

Language: English

Date : July 4(Thu), 2013, 16:00 ~ 17:00

Location : Cooperation Center, 4F Meeting Room, W426
(研究交流棟4階会議室W426)

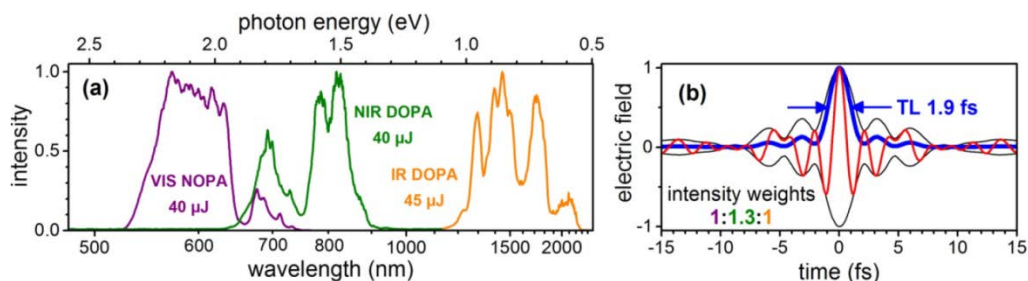
Title : An Orchestra of Light: Advanced Timing Distribution and Light Wave Synthesis

Speaker : Prof. Franz X. Kärtner

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and
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Kilometer scale free-electron lasers will reach their full potential in providing molecular movies if all laser and rf-sources involved in the facility can be timed and synchronized to at least 10-fs precision with scalability to potentially 100 attoseconds in the future. A set of ultrafast optical techniques for long-term stable femtosecond synchronization of large-scale X-ray free-electron lasers will be presented and performance scaling towards sub-femtosecond precision will be demonstrated.

Sub-cycle optical waveforms with spectra spanning multiple octaves are desired for efficient attosecond pulse generation and multi-wavelength spectroscopy. It turns out that some of the techniques invented for large scale timing distribution can be used to coherently stitch few-cycle optical pulses together. Progress towards a multi-Joule optical waveform synthesizer covering 500 nm – 2.5 μm will be presented and potential applications are discussed.



Second stage output from a three channel optical high field synthesizer