

EXTENDING THE FERMI FEL2 TOWARDS SHORTEST WAVELENGTHS

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Abstract

The second FEL line of the FERMI project was originally designed for providing long optical pulses (about 1ps) in the spectral range between 40 and 10 nm. Recent developments of both the FERMI scientific case and of new possible configurations of the FERMI linac stimulated a revision of the original setup in order to exploit new possibilities and fulfill requirements. In this work we deeply investigated the most relevant FEL configurations that may be implemented for the FERMI FEL2, showing that a revision of the original double-cascade high-gain harmonic generation is the most promising. According to numerical simulations, using the electron-beam parameters expected from the FERMI linac, the spectral range for FEL2 can now be extended down to 5 nm, and a significant amount of power can be produced also in the 1-nm spectral range. Moreover, the proposed setup is flexible enough for exploiting future developments of new seeding sources like HHG in gases.

**CONTRIBUTION NOT
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