca. *Journal of Vacuum Science and Technology B* **25** (6), 2094, (2007).
38. "Volume extreme ultraviolet holographic imaging with numerical optical sectioning". P. W. Wachulak, M.C. Marconi, R. A. Bartels, C. S. Menoni, J.J. Rocca. *Optics Express* **15**, 10622-10628, (2007).
39. "Patterning of nano-scale arrays by table top extreme ultraviolet laser interferometric lithography". P.W. Wachulak, M.G. Capeluto, M.C. Marconi, C.S. Menoni, J.J. Rocca. *Optics Express*, **15**, 3465, (2007).
40. "Dynamics of converging laser-created plasmas in semicylindrical cavities studied using soft x-ray laser interferometry." M.Purvis, J.Grava, J.Filevich, M.C. Marconi, J. Dunn, S.J. Moon, V.N. Shlyaptsev, E. Jankowska, J.J. Rocca. *Phys. Rev. E* **76**, 046402 (2007)
41. "Table Top Nanopatterning with Extreme Ultraviolet laser Illumination". M.G. Capeluto, P. Wachulak, M.C. Marconi , D. Patel, C.S. Menoni, J.J. Rocca, C. Lemmi, E.H. Anderson, W. Chao, D.T. Attwood. *Microelectronics Engineering*, **84**, 721-724, (2007)
42. "Sub 400 nm spatial resolution extreme ultraviolet holography with a table top laser". P. W. Wachulak, R. A. Bartels, M. C. Marconi, C. S. Menoni, J.J. Rocca, Y. Lu, B. Parkinson. *Optics Express* **14**, 9636 (2006).
43. "Prediction and observation of tin and silver plasmas with index of refraction greater

- than one in the soft X-ray range". J. Filevich, J. Grava, M. Purvis, M.C. Marconi, J.J. Rocca, J. Nielsen, J. Dunn, W.R. Johnson. *Physical Review E*, **74**, 016404, (2006)
44. "Sub-38 nm resolution table-top microscopy using 13 nm wavelength laser light". G. Vaschenko, C. Brewer, F. Brizuela, Y. Wang, M.A. Larotonda, B.M. Luther, M.C. Marconi, J.J. Rocca, C.S. Menoni, E.H. Anderson, W. Chao, B.D. Harteneck, J.A. Liddle, Y. Liu, D. T. Attwood. *Optics Letters*, **31**, 1214, (2006)
 45. "Continuous high repetition rate operation of collisional soft X-ray lasers using solid targets". A. Weith, M.A. Larotonda, Y. Wang, B.M. Luther, D. Alessi, M.C. Marconi, J.J. Rocca. *Optics Letters*, **31**, 1994, (2006).
 46. "Observation of multiply ionized plasmas with dominant bound electron contribution to the index of refraction". J. Filevich, J.J. Rocca, M.C. Marconi, S.J. Moon, J. Nielsen, J.H. Scofield, J. Dunn, R.F. Smith, R. Keenan, J.R. Hunter, V.N. Shlyaptsev. *Journal of Quantitative Spectroscopy and Radiative Transfer*, **99**, 165-174, (2006).
 47. "Capillary discharge-driven metal vapor plasma waveguides". Y. Wang, B. M. Luther, M. Berrill, M. Marconi, F. Brizuela, J.J. Rocca. *Physical Review E*. **72**, 026413, (2005)
 48. "Nanopatterning with interferometric lithography using a compact $\lambda = 46.9$ nm laser". M. G. Capeluto, G. Vaschenko, M. Grisham, M. C. Marconi, S. Ludueña, L. Pietrasanta, Y. Lu, B. Parkinson, C. S. Menoni, and J. J. Rocca. *IEEE Transactions on Nanotechnology*, **5**, 3 (2006).
 49. "Plasma conditions for improved energy coupling into the gain region of the Ni-like Pd transient collisional X-ray laser". R.F. Smith, J. Dunn, J. Filevich, S. Moon, J. Nielsen, R. Keenan, V.N. Shlyaptsev, J.J. Rocca, J.R. Hunter, M.C. Marconi. *Phys. Rev. E* **72**, 036404, (2005)
 50. "Nano-imaging with a compact extreme ultraviolet laser", G. Vaschenko, F. Brizuela, C. Brewer, M. Grisham, H. Mancini, C.S. Menoni, M.C. Marconi, J.J. Rocca, W. Chao, A. Liddle, E. Anderson, D. Attwood, A.V. Vinogradov, I.A. Artiukov, Y.P. Pershyn and V.V. Kondratenko, *Optics Letters*, **30**, 2095, (2005).
 51. "Picosecond 14.7 nm Interferometry of High Intensity Laser-Produced Plasmas". J. Dunn, J. Filevich, R. F. Smith, S.J. Moon, J. J. Rocca, R. Keenan, J. Nielsen, V. N. Shlyaptsev, J. R. Hunter, A. Ng, and M. C. Marconi, *Lasers and Particle beams* **23** (1), 9-13 (2005).
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 54. "Saturated high repetition rate 18.9 nm table top laser in Ni-like Mo". B.M. Luther, Y. Wang, M.A. Larotonda, D. Alessi, M. Berrill, M. Marconi, J.J. Rocca, V.N. Shlyaptsev. *Optics Letters*, **30**, 165, (2005).
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57. "Characteristics of a Saturated 18.9 nm Tabletop Laser Operating at 5 Hz Repetition Rate". M.A. Larotonda, B. M. Luther, Y. Wang, Y. Liu, D. Alessi, M. Berrill, A. Dummer, F. Brizuela, C. S. Menoni, M. C. Marconi, V. N. Shlyaptsev, J. Dunn, and J. J. Rocca, **(Invited)** IEEE Journal of Selected Topics in Quantum Electronics, **10**, 1363-1367, (2004).
58. "Thermal patterning of superconducting films". M. Tortarolo, H. Ferrari, M.C. Marconi and V. Bekeris. Physica C, 408/410, 599, (2004).
59. "Soft X-Ray Laser Diagnostics of Exploding Aluminum Wire Plasmas". E.C. Hammarsten, B. Szapiro, E. Jankowska, J. Filevich, M. C. Marconi, J. J. Rocca. Applied Physic B 78, 933-937, (2004)
60. "Scanning mechanism based on a programmable liquid crystal display". M.G. Capeluto, C. La Mela, C. Iemmi, M. C. Marconi. Optics Communications, 232, 107-113, (2004).
61. "Guiding of intense laser beams in highly ionized plasma columns generated by a fast capillary discharge". B. M. Luther, Y. Wang, M.C. Marconi, J.L.A. Chilla, M. A. Larotonda, and J.J. Rocca. Physical Review Letters 92, 235002, (2004)
62. "Picosecond resolution soft X-ray laser plasma interferometry". J. Filevich, J.J. Rocca, M.C. Marconi, R.F. Smith, J. Dunn, R. Keenan, J.R. Hunter, J. Nielsen, A Ng, V.N. Shlyaptsev. Applied Optics **43**, 3938, (2004).
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64. "Two dimensional effects in laser created plasmas measured with soft X ray laser interferometry". J.J. Filevich, J.J. Rocca, E. Jankowska, E.C. Hammarsten, K. Kanizay, M.C. Marconi, S.Moon and V.N. Shlyaptsev. Physical Review. E 67, 056409 (2003).
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INVENTION DISCLOSURES AND PATENTS

1. "Nanometer-Scale Lithography Using Extreme Ultraviolet/Soft X-Ray Laser Interferometry". Mario Marconi, Przemyslaw Wachulak, Carmen Menoni, Jorge Rocca. U.S. Patent 7,705,332.
2. "Fast non-invasive defect detection by nanomechanical oscillations and Extreme Ultraviolet (EUV) holography". Mario C. Marconi, Vakhtang Putkaradze, Ganesh Balakrishnan. U.S. provisional patent number: 61/293,130. Filed 1/7/2010.
3. "Extreme Ultraviolet/Soft X-Ray Laser Nano-Scale Patterning Using The Demagnified Talbot Effect," Mario Marconi, Lukasz Urbanski, Artak Isoyan, Jorge Rocca filed in the

U.S. Patent and Trademark Office 4/26/2013. Application Number 13/871,870.

4. "Method for creating a nanostamp and a matched reader for anticounterfeiting applications" M.C. Marconi, C.S. Menoni and J.J. Rocca.

INVITED CONFERENCE PRESENTATIONS

1. "High Average Power 100 Hz Repetition Rate Table-top Soft X-Ray Lasers". J.J. Rocca, B. Reagan, K. Wernsing, Y. Wang, L. Yin, S. Wang, M. Berril, M. Woolston, A. Curtis, F. Furch, V. Shlyaptsev, B. Luther, D. Patel, M.C. Marconi, C.S. Menoni. X-Ray Lasers and Coherent X-Ray Sources: Development and Applications X. San Diego, August 2013
2. "Coherent Nanopatterning with Table-top Soft X-ray Lasers". M.C. Marconi, W. Li, L. Urbanski, A. Stein, W. Chao, E. Anderson, C.S. Menoni, J.J. Rocca. X-Ray Lasers and Coherent X-Ray Sources: Development and Applications X. San Diego, August 2013
3. "Towards Table-top Time-resolved Extreme Ultraviolet Fourier Holography". E. Malm, P. Wachulak, J.J. Rocca, C.S. Menoni, G. Balakrishnan, V. Putkaradze, M.C. Marconi. Invited Talk in 2011 IEEE Photonics Society Meeting. Virginia, October 2011
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INVITED TALKS

- "EUV holography and nanopatterning with table top lasers". Presented at the March ExCom meeting of the IEEE Denver Section. March 2006
- "Photonics research Overview at Colorado State University". Presented at the 2008 Colorado Photonics Industrial Association" November 2008.
- "Research Activity Overview at Colorado State University". Presented at the 2009 Colorado Photonics Industrial Association" November 2009.
- "High resolution imaging in the EUV with table top systems". Presented at the COSI (Computational Optical Sensing and Imaging) Seminar series, Colorado University, March 2010.
- "Imaging in the EUV with EUV lasers: new opportunities in nanotechnology". Presented at the Center for High Tech Materials, University of New Mexico, April 2010.
- "Research Activity Overview at Colorado State University". Presented at the 2010 Colorado Photonics Industrial Association" November 2010.
- "Expanding the possibilities of nanotechnology using Table top EUV lasers: imaging, patterning and more" Presented in the Defense Threat Reduction Agency. March 2011
- "Development of table top tools for patterning and imaging based on EUV compact lasers". Quantum Electronics Symposium, Buenos Aires, 14-16 August 2012
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- Laser Focus World November, 2005
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2. G. Frank, M. Marconi, H. Corti. "Measurement of the difussion of neutral solutes by photobleaching". 88^o Meeting of the Argentinian Physical Society, Bariloche, September 2003.
3. M.G. Capeluto, C. La Mela, C. Lemmi, M.C. Marconi. "Scanning system based on spatial light modulators". 88^o Meeting of the Argentinian Physical Society, Bariloche, September 2003.
4. L. Estrada, Y. Cesa, P.F. Aramendia, M.C. Marconi. "Detection of single molecules by laser induced fluorescence". 88^o Meeting of the Argentinian Physical Society, Bariloche, September 2003.
5. Amador A, Estrada L, Marconi MC. "Generation of supercontinuum in a photonic crystal fiber optic". 87^o Meeting of the Argentinian Physical Society, Cordoba, September 2002.
6. Tortarolo M, Ferrari H, Marconi MC, Bekeris V. "Short time dynamics of magnetic flux in high Tc superconductors". 87^o Meeting of the Argentinian Physical Society, Cordoba, September 2002
7. Suarez B.P.R., Marconi MC. "Time resolved absorption measurements at 400nm". 87^o Meeting of the Argentinian Physical Society, Cordoba, September 2002.
8. Sartarelli A, Ferrari H, Marconi MC, Bekeris V, Johansen TH. "Magneto-optic technique for the study of high Tc superconductors". 87^o Meeting of the Argentinian Physical Society, Cordoba, September 2002
9. Capeluto MG, Marconi MC, Luzzi E, Crespo M. "Two photon absorption fluorescence: calibration and characterization of a microscope". 87^o Meeting of the Argentinian Physical Society, Cordoba, September 2002
10. G. Quinteiro, M. Marconi, H. Corti. "Difussion in super cooled solutions of sacarose and threalose". National Meeting Physical Chemistry. San Martin de los Andes. 23-27 April 2001.
11. F. Coumans, M.G. Capeluto, M.C. Marconi, O.E. Martnez. "Development of a two photon absorption fluorescence microscope". 86^o Meeting of the Argentinian Physical Society, Rosario, September 2001.
12. A.A. Hnilo, M.G. Kovalsky, A.R. Libertun, M.C. Marconi. "Experimental test of the multi stable behavior of a TiSa laser". 85^o Meeting of the Argentinian Physical Society, Buenos Aires, September 2000.
13. F.P. Diodati, A.A. Hnilo, M.G. Kovalsky, M.C. Marconi, A. Touron. "Teaching physics with a diode pumped Nd:YAG laser". 85^o Reunión de la Asociación Física Argentina, Buenos Aires, September 2000.
14. A.C. Ventura, P. Bianucci, A.R. Libertun, M.C. Marconi. "Pulsed Nd:YAG laser with intra cavity doubling". 84^o Reunión de la Asociación Física Argentina, S. Miguel de Tucuman,

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15. J. Torga, C. Garcia Segundo, M. Villagran Muniz, M.C. Marconi. "Total differential energy: a new method to measure rotational diffusion times". 84⁰ Reunión de la Asociación Física Argentina, S. Miguel de Tucumán, September 1999.
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18. Libertun, B. Suarez, M.C. Marconi. "Analysis of a multi pass TiSa amplifier". 83⁰ Meeting of the Argentinian Physical Society, La Plata, September 1998.
19. J. Torga, C. Garcia Segundo, M. Villagran, M. Negri, P. Aramendia, M.C. Marconi. "Dynamics of the rotation of ellipsoidal molecules through the study of the fluorescence after a double short pulse excitation". 83⁰ Meeting of the Argentinian Physical Society, La Plata, September 1998.
20. J. Filevich, M.C. Marconi, J.J. Rocca. "Construction of a prototype of a interferometer to measure linewidth in soft X ray lasers". 83⁰ Meeting of the Argentinian Physical Society, La Plata, September 1998.
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23. Libertun, M.C. Marconi. "Measuring sub nanosecond light pulses using the optical box car method". 81⁰ Meeting of the Argentinian Physical Society, Tandil, October 1996.
24. J.R. Torga, M.C. Marconi. "Photoselection as a method to measure rotational diffusion times". 81⁰ Meeting of the Argentinian Physical Society, Tandil, October 1996.
25. S. Valenzuela, H. Ferrari, V. Bekeris, M.C. Marconi, O.E. Martinez, J. Guimpel, F. Pardo, F. de la Cruz. "Short time relaxation of the magnetic flux in superconductor GdBaCuO films". 81⁰ Meeting of the Argentinian Physical Society, Tandil, October 1996.
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27. A. Libertun, M.C. Marconi. "Description of a method to measure fluorescence in the range of nanoseconds ". 80⁰ Meeting of the Argentinian Physical Society, Bariloche, October 1995.
28. J. Torga, J. Etcheverry, M.C. Marconi. "Calculation to second order of the fluorescence produced by spherical molecules with rotational diffusion ". 80⁰ Meeting of the Argentinian Physical Society, Bariloche, October 1995.
29. J. Etcheverry, J. Torga, M.C. Marconi. "Numeric simulation of the fluorescence induced by laser pulses in spherical molecules with rotational diffusion ". 80⁰ Meeting of the Argentinian Physical Society, Bariloche, October 1995.
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35. J. Codnia, S. Goronatzky, O.E. Martinez, M.C. Marconi. "Computer controlled autocorrelator ". 77° Meeting of the Argentinian Physical Society 1992, Buenos Aires, Argentina.
36. M.C. Marconi, O.E. Martínez, F.P. Diodati. "Cavity modes with a non linear element ". 70° Meeting of the Argentinian Physical Society 1985, Rosario, Argentina.
37. A. Diz, M. Ruiz Azua, C. Yastremiz, P. Zemba, M.C. Marconi, H. Bruzzone. "Teaching the Kerr effect". 68° Meeting of the Argentinian Physical Society, 1983. San Miguel de Tucumán, Argentina.
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39. A.A. Hnilo, M.C. Marconi, F. P. Diodati. "New Q-switch method for Nd:YAG lasers". Meeting of the Argentinian Physical Society 1982. La Plata, Argentina.
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3. Libertun A.R., M.C. Marconi. "Method for the measurement of fluorescence times in the range of nanoseconds". Anales AFA , 7, 149, 1997.
4. J.I. Etcheverry, J. Torga, M.C. Marconi. "Numerical calculations of the fluorescence induced by laser in spherical molecules with rotational diffusion ". Anales AFA , 7, 160, 1997.
5. J. Torga, J.I. Etcheverry, M.C. Marconi. "Second order calculations of the fluorescence of dipolar spherical molecules". Anales AFA , 7, 156, 1997.
6. J. Etcheverry, M. Mesaros, M. Marconi, O. Martinez. "Detection of phase changes produced by high power laser pulses". Anales A.F.A., 5, 183, 1993.
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GRADUATE STUDENTS

PhD Thesis

- Jorge R. Torga. "Study of the rotational diffusion in fluorescent molecules with a double short laser pulse excitation". Buenos Aires University. 1999.
- Ariel Libertun. "Generation, characterization and applications of ultra short laser pulses". Buenos Aires University. 2002.
- Maria Gabriela Capeluto. "Non linear effects applied to microscopy". Buenos Aires University. December 2009
- Guillermo Frank. "Measuring diffusion times in super cooled solutions by the FRAP technique". Buenos Aires University. December 2008.
- Przemyslaw Wachulak. CSU. "Applications of Extreme ultraviolet compact lasers to nanopatterning and high resolution holographic imaging". December 2008
- Lukasz Urbanski. CSU-September 2012
- Wei Li. CSU-Ongoing
- Erik Malm. CSU-Ongoing

Licenciado and MS students

- Jose G. Tischler. "Design, construction and test of amplifier stages for dye lasers". 1994.
- Ariel Libertun. "Generation of ultrashort pulses and ultrafast measuring techniques". 1996.
- Denisse Sciamarella. "Study of a grating interferometer for the measurement of the linewidth in X ray lasers". 1997.
- Jorge Filevich. "Design and testing of a XR interferometer". 2000.
- Bernardo Suarez. "Time resolved absorption measurement in the picosecond time scale". 2002.
- Maria Gabriela Capeluto. "Two photon fluorescence microscope". 2002
- Laura Estrada. "Detection of single molecules by fluorescence". 2004
- Marina Verruno. "Multilayer design in the region between 20 and 50 nm". 2004
- Wei Li. "Periodic metallic nanostructures fabricated by coherent Talbot lithography in a table top system". Master of Science, CSU- August 2013

Senior thesis (1 year, 12 hs per week)

Sonia Gonorantzky, Jorge Codnia, Rodrigo Laje, Jorge Filevich, Miguel Larrotonda, Yanina Cesa, Pablo Bianucci, Alejandra Ventura, Bernardo Suarez, Verónica Cerletti, Alejandro De Falco, Ana Amador, Pablo Perez, Laura Estrada, Javier Etcheverry, Mariana Mesaros, Gabriel Paisan, Jeronimo Bostein, Donato Vigt, Juan Melo, Fernando Suarez Ornani, Alejandro Villanueva.

Visiting students

- Christian Bressels, (Twente University, The Netherlands). "Design and construction of a diode pumped Nd YAG laser". February-July 2001
- Frank Coumans (Twente University, The Netherlands). "Two photon absorption fluorescence microscope". February-July 2001.

GRANTS AND RESEARCH PROJECTS

As Principal Investigator:

In CSU

1. "Defect Free Talbot Nanolithography. SBIR phase I." XUV Lasers (NSF prime). 10/1/2013 to 7/10/2013. Amount: \$150,000
2. DoD/DTRA: "Single Molecule Detection for Countering WMD using Nano-Mechanical Resonator Arrays". \$1,500,000
3. Center for Functional Nanomaterials, Brookhaven National Laboratory. "Fabrication of holographic and Talbot masks for nanoscale patterning with EUV coherent sources". The project gives access to the nanofabrication facility for 2 years.
4. VPR (CSU). "Nanoscale Science and Technology Fabrication and Characterization Facility". \$187,000
5. NSF "Table top EUV holography: a new approach for versatile nanolithography". 1-8-2009 to 31-7-2012. \$329,786
6. NSF: "Engineering Research Center for Extreme Ultraviolet Science and Technology". (Supplement for industrial collaboration.) \$199,981
7. NSF NER "Expanding the limits of Nanofabrication". 7-1-05 to 6-31-06. \$99,191
8. Participant faculty in the NSF Engineering Research Center for Extreme Ultraviolet Science and Technology. 10-1-2003 to 9-30-2011.

In Buenos Aires University

9. "Study, development and applications of pulsed laser systems". Grant from ANPCyT (National Agency for Science and Technology (2000-2002). \$52,000
10. "Characterization of new laser sources ". Grant from the Buenos Aires University (1998-2000). \$12,000
11. "Development of solid state lasers". Grant from CONICET (National Council for Research- Argentina) 1998-2000. \$10,000
12. "Measuring ultra fast properties ". Grant for Young Investigators. Fundación Antorchas. 1995. \$15,000
13. "Short pulse laser system and techniques to measure ultra fast phenomena ". Grant from the Buenos Aires University (1995-1997). \$12,000
14. Equipment Grant from the Third World Academy of Science (ICTP-Trieste). November 1994. \$6,000.
15. "Detecting ultra fast properties in materials ". Grant for Young Investigators. Fundación Antorchas. 1994. \$15,000
16. "Ultra fast processes in the photophysics of cyanines ". CONICET (National Council for Research- Argentina). 1993. \$12,000
17. "Optical gauges of polymers properties ". Grant from the Advanced Materials Program, Buenos Aires University 1993. \$6,000
18. "Sub nanosecond laser system" Grant for Young Investigators. Fund. Antorchas. 1993. \$15,000

As Co PI

1. NSF MRI "Development of the Next Generation of Compact Coherent Extreme Ultraviolet Sources". \$900,000
2. Co Principal Investigator DOE-US Department "Dense Plasma Studies with Ultra bright Soft X-Ray laser Sources. 9-15-2002 to 9-14-2005. \$927,901
3. NSF: "ARRA: MRI-R2: Development of a High Average Power Table-Top Extreme Ultraviolet/Soft X-Ray Laser Beam Line for Science at the Nanoscale". \$1,747,900
4. EUV ERC SBIR supplement. Agency: NSF. 9/1/2010 to 8/31/2013. Amount: \$200,000