



Postdoctoral position at the University of Bordeaux

In the LP2N and CELIA laboratories

**Femtosecond GHz frequency combs with arbitrary temporal burst shaping
for high intensity laser processing**

Frequency combs with very high repetition rate in the GHz range have applications in optical telecommunications, photonic signal processing, spectroscopy, optical sampling, radio-frequency or metrology. Such combs, mainly used for their spectral properties, have also shown strong interest in the time domain for the generation of arbitrary optical waveforms and shaped pulses. The latter is performed by controlling the phase and amplitude of each frequency mode individually (line-by-line shaping). The novelty in the project is the combination of electro-optical comb techniques derived from the telecommunication technology and the high-power fiber laser technology based on Yb-doped fibers. The typical applications of this novel laser source are numerous. To cite a few, picosecond acoustics in solid transparent materials, photo-injectors for new generation of charged particle X-band accelerators, study of ultrafast phenomena in solids or molecules as well as ultra-fast laser ablation. The project takes place in the context of ultrafast laser material processing and aim at developing the systems and the methods for laser processing with high-power bursts of picosecond pulses at GHz repetition rates. This novel interaction regime has demonstrated promising potential and upscaling to industrial applications with kW average power is now under way.

Within the framework of a large EU-funded project with partners in Germany, Austria and Switzerland, the successful candidate will develop unique laser sources consisting of a GHz frequency comb with advanced temporal shaping capabilities specifically designed for high-efficiency material processing in the GHz regime.

Candidates must have a PhD in applied physics, optics or related discipline. They should have a sound experience in experimental physics and/or laser development. A solid background in optoelectronics, radio-frequency, optical fibers and photonics is strongly recommended. Candidates should also have demonstrated abilities to work in a collaborative environment. The successful candidate will be expected to participate in experimental works in close collaboration with researchers from both the LP2N & CELIA laboratories as well as with the other partners. A fluent knowledge of English and/or French is a pre-requisite. The position is for 12 months period renewable.

Interested candidates are invited to apply by sending a letter of motivation, a CV and 2 letters of recommendation to:

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