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## Investigation of attosecond pulse generation schemes for UK XFEL

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Intra-atomic dynamics are fundamental to organic processes such as photosynthesis. X-Ray spectroscopy, using pulses of tens of femtoseconds durations generated by Free Electron Lasers (FELs), has enabled great progress in understanding this field. Sub-femtosecond pulses would enable new discoveries in the ultrafast timescales of reactions and transitions. In this paper, attosecond pulse generation is investigated for the UK XFEL Conceptual Design project's short pulse requirements, with a focus on the XLEAP (X-Ray Laser Enhanced Attosecond Pulses) scheme from LCLS. Simulation studies using the code Genesis 1.3 (v4) are used to investigate and optimise the FEL output properties and further explore methods of enhancing the output power. Simulation results indicate that a post saturation magnetic chicane can be used to double the FEL pulse peak power.

### Funding Agency

### Footnotes

### I have read and accept the Privacy Policy Statement

Yes

**Primary author:** COKU, Mexhisan (Science and Technology Facilities Council)

**Co-author:** THOMPSON, Neil (Cockcroft Institute)

**Presenter:** COKU, Mexhisan (Science and Technology Facilities Council)

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