

Curriculum Vitae

Name: Lucio (Claudio) Andreani

Nationality: Italian

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Updated January 2021

EDUCATION

1985-1989: PhD in Physics (“Perfezionamento”) at the Scuola Normale Superiore, Pisa. Thesis on “Theory of Excitons and polaritons in semiconductor quantum wells”.

1981-1985: M.Sci. in Physics (“laurea vecchio ordinamento”) at the University of Pisa and at the Scuola Normale Superiore, Pisa, Italy.

PROFESSIONAL CAREER

2006-current: Full professor in condensed matter physics and photonics (SC 02/B2, SSD FIS/03) at the Physics Department, University of Pavia, Italy.

1998-2006: Associate professor at the Physics Department “A. Volta”, University of Pavia.

1992-1998: Staff researcher at the Physics Department “A. Volta”, University of Pavia

1989-1992: Post-doc at the Institut Romand de Recherche Numérique en Physiques des Matériaux (IRRMA), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, CH.

TEACHING

2011-current: Solid-State Physics I, Solid State Physics II (for the M.Sci in Physical Sciences), Advanced Solid-State Theory, Photonics (for the PhD school in Physics).

2007-2011: Photonics (for the M.Sci. in Physical Sciences)

2006-2007: Complements of Condensed Matter Physics (for the PhD school in Physics)

2003-2007: Introduction to Solid-State Physics (part of; for the 3rd year of the Bachelor in Physics)

1998-2011: Physics of Semiconductors (yearly course), later split into Physics of Semiconductors I and II, later renamed as Physics of Semiconductors and Semiconductor Nanostructures

SERVICE TO THE UNIVERSITY

2014-current: Coordinator of the PhD programme in Physics, University of Pavia

2012-current: Director of the Pavia research unit of CNISM (Consorzio Nazionale Universitario per le Scienze Fisiche della Materia)

2011-2013: Vice-director of the Physics Department, University of Pavia

2007-2011: Director of the Physics Department "A. Volta", University of Pavia

2006-2007: Coordinator of the PhD programme in Physics, University of Pavia

SERVICE TO THE ACADEMIC COMMUNITY

Evaluator for MIUR (PRIN, FIRB, SIR), European Commission, NSF and DoE (USA), NSERC (Canada), ANR (France), FWO Flandres (Belgium), Ikerbasque (Spain), Swiss NSF, NWO (The Netherlands), Helmholtz Gemeinschaft (Germany)

Co-chair of the Conference on Photonic Crystal Materials and Devices within SPIE Photonics Europe in Brussels: 12-16 April 2010 and 16-20 April 2012.

Senior member of OSA, member of the Italian Physical Society.

AWARDS

Outstanding referee of the American Physical Society (2011)

OUTREACH

Coordinator of the Exhibition "SEMISUPER06 – Semiconductors and Superconductors: from Quantum Physics to technology", University of Pavia, 13-25 February 2006. Introductory video and 10 experimental exhibits. Audience: high-school students, general public. About 1600 visitors in 2 weeks.

Conferences to the public and to high-school students: 2015 (International Year of Light), European Researchers' Nights, pi-day, seminars.

Educational courses for high-school physics teachers: February 2017 and February 2018.

RESEARCH

The research interests of Lucio Andreani span several areas in condensed matter physics and photonics, including electronic and photonic nanostructures (electronic states and radiation-matter interaction in semiconductor heterostructures, excitons and polaritons in microcavities, photonic crystals, nonlinear optics, silicon photonics, photovoltaics) and strong correlations (Kondo systems). His most significant works concern binding energies and the radiative recombination of excitons in quantum wells, radiation-matter interaction and polariton states in semiconductor microcavities, photonic crystal waveguides and nanocavities, light trapping and efficiency limits in photovoltaic cells.

His theoretical research is characterized by a close relation with experiments, as shown by the numerous works in collaboration with Italian and foreign experimental groups. Since about 2000 his research activity is largely focused on nanophotonics, especially photonic crystals, concerning both the theory and the interpretation of optical experiments performed in Pavia and in other laboratories. More recently, this

research evolved into activities related to silicon photonics, plasmonics, and photovoltaics. A full list of publications is available on the Department web site: <http://fisica.unipv.it/personale/Persona.php?ID=17>

Information on the group activities and on current research lines is on the web page:
<http://fisica.unipv.it/nanophotonics>

Lucio Andreani has been scientific manager of several projects concerning Si- and III-V-based photonic crystals, silicon photonics, photovoltaics. The main themes are related to the control of light emission and propagation, as well as nonlinear optics and photovoltaic conversion, in photonic structures of various dimensionalities. Since a few years he is strongly committed to performing applied research and technological transfer towards research centers and industries. He has been responsible of research contracts with ST Microelectronics (light emission in silicon), with ENI (development of photovoltaic cells based on fluorescent concentrators and photonic crystals) and with RSE (development of nanostructured antireflection coatings for multijunction solar cells). He is co-author of four patents.

PUBLICATION METRICS

Scopus (24-01-2021): total cited papers=350, total citations=9616, maximal cites=510, papers with >100 citations=18, H-factor=50

A full list of publications and patents is available on the personal web page
<http://fisica.unipv.it/personale/Persona.php?ID=17>

PROJECTS

MIUR PRIN 2017 Nonlinear photonics with Metal-less Nanoantennas and metasurfaces (NOMEN). Involved units: Brescia, PoliMI, CNR-LNESS Como, Pavia. Responsible of Pavia Unit.

Ricerca sul Sistema Energetico – RSE S.p.A. research contract 2016-2018 “Optimization and characterization of nanostructured antireflection coatings”. Responsible for the contract.

EU Horizon 2020 STREP project 2016-2018 COSMICC - "CmOs Solutions for Mid-board Integrated transceivers with breakthrough Connectivity at ultra-low Cost". Responsible for the UNIPV group at the Physics Department. See <http://www.h2020-cosmicc.com/>

EU FP7 STREP project 2011-2015 FABULOUS - "FDMA Access By Using Low-cost Optical Network Units in Silicon Photonics". Responsible for the UNIPV group at the Physics Department. See <http://www.fabulous-project.eu/>

EU FP7 Marie Curie ITN Network 2011-2014 PROPHET - "Postgraduate Research in Photonics as an Enabling Technology". Large EU ITN network: responsible for UNIPV. See <http://www.prophet-itn.eu/>

ENI S.p.A. research contract 2011-2014 "Photonics for photovoltaic systems based on fluorescent concentrators". Responsible for the contract.

Fondazione Cariplo 2010-2013 "Nanophotonics for thin-film photovoltaics". Responsible of the project.

ENI S.p.A. research contract 2009-2011 "Photonic crystals for photovoltaic cells". Responsible for the contract.

Fondazione Banca del Monte di Lombardia 2010-2011 "Laboratorio per il Fotovoltaico". Responsible for the project.

MIUR-FAR project 2007-2011 "Silicon laser" (legge 297/99) Units: ST Microelectronics, Catania, Firenze, Cagliari, Pavia. Responsible for UNIPV.

Fondazione Cariplo 2007-2010 "Manipulation of light on nanometric scales for photonic and plasmonic applications". Responsible for the project.

ST Microelectronics research contract 2007 "Silicon laser". Responsible for the contract.

Fondazione Cariplo 2005-2007 "All-optical switching in photonic crystals: towards the optical transistor". Responsible for the project.

MIUR PRIN 2004-2006 "Silicon-based photonic crystals for the control of light propagation and emission". Involved units: Pavia, Trento, Torino, Trieste, Firenze. Project coordinator.

MIUR PRIN 2002-2004 "Silicon-based photonic crystals: technology, optical properties and theory" Involved units: Pavia, Trento, Torino, Trieste, Firenze. Project coordinator.

INFM PRA 2002-2005 "GaAs-based photonic crystals: fabrication, optical properties and theory" Involved units: Pavia, Trieste, Lecce, Firenze. Project coordinator.

INFM PAIS 2001 "Fabrication and optical characterization of two-dimensional photonic crystals". Involved units: Trieste, Lecce, Pavia. Project coordinator.

MIUR PRIN 2000-2002 "One- and two-dimensional photonic crystals: growth, theory and optical properties". Involved units: Pavia and Trento. Project coordinator.