

CURRICULUM VITAE

Actual position

- *Postdoctoral fellow in Physics since January 2020
at the engineering department of Sapienza University of Rome*

Previous working experience

- *Assistant Global Risk Management at “Credito Emiliano” Bank
Function: Internal Models Validation
Duration: October 15th, 2015 - October 14th, 2015*
- *PhD student charged of teaching at “Polytech Nice Sophia Antipolis” (France)
Since 1st, October 2017 to 30th, September 2019
Courses:*
 1. *Laboratory of mechanics (2017-2019)*
 2. *Laboratory of electromagnetism (2017-2019)*
 3. *Lectures (exercises) of mechanics (2018-2019)*

Academic education

- *Bachelor degree in physics at “Università della Calabria” (Italy).
Degree mark: 110/100 with honors.
Title of the thesis: “Introduction to plasmon in metamaterials (an experiment to mitigate optical losses)”
Advisors: Prof. Roberto Bartolino, Dr. Antonio De Luca
Type of thesis: Experimental
Subject: Physic of matter
Defense date: October 1st, 2013*
- *Master degree in physics at “Università degli studi di Roma La Sapienza”
Curriculum: Structure of matter
Degree mark: 110/110 with honors
Title of the thesis: “Scale-free optics in periodically microstructured ferroelectrics”
Advisor: Prof. Eugenio Del Re
Type of thesis: Experimental
Subject: Nonlinear Optics
Defense: July 17th,, 2015
Other activities: Study of Graphene's structural properties at LOTUS laboratory (physics department of University of Rome “La Sapienza”)*
- *Visiting PhD student at Postech, Pohang (South Korea) in November 2017*
- *PhD student at “Université Nice Sophia Antipolis” (France), working at CRHEA-CNRS
Defense date: 12th, December 2019*

Thesis title: Integration of metasurfaces based optical devices for optoelectronic application and laser emission control.

Subjects:

- 1. Multisubband plasmon based hyperbolic metamaterials*
- 2. Lidar*
- 3. Cherenkov light source via hyperbolic dispersion*
- 4. Engineered polariton bands*

Pre-university studies

- Scientific high school diploma at “Liceo Scientifico E.Fermi”, Cosenza (Italy)
Diploma mark: 100/100
Date of final exam: July 10th , 2010*

Informatic skills

- Programming languages: C++, Fortran 90, VBA*
- Programs for scientific data analysis: Matlab, R*
- Programs to make 3D images: Blender*
- Programs for simulations in optics: Lumerical FDTD Solutions, Reticolo (Matlab based)*

Languages

- Italian: Native proficiency*
- French: Full professional proficiency
 - French language course organized by CNRS at Valbonne, France (6 month)**
- English: Full professional proficiency
 - English language course at “English now” school, Bethesda, Maryland, USA (4 weeks)*
 - English language course at “Glasgow school of English”, Glasgow, Scotland (1 week)*
 - English language course at “Oxford” school, Rome (32 weeks)**

Honors & Awards

- “Excellent graduate” 2014/2015 of University of Rome “La Sapienza” (Italy).*
- “Excellence path” at University of Rome “La Sapienza” (Italy).
Title: “Nonlinear Schrödinger equation and its solitonic solutions: resolution by the spectral transformation method“
Supervisor: Prof. P.M. Santini*
- “Mention of honor for the brilliant curriculum” at the bachelor graduation session at University of Calabria (Italy).*
- First place at the olympics of physics (regional level) and participation at national level (2009).*
- Fifth place at the olympics of physics (regional level) and participation at national level (2010).*

Organizations

- “Associazione italiana per l’insegnamento della fisica” since December 2013 to December 2015.*
- “Société française physique” since July 2017.*
- “Optical Society of America ” since December 2020.*

Publications

- D. Pierangeli, *M. Ferraro*, F. Di Mei, G. Di Domenico, C. E. M. de Oliveira, A. J. Agranat & E. DelRe, *Super-crystals in composite ferroelectrics*, Nat. Commun. 7, 10674 (2016).
(Journal paper; DOI: 10.1038/ncomms10674)

- *M. Ferraro*, D. Pierangeli, , M. Flammini, F. Di Mei, G. Di Domenico, L. Falsi, A. J. Agranat & E. DelRe, *Observation of polarization-maintaining light propagation in depoled compositionally disordered ferroelectrics*, Opt. Lett. 42, 19 (2017).
(Journal paper; DOI: 10.1364/OL.42.003856)

- A. Hierro, M. Montes Bajo, *M. Ferraro*, J. Tamayo-Arriola, N. Le Biavan, M. Hugues, J. M. Ulloa, M. Giudici, J. M. Chauveau, and P. Genevet, *Optical phase transition in semiconductor quantum metamaterials*, Phys. Rev. Lett. 123,117401 (2019)
(Journal paper, DOI: 10.1103/PhysRevLett.123.117401)

- M. Zitelli, F. Mangini, *M.Ferraro*, A. Niang, D. Kharenko, and S. Wabnitz, *High-energy soliton fission dynamics in multimode GRIN fiber*, Opt. Exp. 28, 14, pp. 20473-20488 (2020).
(Journal paper, DOI: 10.1364/OE.394896)

- T. Hansson, A. Tonello, T. Mansuryan, F. Mangini, M. Zitelli, *M. Ferraro*, A. Niang, R. Crescenzi, S. Wabnitz, and V. Couderc, *Nonlinear beam self-imaging and self-focusing dynamics in a GRIN multimode optical fiber: theory and experiments*, Opt. Exp. 28,16, pp. 24005-24021 (2020)
(Journal paper, DOI: 10.1364/OE.398531)

- F. Mangini, *M. Ferraro*, M. Zitelli, N. Niang, A. Tonello, V. Couderc and S. Wabnitz, *Multiphoton-Absorption-Excited Up-Conversion Luminescence in Optical Fibers*, Phys. Rev. Applied 14, pp. 054063 (2020)
(Journal paper, DOI: 10.1103/PhysRevApplied.14.054063)