

## Colloquia

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**SPRING 2014**

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Recent trends in ultrafast lasers and frequency combs

day

**FEBRUARY 19, 2014 WEDNESDAY**

location

**EE01**

time

**15:40**

### **ABSTRACT**

Although ultrafast lasers have already enabled numerous important industrial and scientific breakthroughs, there is still a strong need for further improvements in terms of achievable performance, compactness, and reliability. In this presentation, we will review latest developments in the area of ultrafast laser oscillators and frequency comb generation. The highest average power levels and pulse energy levels of ultrafast oscillators are achieved in the thin disk laser geometry. We review the latest milestones in terms of duration, power and pulse energy and discuss the first carrier-envelope-offset (CEO) stabilized SESAM-modelocked thin disk laser. Moreover, we discuss the first frequency comb stabilization by optical feedback to a semiconductor saturable absorber mirror (SESAM). This new method for opto-optical modulation (OOM) overcomes bandwidth limitations of the standard pump current control and enables a CEO-locked 1.5- $\mu\text{m}$  diode-pumped solid-state laser with ten times lower residual phase noise.

The Physics Colloquia are designed to address a non-specialist, broad audience and introduce topics of contemporary research through lectures by leading experts. We warmly invite all members of the student body, including undergraduates enrolled in any programme.

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