

# Luca Vincetti Curriculum Vitae

Luca Vincetti is Full Professor of Electromagnetic Fields at the Department of Engineering “Enzo Ferrari” of the University of Modena and Reggio Emilia, Italy.

## Education

He received the Degree in Electronics Engineering (cum laude) from University of Parma, Italy, by discussing a thesis about the development of Beam Propagation Methods based on the Finite Element Method (FEM-BPM) for optical device analysis.

He did his PhD in Information Technologies at the University of Parma on the development of numerical methods for optical devices analysis and he got the PhD degree in 2000.

## Employment

In 2000 he received a Young Research Project grant to study the polarization and non-linear effects in dielectric waveguide components and amplifiers.

In the same year he became researcher at the National Inter-University Consortium for Telecommunications (Consorzio Nazionale Interuniversitario per le Telecomunicazioni - CNIT) working on Polarization Mode Dispersion (PMD) in optical fibers and proposing for the first time an exact evaluation of the Jones matrix of a single mode fiber affected by PMD.

In 2001 he moved to the University of Modena and Reggio Emilia with a grant funded by Cisco Research Center of Cisco Systems entitled "Numerical Analysis and Design of Photonics Bandgap Crystals".

In 2001 he became Assistant Professor of Electromagnetic Fields at the Department of Information Engineering, University of Modena and Reggio Emilia and then Associate Professor at the Department of Engineering “Enzo Ferrari” from 2014 to 2021.

In March 2015 he was visiting professor at the University of Limoges – France.

Since 2021 he is Full Professor of Electromagnetic Fields at the Department of Information Engineering, University of Modena and Reggio Emilia.

Head of “Photonics and ElectroMagnetics Laboratory – PhEMLab” of the Department of Engineering “Enzo Ferrari” of the University of Modena and Reggio Emilia (<http://www.phemlab.unimore.it/>)

## Research

Luca Vincetti has made several key contributions in the development and applications of analytical models of PMD in optical fiber, and numerical models based on Finite Element Method for the analysis and design of photonic components. In 2001 he proposed for the first time an exact evaluation of the Jones matrix of a single mode fiber affected by PMD. In 2000's he pioneered the use of FEM modal solvers for the analysis of Photonic Crystal Fibers. In 2010 he proposed the basic structure, and the waveguiding model of a new type of hollow core fibers named Tube Lattice Fibers, currently the most promising and studied approach to the realization of very low loss hollow core fibers from terahertz to UV spectral range. He is coauthor of several record loss of hollow-core inhibited-couplings optical fibers. Currently his research is aimed to investigate the waveguiding mechanism

and loss mechanisms in hollow core inhibited coupling fibers and to the use of them for terahertz applications, high power laser delivering, lasers, particle accelerators, and quantum applications.

### **Bibliometrics**

Since 1997 he has been author or co-author of 163 papers in journals and conference proceedings indexed by Scopus database (scopus id: 55925484900) with **3335 total citations** and **h-index 29**. 23% of published papers are in the top 25% most cited documents worldwide, and 57.1% in the top 25% journals by CiteScore.

He co-authored three patents:

- 1) on fiber optics with inhibited coupling with hybrid cladding and hollow core;
- 2) on a microwave system for detecting the filling parameters of the pre-chamber of a forage packing machine;
- 3) on millimeter-wave antenna for 5G automotive applications.

### **Projects**

In 2016-2019 he was coordinator a 3 years regional project entitle “New materials, devices, and processes for industry 4.0” - POR - FSE 2014-2020, involving the four Universities of Regione Emilia Romagna, the Consiglio Nazionale delle Ricerche - CNR, 5 research laboratories, and 8 companies. The project also includes 4 PhD grants and 8 one year research grants.

2019-2022: Proposer and scientific representative of the research project "Photon technologies for real time monitoring of product quality in the manufacturing and agri-food industry" funded with a doctoral grant, POR FSE 2014/2020. Period 01.11.2019 - 31.10.2022

2019-2022: He was scientific coordinator of research unit Intermech - Unimore of a two years project “5G-CAR: 5G car-to-everything communication systems for smart and safe transport in Emilia-Romagna”, POR FESR 2014-2020.

2021-present Scientific coordinator of the research unit UniMORE in the project “ATOM-LIGHT CRYSTALS IN PHOTONIC CRYSTALS – CRYST^3” call “H2020-FETOPEN 2018-2020”.

2023-present Scientific coordinator of the research unit UniMORE in the project ““Dielectric Optical accelerators for hEalth – DOSE” call “PRIN 2022”.

Scientific coordinator of research projects in collaboration with companies for a total of about 450k€.

### **Teaching**

Prof. Vincetti leads undergraduate and graduate courses in Electromagnetic Engineering, Microwaves, and Photonics at the Department of Engineering “Enzo Ferrari” of the University of Modena and Reggio Emilia, Italy. He is author and co-author of two academic books:

- L. Vincetti, “Esercizi di Campi Elettromagnetici”, Pitagora Editrice, Bologna, 2005 ISBN 8837115393.
- S. Selleri, L. Vincetti, A. Cucinotta, "Optical and Photonic Components", Esculapio, Bologna, 2015, ISBN 9788874889242.

### **Memberships**

Prof. Vincetti is a Senior Member of the IEEE (Institute of Electrical and Electronics Engineering), of the IEEE Photonic Society, of the SIEm (Società Italiana di Elettromagnetismo) and of the CNIT.

#### Institutional activities

Since 2006 member of Doctorate Council of the Doctorate in Information and Communication Technologies.  
2017-2023 Coordinator of the Teaching Committee.

Since 2019 coordinator of the Bachelor and Master programs on Electronics Engineering of the Department of Engineering "Enzo Ferrari" – UniMORE.

Since 2019 he is Associate Editor of the IEEE Photonics Journal.

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