**Progetto Laurea Magistrale Plus**  
*(Students enrolled for the first time in the Academic Year 2019/20, undertaking the internship in the company in 2020/2021)*

### University infos

<table>
<thead>
<tr>
<th>University degree</th>
<th>LAUREA MAGISTRALE IN PHYSICS</th>
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</thead>
<tbody>
<tr>
<td>University tutor / Thesis supervisor</td>
<td>Prof. Matteo Galli</td>
</tr>
<tr>
<td>Courses / Expertize of the university tutor</td>
<td>Integrated photonics for classical and quantum applications</td>
</tr>
</tbody>
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### Company infos

<table>
<thead>
<tr>
<th>Company name</th>
<th>CEA-Leti</th>
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<tbody>
<tr>
<td>Company Tutor(s)</td>
<td>Segolene OLIVIER</td>
</tr>
<tr>
<td>Role in the company of the tutor(s)</td>
<td>R&amp;D engineer in silicon photonics</td>
</tr>
</tbody>
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### Contents and infos on project and internship

**Project title:** Development of silicon photonics multiplexers/demultiplexers for quantum information processing  

**Activity scenario and targets of the internship - Area/Department/office/lab (where the trainee will be involved):**  
First six months (2021): The student will be guided to perform numerical simulations to design Si and/or SiN multiplexers/demultiplexers at near-infrared and visible wavelength, addressing the specifications of multiplexed quantum transmitters. He will be familiarized with design layout on a maskset and will partially contribute to the CMOS fabrication in clean room.  
Last six months (2022): In the second part of the internship, the student will carry out wafer-level characterization of the devices (spectral transmission) and compare the results with simulations.

**Background / Expertize of the student required for the internship:**  
Master studies including semiconductors, photonics, nanotechnologies

**Potential thesis topics:**  
Silicon photonics integrated transmitters of high-dimensional qubits for quantum information processing

**Company location and place of work:** (Full address)  
CEA-Leti – Optics and Photonics Department – 17 rue des Martyrs – 38054 Grenoble - France

**Time length of the internship:** 12 MONTHS

**Benefits provided by the company (at least reimbursement of 500€ per month):**  
Reimbursement >500€ per month

**Specific company requests:**  
Strongly motivated students with good exam scores, team working and flexibility skills to work in a multi-disciplinary environment (photonic component design, pre-industrial clean room fabrication, optical characterization)

**Other comments:**  
The student will work with several highly-qualified people in the the field of design, CMOS fabrication and optical characterization, with state-of-the-art equipment. He/She will get a pratical insight of the various aspects of integrated silicon photonics technology in one of the largest technological R&D institutes in Europe.

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