Charly Leblanc

PhD in Nanophotonics

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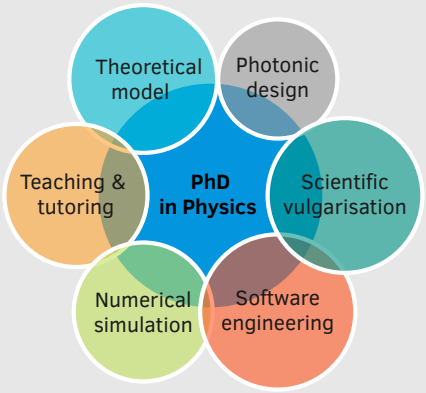
Overview



Programming

Python • Lumerical • RCWA

Matlab • Mathematica • Comsol

Collaborations

Education

PhD in Nanophotonics and Computational Optics
Specialization: Nanophotonics
Institut Pascal - UCA/CNRS
2019 - 2022 | Aubière, France

Master in Physics (Rank #1)
Major: Nanophysics
Université Clermont Auvergne
2017 - 2019 | Clermont-Fd, France

Bachelor in Physics
Major: Fundamental physics
Université Clermont Auvergne
2015 - 2017 | Clermont-Fd, France

Classe Préparatoire aux Grandes Ecoles
Major: Mathematics and Physics
Université Blaise Pascal
2011 - 2013 | Clermont-Fd, France

Experience

Feb. 2024 - Present — **Research Engineer: Photonic Designer** — CEA - Leti - Grenoble, France
Subject: Direct/inverse design of integrated diffractive photonic components on CMOS.

Dec. 2022 - Nov. 2023 — **Postdoctoral Researcher** — CNR-Nanotec - Lecce, Italy
Subject: Design of integrated non-linear waveguides. Optical characterization of cavities and light-matter interaction.

Sep. 2020 - Aug. 2022 — **Graduate teaching assistant** — UCA - Clermont-Fd, France
Undergraduate lectures and tutorials of Mathematics and Physics.

Oct. 2019 - Sep. 2022 — **PhD in Nanophotonics and Computational Optics** Institut Pascal, France
Thesis: Theory and design of integrated topological non-linear photonic components (topological integrated laser, waveguides)

Skills

Technical

- **Optical design**: 5 years of experience designing photonic structures (waveguides, metasurfaces, integrated laser) using FDTD/MODE (Lumerical), FEM (Comsol) and python libraries combined with inverse design techniques such as LPA, gradient descent, Particle Swarm Optimization, genetic algorithms and machine learning.
- **Programming & Software Engineering**: 5 years of experience in Python & MATLAB for computational physics. I developed and optimized numerical solvers, data analysis scripts, and inverse design algorithms. I have experience in best software engineering practices, including Git version control.
- **Layout**: Created photonic circuit and metasurface layouts using Python (GDSfactory) and KLayout. I am learning how to use IPKISS.
- **Experimental Techniques and manufacturability**: Optical characterization of cavities, data analysis from experimental measurements. Conducted tolerancing studies to assess manufacturability, working with the 300mm process team.

Transversal

- **Scientific communication & documentation**: Published 11 scientific papers in top journals, including *Nature Photonics*, *Optica* and *Physical Review Letters*.
- **Technical presentations & training**: Delivered over 15 technical presentations in international conferences, invited seminars, and workshops.
- **Teaching & mentoring experience**:
  - Over 120 hours of university-level teaching in Physics and Mathematics.
  - Mentored & advised Master's and PhD students (I. Septembre, J. Pellench).
- **Science outreach & communication**:
  - Authored popular science articles for PhysicsWorld (IOP).
  - Experience presenting research findings to diverse audiences, including academic researchers, students, non-experts, and industry professionals.
  - Comfortable with technical documentation and training.
- **Time management**: Efficiently managed multiple projects simultaneously while meeting deadlines.
- Fluent in **French** (native), proficient in **English** and learning **Italian**.

Prizes and awards

- National PhD award from the Société Francaise de Physique (SFP).
- PhD thesis prize C'Nano 2023 (CNRS).