

Physics and Applications of High Brightness Beams



Contribution ID: 71

Type: **Invited talk**

High brilliance Free-Electron Laser Oscillator operating at multi-MegaHertz repetition rate in the short-TeraHertz emission range

Monday, June 19, 2023 12:20 PM (25 minutes)

We present the design study of an innovative scheme to generate high repetition rate (multi-MHz-class) THz and X synchronized radiation pulses by using an Energy Recovered Super Conducting Linac operating in Continuous Wave mode driving a Free-Electron Laser Oscillator. The FEL and X rays performances are illustrated for one and two color operation. Start-to-end simulations are presented to assess the capability of this scheme for typical values of wavelengths of interest in the 10-50 μm (6-30 THz) and 3-0.05 \AA .

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Session Classification: 5th generation light source