



# UNIVERSITÀ DEGLI STUDI DELL'AQUILA

**Prof. Elia Palange**

## Curriculum scientifico

(Aggiornato il 2020/05/21)

Elia Palange, si laurea con lode in fisica nel 1976 presso l'Università di Roma "La Sapienza". Attualmente è Professore Associato di Fisica e Nanofotonica presso la Facoltà di Ingegneria dell'Università dell'Aquila. Egli è stato visiting scientist presso il Laboratoire d'Optique Quantique a Palaiseau - Francia (1981-1983), presso il centro di ricerche della IBM "T.J. Watson Research Centre" a Yorktown Heights (NY) ? USA (1987-1988) e professore visitante presso il Departamento de Eletrônica Quântica dell'Istituto di Fisica della Università Statale di Campinas ? Brasile (1984, 1994-1995). Durante la sua attività scientifica egli si è dedicato a ricerche nel campo della fisica dei laser, dell'ottica e della spettroscopia non lineare, delle proprietà ottiche di eterostrutture di semiconduttori di dimensioni nanometriche e composti di meta-materiali organici ed inorganici. Attualmente è Responsabile del Laboratorio di Ottica e Fotonica del Dipartimento di Ingegneria Elettrica e dell'Informazione dell'Università dell'Aquila. Il Laboratorio è impegnato nello sviluppare attività di ricerca sullo sviluppo di dispositivi fotonici innovativi e multi-funzionali basati sull'utilizzo di sistemi di metamateriali lineari e non lineari nella situazione di regime estremo per la permittività dielettrica, sulla elettron-attivazione di solitoni spaziali in cristalli foto-rifrattivi, sull'uso di nanofili di Ge e Si per la fabbricazione di nanodispositivi elettronici ed opto-elettronici e sulla sintesi e caratterizzazione delle proprietà fisiche e strutturali di nanoparticelle di leghe di FePt con elevate proprietà magnetiche. Egli è co-autore di oltre 100 articoli scientifici su riviste internazionali con Referee, di 4 brevetti europei e di uno negli Stati Uniti.

Elia Palange, graduated cum laude in Physics in 1976 at the University "La Sapienza" of Rome ? Italy, is currently Associated Professor of Physics and Nanophotonics at the Faculty of Engineering of the University of L'Aquila. He was visiting scientist at the Laboratoire d'Optique Quantique - Palaiseau - France (1981-1983), at the IBM T.J. Watson Research Centre - Yorktown Heights (NY) ? USA (1987-1989) and visiting professor at the Departamento de Eletrônica Quântica of the Instituto de Fisica of the Universidade Estadual de Campinas ? Brazil (1984-1985, 1992-1994). During his scientific activities he carried out research on laser physics, nonlinear optics and spectroscopy and optical properties of nanometer sized semiconductor heterostructures and organic/inorganic metamaterial compounds. He is currently the Supervisor of the Optics and Photonics Laboratory of the Electrical and Information Engineering Department. The Laboratory is developing research activities on novel photonics multifunctional devices based on linear and nonlinear extreme metamaterials, electro-activation of spatial solitons in photorefractive crystals, the use of Si and Ge nanowires for the fabrication of electronic and optoelectronic nanodevices and the synthesis and characterization of the physical and structural properties of highly magnetic FePt nanoparticles. He is co-author of 1more than 100 scientific papers on international journals, 4 European patents and 1 USA patent.

### ELENCO DELLE PUBBLICAZIONI SU RIVISTE INTERNAZIONALI CON ?PEER REVIEW?

**Prof. ELIA PALANGE**

1. Michele Gabrio Antonelli, Pierluigi Beomonte Zobel, Andrea De Marcellis, Elia Palange

?Autonomous robot for cleaning photovoltaic panels in desert?

Mechatronics, 68 102372 (2020)

2. A. De Marcellis, G. Di Patrizio Stanchieri, M. Faccio, E. Palange, T. Constandinou

IEEE Transactions on Biomedical Circuits and Systems, (2020) DOI: 10.1109/TBCAS.2020.2972733

3. C. Rizza, M. Fantasia, E. Palange, M. Alecci, A. Galante

?Harnessing Surface Plasmons for Magnetic Resonance Imaging Applications?

Physical Review Applied, 12, 044023 (2019).

4. A. De Marcellis, E. Palange, G. Di Patrizio Stanchieri, M. Faccio

?Portable Lock-In Amplifier-Based Optoelectronic Readout Circuit for High-Sensitivity Differential Measurements of Laser Pulse Energy Variations?

J- of Low Power Electronics, Volume 15, 87-94 (2019)

5. G. Di Patrizio Stanchieri, A. De Marcellis, E. Palange, M. Faccio

?A true random number generator architecture based on a reduced number of FPGA primitives?

Inter.Journal of Electronics and Communications (AEÜ), 105, 15-23 (2019)

6. V. Di Meo, A. Caporale, A. Crescitella, M. Janne, E. Palange, A. De Marcellis, M. Portaccio, M. Lepore, I. Rendina, M. Ruvo, E. Esposito

?Metasurface based on cross-shaped plasmonic nanoantennas as chemical sensor for surface-enhanced infrared absorption spectroscopy?

Sensors and Actuators B: Chemical, (2019) doi.org/10.1016/j.snb.2019.02.014

7. A. De Marcellis, S. Leone, E. Palange

?High-Sensitivity Differential Interface for the Detection of Energy Variations of Nanosecond Laser Pulses for Spectroscopic Applications?

IEEE Sensors Journal, 18, 8410 ? 8415 (2018)

8. C. Rizza, X. Li, A. Di Falco, E. Palange, A. Marini, A. Ciattoni

?Enhanced asymmetric transmission in hyperbolic epsilon-near-zero slabs?

Journal of Optics, 20, 085001 (6pp) (2018)

9. M. Janneh, A. De Marcellis, E. Palange, A. T. Tenggara, D. Byun

?Design of a metasurface-based dual-band Terahertz perfect absorber with very high Q-factors for sensing applications ?

Optics Communications, 416, 152-159 (2018)

10. A. De Marcellis, E Palange

?Differential measurements of light power variations through Si photodiodes in a bridge configuration for high-sensitivity chemical/biological optical sensing?

Sensors and Actuators B: Chemical 246, 305-309 (2017)

11. A. De Marcellis, E. Palange, M. Janneh, C. Rizza, A. Ciattoni, S. Mengali, ?Design optimisation of plasmonic metasurfaces for mid-infrared high-sensitivity chemical sensing?, Plasmonics, 12, 293-298 (2017)

12. A. De Marcellis, E. Palange, L. Nobile, M. Faccio, G. Di Patrizio Stanchieri, T. G. Constandinou, ?A Pulsed Coding Technique Based on Optical UWB Modulation for High Data Rate Low Power Wireless implantable Biotelemetry?, Electronics 5, 69 (2016), doi:10.3390/electronics5040069

13. F. Ferranti, A. De Marcellis, M, Janneh, E. Palange, G. Antonini, ?A metamodelling technique for the efficient design optimization of metasurfaces?, Electronics Letters, 52,1191-1192 (2016), DOI: 10.1049/el.2016.1262

14. L. Giancaterini, S. M. Emamjomeh, A. De Marcellis, E. Palange, A. Resmini, U. Anselmi-Tamburini, and C. Cantalini, ?The influence of thermal and visible light activation modes on the NO<sub>2</sub> response of WO<sub>3</sub> nanofibers prepared by electrospinning?, Sensors and Actuators B: Chemical 229, 387-395 (2016)

15. A. De Marcellis, M. Janneh, and E. Palange, ?High-Sensitivity High-Resolution Optical Phase Shift Detection Technique Using a Si Photodiode Operating in Photovoltaic Mode?, IEEE Sensors Journal, 15, 6898-6903 (2015), DOI: 10.1109/JSEN.2015.2463675

16. C. Rizza, A. Ciattoni, F. de Paulis, E. Palange, A. Orlandi, L. Columbo, and F. Prati, ?Reconfigurable photoinduced metamaterials in the microwave regime", J. Phys. D: Appl. Phys. 48, 135103 (2015), DOI 10.1088/0022-3727/48/13/135103

17. A. De Marcellis, M. Janneh, and E. Palange, ?Very high sensitivity tuneable phase detection of light power variations by using electrical modulation of a Si-photodiode in photovoltaic regime?, Electronics Letters, 51, 282-284 (2015), DOI: 10.1049/el.2014.3763

18. Andrea De Marcellis, Giuseppe Ferri and Elia Palange, ?A Fully Analog High Performances Automatic System for Phase Measurement of Electrical and Optical Signals?, IEEE Transactions on

19. Alessandro Ciattoni, Carlo Rizza, and Elia Palange, ?Electromagnetic chirality induced by graphene inclusions in multi-layered metamaterials?, *Photonics Research* 2, 121-125 (2014)
20. A. De Marcellis, G. Ferri, and E. Palange, ?Electrical self-modulation of optical sensors for light power measurement in chemical applications by phase detection technique?, *Sensors and Actuators B: Chemical*, 193, 378-383 (2014)
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22. A. Ciattoni, R. Marinelli, C. Rizza, and E. Palange, ?????? - Near-zero materials in the near-infrared?, *Applied Physics B, Laser and Optics*, 110, 23-26 (2013)
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24. R. Marinelli, E. Palange, ?Optical Performances of Lensless Sub-2micron Pixel for Application in Image Sensors?, *Progress In Electromagnetic Research B*, 31, 1-14 (2011)
25. R. Marinelli, E. Palange, M. Faccio, S. Guerrieri, A. Del Monte, G. De Amicis, and A. D'Anna, ?A Method for the Determination of the Thermally Induced Optical and Structural Changes of Polymers Used to Fabricate Lightpipes Integrated in CMOS Image Sensor Arrays?, *Sensors & Actuators: A. Physical*, 167, 385-388 (2011)
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27. A. Ciattoni, C. Rizza, and E. Palange, ?All-optical active plasmonic devices with memory and power switching functionalities based on epsilon near-zero nonlinear metamaterials?, *Phys. Rev. A* 83, 043813-1 043813-8 (2011)
28. A. De Marcellis, G. Ferri, and E. Palange, ?A Novel Analog Autocalibrating Phase-Voltage Converter for Signal Phase Shifting Detection?, *IEEE Sensor Journal*, 11, 259-266 (2011)
29. A. Ciattoni, C. Rizza, and E. Palange, ?Multistability at arbitrary low optical intensities in a metal-dielectric layered structure?, *Optics Express*, 19, 283-288 (2011)
30. O. Limaj, A. Nucara, S. Lupi, M. Ortolani, A. Di Gaspare, E. Palange, and P. Carelli, ?Scaling the spectral response of metamaterial dipolar filters in the terahertz?, *Optics Communications*, 284, 1690 (2011)
31. A. Ciattoni, C. Rizza, and E. Palange, ?Transmissivity directional hysteresis of a nonlinear metamaterial slab with very small linear permittivity?, *Optics Letters*, 35, 2130-2132 (2010)

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37. A. Capobianchi, M. Colapietro, D. Fiorani, S. Foglia, P. Imperatori, S. Laureti, and E. Palange, ?General Strategy for Direct Synthesis of L1 Nanoparticle Alloys from Layered Precursor: The Case of FePt?, *Chemistry of Materials* 21, 2007-2011 (2009)
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