

<b>Title : Power and high-energy lasers</b>
<b>Acronym :</b> B2
<b>EU Coordinator :</b> Joao Jorge SANTOS, Université de Bordeaux
<b>Teaching staff :</b> Dimitri BATANI, Frédéric BURGUY, Alexis CASNER, Guillaume DUCHATEAU, Emmanuel d'HUMIERES, Clément PEJOT, Joao Jorge SANTOS
<b>Pre-requisites :</b> First year of MSc in Physics or Engineering Schools.
<b>Credits :</b> 3 ECTS
<b>Language :</b> French/English
<b>Keywords :</b> Power lasers - High energy lasers - Very short pulse lasers - Laser diagnostics - Hot plasmas - Laser architectures and amplifier chains - Design and dimensioning of a PW laser.
<i>Some notions on power lasers are given. The example of the LIL, LMJ and PETAL chains is presented. The module ends with practical works on lasers.</i>
<p><b>Laser technology</b> History of lasers. High energy and high intensity lasers. Materials for the optical elements of the end chain. Diagnostics of lasers in a radiative environment. Examples : LIL and LMJ.</p> <p><b>Laser architectures and amplifying chains</b> LIL and LMJ amplifier chains: implementation and diagnosis. High energy and very short pulse lasers: design and dimensioning of a PW laser, management of large lasers: LMJ and PETAL.</p> <p><b>The Miro software</b> Design and dimensioning of a laser chain with the Miro software.</p> <p><b>Experimental work on lasers</b> Smoothing, alignment and interferometry; Mac-Zehnder interferometer; Amplification, frequency conversion.</p>