Marco Leonetti, Ph.D. | C.V.

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To whom it may concern September 12, 2018

Motivation

I am a physicist with a strong research background (theoretical and experimental) in optical techniques, adaptive optics, wavefront shaping, optical instruments (laser, cameras, sensors and spectrographs) while I desired and realized more than 10 different experimental setups from scratch including microscopes, laser writing machines, optical fibers characterization etc etc. In few years I have been able to become an independent researcher: I have 31 papers, 18 of which as first author and 5 as last author. I am currently Project Leader of the project "LOCALITIS" (400K Eur in four years @CNR Nanotec Lecce, novel generation optical fibers design and fabrication) and of the project "SELFI" (316K Eur in 3 years with CREST optics company high resolution long working distance microscope/oftalmoscope).

GENERAL

Born: 12/01/1981 in Rome, Italy; Italian Citizenship.
Addresses : Roma Via del Pigneto 3, 00176 Rome Italy.
Affiliation 1: CNR NANOTEC-Institute of Nanotechnology, Via Monteroni, 73100 Lecce, Italy.
Affiliation 2: IIT-CLNS Viale Regina Elena, 291 00161 Roma, Italy.
Affiliation 3: Crest Optics,Via Mattia Battistini, 184/D - 00167 Roma, Italy.
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BIBLIOMETRIC

Papers: 31; **H-index:** 14 (Scopus); **Citations:** 530 (Scopus) **Scopus ID:** 36779450500

EMPLOYMENT

Jan 2017- Present :

Project Leader of the "Localitis" project (financed by the "Fondazione Con Il Sud", grant "Brains2South" duration 2017-2021, at the CNR Nanotec, in Lecce.

Role: Principal investigator. Team leading, scientific direction, funds management (360K eur), tutoring of students, scientific papers and patents writing, experimental activity, instruments selection alignment and maintenance.

Context: **Fabrication** and characterization (in collaboration with university of New Mexico) of a novel

generation **optical fibers** through **direct laser writing**, @ CNR Nanotec. Design of novel **quantum communication** algorithms In collaboration with University of Bristol.
Results: Project ongoing. Demonstration of capability to control confinement strength with defects structure factor. Papers published in high impact journals.

Sept. 2014-Present

Senior Post Doc @ IIT-CLNS Center for Life Nanoscience, Rome Italy & (from 2016) leading the Joint lab Project "SELFI" Scattering Enhanced Localization Fluorescence Imaging in the framework of a IIT-Crest(Company focused in the R&D of optical device) joint lab.
Role: Principal investigator. Team leading, scientific direction, Funds management (330K eur, project awarded on June 2018), tutoring of students, scientific papers and patents writing, experimental activity, instruments selection alignment and maintenance.
Context: Design and realization of a new concept high resolution **ophthalmoscope** for early detection of micro-amyloid plaques in retina exploiting Scattering assisted **structured illumination microscopy**. Specific properties of light diffusion exploited thought wavefront shaping to improve resolution.
Results: Demonstration of super resolution in presence of scattering material (eye sclera) and preliminary **retina imaging**. Papers published in High impact journals - PATENT application presented.

May 2012 -Sept 2014:

Senior Post Doc @CNR-ISC UOS , & @CNR-IPCF, in "Sapienza" university, Roma Italy. Role: Researcher. Experimental activity on **nonlinear optics** in Anderson Optical fibers Lab activity management, scientific papers writing, instruments selection alignment and maintenance.
Context: Study of **nano-lasing** in TiO nanostructures and **optical fiber** transmission, **wavefront shaping** and information transport (**quantum key distribution**) in Anderson Localization Fibers
Results: Papers published in high impact Journals. Results achieved here are at the basis "LOCALITS" Project (Funded in 2017)

Mar 2010 - May 2012

Post doc @Photonic Crystal Group CSIC-ICMM Madrid, Spain. Role: Researcher. Experimental activity on nonlinear optics in Anderson Optical fibers Lab activity management, scientific papers writing, instruments selection alignment and maintenance.
Context: Control of nano-lasing in TiO nanostructures and light diffusion through Wavefront shaping.
Results: Papers published in high impact journals.

EDUCATION

Ph.D. in Materials Science, 29 December 2009; University of Rome Sapienza, 00185 Rome Italy.
Master Degree in Physics, 104/110, 13 July 2006; University of Rome Sapienza, 00185 Rome Italy. Six Months Stage @ ESRF European Synchrotron Radiation Facility In Grenoble France

SKILLS

Languages **English**, Oral and Writing @ Master level. **Spanish**, Oral Master; Writing Intermediate. **French**, Oral Intermediate.
Experimental Laser, Optics, Pulsed lasers, Adaptive optics, Microscopy, Nonlinear optics, Pulsed/Femtosecond lasers, Spectrography, Cameras, Sensors, Device synchronization (DAQ boards).
Informatics Matlab, Zemax, Labview, Fortran, Office, Latex, Data presentation software (Illustrator, Gimp, Photoshop, Blender).

REFERENCES

1. Prof. *Cefe Lopez* : Instituto de Ciencia de Materiales de Madrid (CSIC) C/ Sor Juana Ines de la Cruz 3, 28049 Madrid;: +34 913 349 019; Email: cefe@icmm.csic.es;
2. Prof. *Arash Mafi* : University of new Mexico; Albuquerque, USA, Email: mafi@unm.edu;
3. Prof. *Hui Cao*: Yale University, P.O. Box 208284, New Haven, USA CT 06520; (203) 4320683; hui.cao@yale.edu;
4. Dr. *Eugenio DelRe*: University of Rome, Sapienza, Email: eugenio.delre@uniroma1.it ;
5. Prof. *Giancarlo Ruocco*: Director of CNLS-IIT@ sapienza Viale Regina Elena 291, Rome, Italy. Giancarlo.ruocco@iit.infn.it;

SELECTED PUBLICATIONS

1. † Disorder-induced single-mode transmission; Nat. Commun, 8, 14571 (2017).
2. *Light focusing in the Anderson Regime, Nat. Commun. 5, 4534 (2014).
3. *Observation of migrating transverse localizations of light in nonlocal media, Phys rev lett. 112 193902 (2014).
4. *Switching and amplification in disordered lasing resonators; Nature Communications, 4, 1740. (2013).
5. *The Mode-locking transition of random lasers; Nature Photonics, 5, 615 (2011).

FULL PUBLICATIONS LIST

1. † Hyperuniformity in amorphous speckle patterns; Diego Di Battista, Daniele Ancora, Giannis Zacharakis, Giancarlo Ruocco, and Marco Leonetti; Optics Express 26 15594 (2018).
2. Effect of dilution in asymmetric recurrent neural networks; Viola Folli, Giorgio Gosti,Marco Leonetti, Giancarlo Ruocco; Neural. Networks, 104, 50 (2018).
3. †What is the Right Theory for Anderson Localization of Light? An Experimental Test; Walter Schirmacher, Behnam Abaie, Arash Mafi, Giancarlo Ruocco, and Marco Leonetti; Phys. Rev. Lett., 120, 067401, (2018).
4. †Bibliometric indicators: the origin of their log-normal distribution and why they are not a reliable proxy for an individual scholar talent;Giancarlo Ruocco, Cinzia Daraio, Viola Folli & Marco Leonetti; Palgrave Commun., 3, 17064 (2017).
5. Do social sciences and humanities behave like life and hard sciences?; A. Bonaccorsi, C. Daraio, S. Fantoni, V.Folli M. Leonetti, G. Ruocco; Scientometrics DOI: 10.1007/s11192-017-2384-0
6. Analytical description of the transverse Anderson localization of light; Walter Schirmacher, Marco Leonetti and Giancarlo Ruocco; J. Opt. 19 045602 (2017).
7. †**Disorder-induced single-mode transmission; Giancarlo Ruocco, Behnam Abaie, Walter Schirmacher, Arash Mafi & Marco Leonetti; Nat. Commun, 8, 14571 (2017).**
8. On the Maximum Storage Capacity of the Hopfield Model; V. Folli, M. Leonetti G. Ruocco; Front. Comput. Neurosci. 10,144, (2017).
9. † Tailoring non-diffractive beams from amorphous light speckles; D. DiBattista, D. Ancora, M. Leonetti, G. Zacharakis; Appl. Phys. Lett., 109, 121110 (2016).
10. *Secure information transport by transverse localization of light; Marco Leonetti, S. Karbasi, A. Mafi, E. Delre, C. Conti, Scientific Reports, 6 29918 (2016).
11. † Enhanced adaptive focusing through semi transparent media; D. Di Battista, G. Zacharakis, M. Leonetti, Sci. Rep. 5, 17406, (2015).
12. *Observation of three dimensional optical rogue waves through obstacles; M. Leonetti, C. Conti. Appl, Phys. Lett. 106, 254103 (2015).
13. Mher Gullivan & Lorenzo Pavesi "Light Localisation and Lasing"; Contributing author to book chapter, Cambridge, Cambridge University press (2015).

14. *Experimental observation of disorder induced self-focusing in optical fibers; M. Leonetti, S karbasi, A. Mafi, C. Conti; Appl. Phys. Lett., 105, 171102 (2014).
15. ***Light focusing in the Anderson Regime, M. Leonetti, S karbasi, A. Mafi, C. Conti. Nat. Commun. 5, 4534 (2014).**
16. ***Observation of migrating transverse localizations of light in nonlocal media, M. Leonetti, S karbasi, A. Mafi, C. Conti; Phys rev lett. 112 193902 (2014).**
17. *Random Lasers: Active Mode Control and Gating; M.Leonetti, C. Conti, C. Lopez; Opt. Photon. News; 24, 29, (2013).
18. *Dynamics of phase-locking random lasers; M.Leonetti, C. Conti, C. Lopez; Phys.Rev. A.; 88, 043834 (2013).
19. ***Non-locality and collective emission in disordered lasing Resonators; Marco Leonetti, Claudio Conti, Cefe Lopez; Light: Science and Applications, 2, e88, (2013).**
20. ***Switching and amplification in disordered lasing resonators; Marco Leonetti, Claudio Conti, Cefe Lopez; Nature Communications, 4, 1740. (2013).**
21. *Active subnanometer spectral control of a random laser; Marco Leonetti, Cefe Lopez; Applied Physics Letters, 102, 071105. (2013)
22. *Random lasing in structures with multi-scale transport properties; Marco Leonetti, Cefe Lopez; Applied Physics Letters, 101, 251120, (2012).
23. *Tunable degree of localization in random lasers with controlled interaction ; Marco Leonetti, Claudio Conti, Cefe Lopez; Giornale: Applied Physics Letters, 101, 051104 (2012).
24. *Random laser tailored by directional stimulated emission; Marco Leonetti, Claudio Conti, Cefe Lopez; Physical Rewiev A, 85, 043841 (2012).
25. ***The Mode-locking transition of random lasers; Marco Leonetti, Claudio Conti, Cefe Lopez; Nature Photonics, 5, 615 (2011).**
26. *Measurement of transport mean-free path of light in thin systems; Marco Leonetti, Cefe Lopez; Optics Letters, 36, 2824 (2011).
27. Optical amplification enhancement in photonic crystals; R. Sapienza M. Leonetti, L. Froufe, J. Galisteo Lopez, C. Conti, and C. L0pez; Optics Letters, 36, 2824 (2011).
28. *Haus/Gross-Pitaevskii equation for random lasers; M. Leonetti C. Conti; Journal of the optical society of america B, 7, 1446 (2010).
29. *Optical gain in DNA-DCM for lasing in photonic materials; M. Leonetti, R. Sapienza, M. Ibisate, C. Conti C. Lopez; Optics Letters, 34, 3764, 2009.
30. *Characterization of archaeological human bone tissue by enhanced backscattering of light; M. Leonetti, S. Capuani, M. Peccianti, G. Ruocco, C. Conti; Optics Letters, 34, 3764 (2009).
31. **Condensation in Disordered Lasers: Theory, 3D+1 Simulations, and Experiment; C. Conti., M. Leonetti, A. Fratalocchi, L. Angelani G. Ruocco; Physical Review Letters, 101, 143901, (2009).**

First author paper are marked with * Last author paper are marked with † **BOLD : High impact (IF>7)**

Selected CONFERENCES

1. Plasmonica 2018 4-6/07/2017 Florence, Italy, Oral.
2. Cleo Cleo 13 - 18/05 (2017) San Jose Convention Center, San Jose, California, USA; Oral FTu3F.2.
3. Cleo Europe 2015; 21-25June; Munich Germany Oral contribution Oral.
4. PQE 2015- Snowbird Usa Invited contribution PQE 2015.
5. Random laser school, Recife, Br 14/08 (2014). Invited Oral
6. FIO 7/10 (2013),, Molding the Flow of Light in Disordered Active Nanostructures, Invited Oral .
7. NFO San Sebastian, Mode-locking in disordered lasers, Spain, (2012) Oral.
8. CEN 2010 Segovia Spain, (2010) Oral.
9. International School on complexity, Erice, Italy (2009) Oral.

Signed

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