



# SEMINAR

**18<sup>th</sup> November, 2014 - 11:00 a.m.**  
bldg. 48e (EMBL), seminar room

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## Ultrashort laser pulses from optical parametric amplifiers and oscillators

The on-going progress of fs-pump laser sources, e.g. based on fiber amplifier or thin-disk laser technology, optical parametric amplifiers and oscillators are becoming increasingly popular for the generation of ultrashort laser pulses with several hundred MWs of peak power especially at high repetition rates. In combination with ultra-broadband seed sources these systems are ideally suited for a variety of applications, e.g. high harmonic generation with high photon flux, generation of attosecond pulses and non-linear spectroscopy.

Besides the latest results of an ultra-broadband phase-matched optical parametric oscillator a novel (2+1) dimensional theoretical model will be presented. The model includes the effects of spatial walk-off, diffraction, dispersion, cascaded- and all parasitic effects for the systematic investigation of second order parametric processes. The detailed information from these complex electrical fields during the whole amplification process, e.g. parametric phase, intensity distributions, as well as unexpected cascaded effects and other mixing products allow for a quantitative prediction of even curious features in state-of-the-art OPA systems.