

GFA Accelerator Seminar

FERMI FEL operation in Echo Enabled Harmonic Generation mode

Friday, 28 September 2018, 10am, WSLA/008

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The FERMI FEL routinely operates in High Gain Harmonic Generation mode, providing fully coherent pulses from the extreme ultraviolet (EUV) to the soft x-ray.

However the FERMI layout is very suitable to test a novel FEL mode, named echo-enabled harmonic generation (EEHG), where two external seed lasers are used to precisely control the spectro-temporal properties of the FEL pulse. This scheme, already demonstrated in the EUV, promises an improvement in the FEL stability and a minor sensitivity to the microbunching instabilities. With a small modification of the FERMI FEL-2 line, the EEHG mode has been experimentally proved at FERMI, generating for the first time intense pulses in the soft x-ray.

An outlook of the main results obtained at FERMI and a comparison with the nominal performance of FERMI in HGHG mode is given in this talk.

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