Rémi CARMINATI

Born February 17, 1971 in Thonon (France)
Married, two children
Nationality: French

Professional address
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Current position: Professor at ESPCI Paris - PSL
Area of expertise: Optics of complex media

Education

- 1993: Engineer Degree from Ecole Centrale Paris (France)
- 1993: Master Degree in Physics of Transport Phenomena and Heat Transfer, Ecole Centrale Paris (France)
- 1993 - 1996: PhD in Optical Physics, Ecole Centrale Paris, defended in Sept 1996
  Subject : *"Analysis of the image formation in near-field optics"*
  Members of Committee : Profs. Boccara, Chavel (President), Girard, Greffet (Advisor), Nieto-Vesperinas (Referee), Pohl et Van Labeke (Referee)
- 2002: "Habilitation à Diriger des Recherches" from the University of Paris-Sud, Orsay, defended in Nov 2002. Subject: *"Propagation, scattering and thermal emission of electromagnetic radiation at small scales"*
  Members of Committee : Profs. Aspect (President), Boccara (Referee), Greffet, Sandoghdar (Referee), Van Labeke (Referee), Sáenz

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Employment history

- Oct 1996 - Sept 1997: Post-doctoral fellowship under a grant from the European Union, Department of Theoretical Condensed Matter Physics (Prof. M. Nieto-Vesperinas), Institute of Material Science of Madrid (Spain)
- Oct 1997 - Sept 2003: Assistant Professor (Maitre de Conférence) at Ecole Centrale Paris (France), Physics Department
- Oct 2003 - Nov 2007: Professor at Ecole Centrale Paris, Physics Department
- Since Dec 2007: Professor at ESPCI Paris - PSL

Research topics

- 1993-2000 **Theory of image formation in near-field optics** (with Pr J.J. Greffet and Pr M. Nieto-Vesperinas)
  - Concept of transfer function of a near-field optical microscope, inverse problem
  - Perturbation theory for near-field scattering
  - Reciprocity and time reversal with evanescent fields
- 1998-2006 **Electromagnetic thermal fluctuations** (with Pr J.J. Greffet and Dr K. Joulain)
  - Coherence of thermal near fields, coherent thermal emission
  - Near-field radiative heat transfer
  - Concept of thermal radiation STM (experimentally realized by Dr Y. De Wilde in 2006)
- 2000 - **Nanophotonics and plasmonics** (since 2009 with Dr Y. De Wilde, Dr V. Krachmalnicoff and Dr R. Pierrat)
  - Enhancement and quenching of molecular fluorescence in nanostructured media
  - Electromagnetic density of states at the nanoscale (from concepts to practical measurements)
  - Concept of cross density of states and connection to spatial coherence
- 2003 - **Multiple scattering of light in disordered media** (with Dr R. Pierrat, since 2015 with Dr Arthur Goetschy)
  - Transport models for diffuse light in scattering media (with applications to imaging)
  - Correlations and information in optical speckles (with application to imaging and sensing)
  - Coherence, polarization and near-field interactions in complex media
- 2010 - **Electrodynamics in disordered media** (with Dr Y. De Wilde, Dr R. Pierrat and Dr V. Krachmalnicoff)
  - Statistics of local density of states in disordered scattering materials
  - Dynamics of quantum emitters in complex media
  - Random time-varying media (starting)
- 2016 - **Light in correlated disorder** (with Dr R. Pierrat)
  - Transport equations in correlated disordered media
  - Hyperuniform disorder and implications for photonics
  - Photonic materials based on self-organization in soft matter (starting)

Executive and board positions

Associate Director of the Langevin Institute, ESPCI Paris - PSL, 2009-2018 (10 years)

Deputy Director for Research (Directeur Scientifique) at ESPCI Paris - PSL, 2015-2019 (4 years)

Vice-President for Research at PSL University, January 2021 –

Member of the Board of Trustees (Conseil d'Administration) at Institut d'Optique Graduate School

Member of the Advisory Committee (Comité d'Orientation Stratégique) at CentraleSupélec

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Scientific coordination and networking

Coordinator of the research theme "Waves in Complex Media" and of the team "Wave Theory and Mesoscopic Physics" at the Langevin Institute, ESPCI Paris - PSL

Coordinator of the EU COFUND project UpToParis (H2020) at ESPCI Paris - PSL

Member of the Scientific Committee of the Cargèse Institute of Physics, France

Referee of several international journals in physics and optics
(Nature group, APS, AIP, OSA, ACS journals, ...)

Expert for the French National Agency for Research (ANR)

Coordinator of the "Nanophotonics" and "Waves and imaging in complex media" groups of the CNRS French Research network "GDR Ondes", 2004-2012 (8 years)

Member of the French Optical Society, of the French Physical Society, of the European Optical Society and of the Optical Society of America

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Awards

Fabry-De Gramont Prize of the French Optical Society (2006)

Prize of the iXCore Foundation for Research (2009)

Fellow of the Optical Society of America (2015)

Jean Langlois Research Prize 2020 (Jean Langlois Foundation)

Publications records (November 2021)

145 papers in international journals + 21 conference proceedings
1 textbook (*Principles of Scattering and Transport of Light*, Cambridge Univ. Press, 2021)
11 book chapters in collective books
95 invited talks in international conferences or lectures in summer/winter schools
h-index: 42 (Web of Science), 50 (Google Scholar)