# TITLE: Ultrafast lasers with high average power

**ABSTRACT:**

An increasing number of applications both in science and in industry require ultrafast lasers that combine high pulse energy and pulse repetition rate – i.e. that operate at high average power of hundreds of watts to kilowatts. In the last few years, progress in this area has been tremendous, and continues to provide new momentum to various fields of application.

This lecture will aim at giving an overview of the current technological advances in the generation of high-average power ultrashort pulses, with a particular emphasis on achieving these pulses directly from compact oscillator sources. In the first lecture will aim to provide a general background of the mechanisms behind modelocking of solid-state lasers, and the second lecture will focus on the current state-of-the art in this area, as well as some examples of relevant applications for these systems.