Unipv LM+

Progetto Laurea Magistrale Plus

(realizzazione esperienza in azienda anno accademico 2025/26)

University details

Degree Course **PHYSICS**
University tutor/Thesis supervisor - Area of expertise of the university tutor **Prof. Matteo Galli - Integrated photonics for classical and quantum applications**

Company details

Company Name **CEA-Leti**
Company Tutor and Function/Role of the Company Tutor **Sylvain Guernber / R&D engineer in silicon photonics**

Project content and information about the internship

Title of the internship project **Characterization and modeling of photonic microlasers integrated on silicon.**
Activities/objectives planned for the internship and area/department in which the intern will be placed **The recent but very fast development of artificial intelligence is pushing the electrical interconnections of data centers to their limits in terms of throughput, density, and power consumption. By replacing these electrical links with optical fibers and integrating all the functions necessary for the production of optical transceivers on a chip, silicon photonics represents a unique opportunity to increase the performance of these systems while limiting their energy consumption.** **In particular, the integration of a laser light source within a photonic chip is an essential building block for the development of this technology. While current systems rely on the use of external lasers or butt-coupled laser chips, the heterogeneous manufacturing of microlasers directly on the photonic chip will be at the heart of future generations of data centers. This integration will notably enable ultra-fast and energy-efficient communications over very short-distance (inter-chip, intra-chip). Within our laboratory, which employs around thirty people, you will be responsible for:** **• Operating, and if necessary improving, a characterization bench specially designed for microlasers.** **• Characterizing a series of microlasers manufactured by a previous doctoral student.** **• Analyzing the results and modeling the influence of various parameters of the microlaser on its performance.** **• Participating in the design of a new generation of microlasers.**
Intern's requirements/skills **Master studies including semiconductors and photonics**

Training courses offered by the company during the internship (specify whether training courses will be offered and, if so, the title and area in which the intern will be trained)
Potential scope and topic of thesis **To be discussed, possible in principle**
Internship location **CEA-Leti – Optics and Photonics Department – 17 rue des Martyrs – 38054 Grenoble - France**
Duration of the internship **4+6 months**
Expense reimbursement - information to be obtained if the company has a policy different from the minimum (min £500/net - max £800/net) - indicate any other benefits (shuttle bus, canteen, guest accommodation, etc.) **Reimbursement of 1300€ per month in Grenoble + benefits**
Specific requests from the company **Strongly motivated students with good exam scores, team working and flexibility skills to work in a multi-disciplinary environment (photonic circuit design and optimization, pre-industrial clean room fabrication, optical characterization)**
Notes/to be reported **The student will get a practical insight of the various theoretical and experimental aspects of integrated silicon photonics technology in one of the largest technological R&D institutes in Europe.**