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Improving the Realistic Modeling of the EEHG Seed Section in Start to End Simulations

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A tunable and multicolor light source with near Fourier-limited pulses, controlled delay, and fully coherent beam with precisely adjustable phase profiles enables state-of-the-art measurements and studies of femtosecond dynamic processes with high elemental sensitivity and contrast. The start-to-end simulations efforts aim to take advantage of the available global pool of software and past and present extensive efforts to provide realistic simulations, particularly for cases where precise and fine manipulation of the beam phase space is concerned. Since, for such cases, tracking of beams with billions of particles through magnetic structures and handover between multiple codes are required, extensive realistic studies for such cases are limited. Here we will describe a workflow that reduces the needed computational resources and share studies of the EEHG seed section for the FLASH2020+ [1] project.

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Primary authors: NIKNEJADI, Pardis (Deutsches Elektronen-Synchrotron); ACKERMANN, Sven (Deutsches Elektronen-Synchrotron); AMSTUTZ, Philipp (Deutsches Elektronen-Synchrotron); DOHLUS, Martin (Deutsches Elektronen-Synchrotron); FERRARI, Eugenio (Deutsches Elektronen-Synchrotron); LANG, Tino (Deutsches Elektronen-Synchrotron); PARASKAKI, Georgia (Deutsches Elektronen-Synchrotron); SCHAPER, Lucas (Deutsches Elektronen-Synchrotron); SCHNEIDMILLER, Evgeny (Deutsches Elektronen-Synchrotron); SCHREIBER, Siegfried (Deutsches Elektronen-Synchrotron); VOGT, Mathias (Deutsches Elektronen-Synchrotron); YURKOV, Mikhail (Deutsches Elektronen-Synchrotron); HILLERT, Wolfgang (University of Hamburg); PANNEK, Fabian (University of Hamburg); SAMOILENKO, Dmitrii (University of Hamburg); REICHE, Sven (Paul Scherrer Institut); CURBIS, Francesca (Lund University); POP, Mihai (Lund University)

Presenters: NIKNEJADI, Pardis (Deutsches Elektronen-Synchrotron); ACKERMANN, Sven (Deutsches Elektronen-Synchrotron); AMSTUTZ, Philipp (Deutsches Elektronen-Synchrotron); DOHLUS, Martin (Deutsches Elektronen-Synchrotron); FERRARI, Eugenio (Deutsches Elektronen-Synchrotron); LANG, Tino (Deutsches Elektronen-Synchrotron); PARASKAKI, Georgia (Deutsches Elektronen-Synchrotron); SCHAPER, Lucas (Deutsches Elektronen-Synchrotron); SCHNEIDMILLER, Evgeny (Deutsches Elektronen-Synchrotron); SCHREIBER, Siegfried (Deutsches Elektronen-Synchrotron); VOGT, Mathias (Deutsches Elektronen-Synchrotron); YURKOV, Mikhail (Deutsches Elektronen-Synchrotron); HILLERT, Wolfgang (University of Hamburg); PANNEK, Fabian (University of Hamburg); SAMOILENKO, Dmitrii (University of Hamburg); REICHE, Sven (Paul Scherrer Institut); CURBIS, Francesca (Lund University); POP, Mihai (Lund University)

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