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Preliminary commissioning results for the plasma-driven attosecond X-ray source (PAX) experiment at FACET-II

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

In our recent work [1], we proposed a plasma-driven light source that can generate coherent tunable XUV pulses with TW peak power and pulse durations of 40 attoseconds (or longer) in a m-length undulator. The pulses synthesized in this approach carry particular merit for tracking chemical dynamics and enabling measurements that extend beyond the range of conventional HHG and XFEL sources.

In this presentation, we share early commissioning results from preliminary experiments undertaken at the FACET-II facility at SLAC National Accelerator Laboratory, making use of the GeV-energy nC-charge beam available to users. We show measurements of the radiated UV/Vis spectrum and spatial mode of coherent synchrotron radiation generated by the uncompressed drive beam, which will be used in future plasma chirping and compression experiments. These early results provide a roadmap for successful commissioning of the weak 4-dipole chicane that will later be installed to compress the beam before injection into a m-length undulator.

1. Emma, C. et al. (2021). Terawatt attosecond x-ray source driven by a plasma accelerator. *APL Photonics*, 6(7), 076107.

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Footnotes

I have read and accept the Privacy Policy Statement

Yes

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