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Chirped Pulse Amplification in a Seeded FEL: Towards the Generation of High-Power Few-Femtosecond Pulses Below 10 nm

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In optical conventional lasers, chirped pulse amplification (CPA) has become an extremely powerful technique for the generation of ultrashort pulses in the infrared and visible spectral ranges. In this contribution we report the successful implementation of CPA in a seeded XUV FEL. A second experiment, using a two-stage harmonic generation scheme (FERMI FEL-2) has the objective to generate coherent and phase-tailored few-femtosecond FEL pulses, with gigawatt peak power in the sub-10 nm spectral range. This second experiment is still in progress. We will discuss the main scientific and technical bottlenecks and the implications.

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