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Simulation Studies for the ASPECT Project at European XFEL

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Intense attosecond pulses generated by x-ray free-electron lasers (XFEL) are promising for attosecond science, for example, to study the quantum mechanical motion of electrons in molecules. This paper presents numerical simulations of the generation of attosecond soft and hard x-ray FEL pulses with the chirp-taper and Enhanced SASE schemes, based on the parameters of the European XFEL. To overcome the coherence time barrier, a modification of the chirp-taper scheme [1] is used in the case of soft x-rays. The results show that several hundred attosecond pulses can be obtained at photon energies of both 700 eV and 6 keV.

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Primary authors: YAN, Jiawei (European XFEL GmbH); GELONI, Gianluca (European XFEL GmbH); LECHNER, Christoph (European XFEL GmbH); Dr CHEN, Ye (Deutsches Elektronen-Synchrotron); GUETG, Marc (Deutsches Elektronen-Synchrotron); SCHNEIDMILLER, Evgeny (Deutsches Elektronen-Synchrotron); SERKEZ, Svitozar (European XFEL GmbH); Dr HEYL, Christoph (Deutsches Elektronen-Synchrotron)

Presenters: YAN, Jiawei (European XFEL GmbH); GELONI, Gianluca (European XFEL GmbH); LECHNER, Christoph (European XFEL GmbH); Dr CHEN, Ye (Deutsches Elektronen-Synchrotron); GUETG, Marc (Deutsches Elektronen-Synchrotron); SCHNEIDMILLER, Evgeny (Deutsches Elektronen-Synchrotron); SERKEZ, Svitozar (European XFEL GmbH); Dr HEYL, Christoph (Deutsches Elektronen-Synchrotron)

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