**Generation and applications of few-cycle relativistic light pulses**

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Optical parametric chirped pulse amplification (OPCPA), a new and alternative light amplification scheme to lasers, offers a huge gain bandwidth supporting light pulses with few optical cycle duration (5-10 fs) and ultra-relativistic intensities (>>1018 W/cm2). This technology forms also the basis of the Extreme Light Infrastructure Attosecond Light Pulse Source (ELI ALPS) facility.

Our OPCPA system, the Light Wave Synthesizer 20 (LWS-20), delivers 130 mJ and 8fs with 10 Hz repetition rate and its upgrade towards 500 mJ and 5 fs is under way. This upgrade makes LWS-20 an ideal tool to generate isolated attosecond pulses with unprecedented energy for nonlinear X-ray science. This is pursued in two ways, as high harmonic generation in atomic medium and on plasma surfaces. A further area of application of LWS-20 is laser-driven electron acceleration. A summary of LWS-20 and its future prospects and the newest application results will be presented.