



Contribution ID: 38

Type: Oral Presentation

Measurement of femtosecond incoherent XUV pulses using shot-noise-driven fluctuations in plasma betatron sources

Tuesday, 8 April 2025 12:00 (30 minutes)

The duration of incoherent XUV pulses down to the femtoseconds (fs) can be retrieved through a statistical analysis of the modulations on the observed radiation spectrum. Uncorrelated shot-noise fluctuations in the pulse temporal profile result in incoherent radiation showing a multispikes spectrum where the spike width is inversely proportional to the pulse length. In this Letter, single-shot temporal characterization of the betatron radiation pulses emitted by fs-long, 100's MeV electron bunches undergoing acceleration, and propagating through a plasma wiggler was performed in the XUV domain. The retrieved pulse lengths agree with independent measurements performed in the THz spectral range and with theoretical predictions.

Primary author: CURCIO, Alessandro (Istituto Nazionale di Fisica Nucleare)

Presenter: CURCIO, Alessandro (Istituto Nazionale di Fisica Nucleare)