Contribution ID: **1606** Contribution code: **TUPL145** Type: **Poster Presentation**

Beam dynamics of the RUEDI diffraction beamline

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

RUEDI is a proposed relativistic ultrafast electron diffraction and imaging facility. It will have two beamlines: a diffraction beamline and an imaging beamline. This proceeding discusses the beam dynamics design of the diffraction beamline. The diffraction beamline needs to have the best temporal resolution possible which requires short bunch length and minimal time of arrival jitter at the sample. To achieve this a magnetic bunch compressor operated in a jitter cancelling configuration is used. To achieve compression as well as jitter cancellation the beam's longitudinal space charge forces are used to modify the chirp to compress the beam. The RUEDI diffraction line will operate at 4 MeV meaning that both space charge forces and ballistic effects are significant and need to be accounted for in the design. The diffraction line will be operated in three modes: single-shot, stroboscopic and streaking.

Funding Agency

Work supported by EPSRC/UK Infrastructure Fund under grant number EP/W033852/1.

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary authors: HOUNSELL, Benjamin (Science and Technology Facilities Council); MCKENZIE, Julian (Science and Technology Facilities Council)

Presenter: HOUNSELL, Benjamin (Science and Technology Facilities Council)

Session Classification: Tuesday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.A08: Linear Accelerators