**INTERNSHIP PROGRAM FOR INTERNATIONAL STUDENTS**

**INTERNSHIP SUBJECT FORM**

<table>
<thead>
<tr>
<th>Name of the Host Laboratory</th>
<th>OMEGA</th>
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<tr>
<td>Website of the Host Laboratory</td>
<td><a href="https://portail.polytechnique.edu/omega/fr">https://portail.polytechnique.edu/omega/fr</a></td>
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<tr>
<td>Research Group</td>
<td>ASIC design</td>
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<td>Internship Supervisor</td>
<td>D. Thienpont</td>
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<td>Internship Subject</td>
<td>Picosecond ASIC design and characterization for CERN experiment</td>
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**Student’s level**

- Advanced Undergraduate Students (3rd or 4th year)
- Master’s students (1st or 2nd year)
- PhD students

**Proposed Duration**

- 3 months
- 4 months
- 5 months
- 6 months

**Prerequisites**

- Electrical engineering

**Internship description (max. 15 lines)**

OMEGA is a French National Design Center for ASICs dedicated to particle physics and located at École Polytechnique near Paris. It is co-owned by CNRS/IN2P3 and École Polytechnique and performs academic research and teaching on microelectronics design. The laboratory is composed of a dozen of permanent research engineers, with high expertise on low noise, high-speed radiation hard readout ASICs for particle physics detectors. The well-recognized expertise of the laboratory has led to its selection for providing the readout ASICs of calorimeter upgrades on ATLAS and CMS experiments at CERN.

The research subject will be to simulate and layout full custom blocks in readout ASICs for pico-second timing measurements in CMOS 130nm. In particular high-speed low noise preamplifier, discriminator and pico-second Time to Digital converter. The student will also participate to the characterization of previous test vehicles already fabricated in this domain.