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Simulation study on a virtual diagnostics concept for X-ray pulse characterisation

Tuesday, 9 May 2023 16:30 (2 hours)

In this study we investigate simulation results for a virtual diagnostics concept that is planned for the SASE1 beamline at the European XFEL. These virtual diagnostics will be used to predict photon beam properties like pointing and divergence. We first use the GENESIS simulation framework to compute different lasing conditions in the undulator beamline, and then use Artificial Neural Networks (ANN) to predict the pulse properties. The final model will be able to estimate X-ray pulse characteristics based on properties like electron beam trajectories inside the undulator sections along with other diagnostics data. This study will provide insight towards the development of online virtual diagnostics in the real machine.

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Footnotes

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Yes

Primary author: JAFARINIA, Farzad (Deutsches Elektronen-Synchrotron)

Co-authors: GRECH, Christian (Deutsches Elektronen-Synchrotron); GELONI, Gianluca (European XFEL GmbH); GUETG, Marc (Deutsches Elektronen-Synchrotron)

Presenter: JAFARINIA, Farzad (Deutsches Elektronen-Synchrotron)

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