



Contribution ID: 1899 Contribution code: MOPG63

Type: **Poster Presentation**

Stability and scalability of superradiant amplification in attosecond X-ray free-electron lasers

Monday, 20 May 2024 16:00 (2 hours)

In free-electron lasers seeded by a coherent pulse, the term superradiance refers to a regime in which the seed pulse is consistently shortened by a slippage-dominated interaction with the electron beam. This regime is extremely promising for attosecond X-ray free-electron lasers in particular, as it offers a potential path towards shorter, higher power pulses. We study the practical limits of this regime in two directions. First, we study numerically and analytically the conditions under which superradiant behavior is observed. Second, we study the limits of superradiant amplification, in particular how long this nonlinear interaction can be prolonged for realistic beam conditions.

Footnotes

Funding Agency

Paper preparation format

LaTeX

Region represented

North America

Primary author: ROBLES, River (Stanford University)

Co-author: MARINELLI, Agostino (SLAC National Accelerator Laboratory)

Presenter: ROBLES, River (Stanford University)

Session Classification: Monday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.A06 Free Electron Lasers