Eliott BERAUD

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Education

PhD student, Bordeaux University - Preparing my PhD thesis under the supervision of Prof. Simon Bernon. I am working on designing and implementing an atom chip. The goal is shaping the electromagnetic environment of an atom cloud, in order to enhance interactions. 2023 -

Bordeaux University, Master LMN - MSc called Light, Matter and Interaction
International and interdisciplinary master teaching Quantum Optics, Light Manipulation of Matter, Nanophysics,... 2022 - 2023

Paris-Saclay University, Institut d'Optique Graduate School - BSc and MSc in Physics and Photonics Engineering 2020 - 2023
Studying the Photonics wide spectrum from Quantum Mechanics or Electromagnetism to Laser Engineering or Computer Science.

CPGE Gustave Eiffel PCSI/PSI* - Classe Préparatoire 2018 - 2020
Intensive two-year undergraduate honors program studying Mathematics, Physics and Electronics Engineering preparing to competitive entrance into top French engineering School.

Professional Experience

Université de Sherbrooke - Sherbrooke, Canada *www.usherbrooke.ca/ln2/*
Research Intern - Laboratoire Nanotechnologies et Nanosystèmes (LN2) Apr 2023 - Aug 2023

Unlike the smooth metal surfaces used in Surface Plasmon Resonance Imaging (SPRI) that support purely propagating surface modes, nanostructured metal surfaces support hybrid SPP modes that share attributes from both propagating and localized modes. These hybrid modes are well-suited to achieve sub-µm resolution with SPRI. Internship goals :

- Simulation of the measured blur in SPRI induced by metal surface nanostructure design.
- Optimisation of the surface nanostructure design according to spatial resolution versus contrast trade-off.

Synchrotron SOLEIL - CNRS&CEA - Saint-Aubin, France *www.synchrotron-soleil.fr*
Optics Group Engineer Intern May 2022 - Aug 2022

Meter-long mirrors need their surface to be mapped at the nm-scale for Synchrotron applications. High-precision stitching interferometers were developped but couldn't meet the precision requirements. Internship achievements :

- Distorsion characterisation and elimination (Measurements, Detection, Non-linear 2D-curve fitting and Correction)
- Interfacing interferometers' data with image processing algorithms (.dat files reader and builder adapted to Zygo)
- Comparison between the two interferometers and a reference interferometer

ALPhANOV - Talence, France *www.alphanov.com*
Laser Processing Engineer Intern Jun 2021 - Jul 2021

ALPhANOV provides Photonic Crystal Fibre interfacing and integration. Characterisation of the fibre (i.e laser injection) is mandatory after any operation on it. Injecting a laser beam into this type of fiber (core of few microns) is very tedious and complex. My successful achievements :

- Design and test of a characterisation bench for multi-wavelength single-mode optical fibers (e.g LMA-PM-5) respecting the constraints of size and precision. Easier and faster process (+4h/week saved).
- Handling of optical fiber splicer and cleaver.

Other

Teaching 64h/yr - Assisting teaching in 2nd year of IOGS whith few students from EUR Light. Tutorial sessions (Atomic Physics and Non Linear Optics) and Practical work sessions (Laser, NV Center, Detection Noise and SLM). Sep 2023 - Aug 2025

QAFCA 2024 - Talk Given at QAFCA conference on atomic interferometry. My talk was presenting previous work done in our team on atom number calibration in dense atomic clouds for in situ imaging. May 2024

PERL (Personne Exposée au Risque Laser) Certificate - Laser Safety Management Certificate valid for 5 years
Stating the ability of working safely with dangerous Lasers in a Lab. Jun 2021

Tutoring Experience - Tutoring 6 BSc students in Maths and Physics
Lessons, Tutorials and Work group with 2 groups of 3 Science and Technology BSc students. 3h/week activity. Sep 2020 - Aug 2021