



## INTERNSHIP PROGRAM FOR INTERNATIONAL STUDENTS

### INTERNSHIP SUBJECT FORM

Name of the Host Laboratory	OMEGA
Website of the Host Laboratory	<a href="https://portail.polytechnique.edu/omega/fr">https://portail.polytechnique.edu/omega/fr</a>
Research Group	ASIC design
Internship Supervisor	D. Thienpont
Internship Subject	Picosecond ASIC design and characterization for CERN experiment
Student's level	<input checked="" type="checkbox"/> Advanced Undergraduate Students (3 <sup>rd</sup> or 4 <sup>th</sup> year) <input type="checkbox"/> Master's students (1 <sup>st</sup> or 2 <sup>nd</sup> year) <input checked="" type="checkbox"/> PhD students
Proposed Duration	<input type="checkbox"/> 3 months <input type="checkbox"/> 4 months <input type="checkbox"/> 5 months <input checked="" type="checkbox"/> 6 months
Prerequisites	Electrical engineering
Internship description (max. 15 lines)	<p>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.</p> <p>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.</p>