Contribution ID: **152** Contribution code: **TUP152-WEC** Type: **Poster Presentation**

ERFORMANCE ESTIMATES FOR A COMPACT THZ FEL

Tuesday 20 August 2024 20:40 (20 minutes)

Free-electron lasers in the terahertz region that produce high peak and average power require small diameter, low-emittance, high voltage electron beams. This paper presents a 1.5-2 MV, 100-200 A thermionic cathode e-beam source for compact megawatt range peak power, multi-kilowatt average power, high repetition rate THz FELs. The beam generation system includes a high-quality Pierce gun followed by a four-stage acceleration section followed by a magnetic beam compression lens. A specific design for a 1.0 THz FEL is presented. The injector possesses various power supply switching advantages and the paper also includes remarks on very high-voltage multi-stage depressed collectors for overall efficiency enhancement. Performance estimates are included throughout the paper.

Footnotes

Funding Agency

Absolutely no outside funding whatsoever was used in the creation of this report

Primary author: Dr TRUE, Richard

Co-authors: FREUND, Henry (University of New Mexico); Dr FAZIO, Michael; Dr O'SHEA, Patrick

Presenter: FREUND, Henry (University of New Mexico)

Session Classification: Poster session

Track Classification: Novel acceleration and FEL concepts