



Contribution ID: 187 Contribution code: TUP71

Type: Contributed Poster

## Spectro-Temporal Properties of Coherently Emitted Ultrashort Radiation Pulses at DELTA

*Tuesday, 23 August 2022 17:40 (20 minutes)*

At the 1.5 GeV synchrotron light source DELTA operated by the TU Dortmund University, the short-pulse facility employs the seeding scheme coherent harmonic generation (CHG) to produce ultrashort pulses in the vacuum ultraviolet and terahertz regime. This is achieved via a laser-induced electron energy modulation and a subsequent microbunching in a dispersive section. The spectro-temporal properties of the CHG pulses as well as the coherently emitted terahertz radiation are influenced by the seed laser parameters and can be manipulated by varying the laser pulse shape and the strength of the dispersive section. CHG spectra for different parameter sets were recorded and compared with the results of numerical simulations to reconstruct the spectra. A convolutional neural network was employed to extract the spectral phase information of the seed laser from the recorded spectra. In addition, the shaping of the coherently emitted THz pulses by controlling the seed pulse spectral phase using a spatial light modulator was also demonstrated.

### I have read and accept the Privacy Policy Statement

Yes

**Primary authors:** RADHA KRISHNAN, Arjun (TU Dortmund University); BÜSING, Benedikt (TU Dortmund University); KHAN, Shaikat (TU Dortmund University); MAL, Carsten (TU Dortmund University); HELD, Arne (TU Dortmund University); USFOOR, Zohair (TU Dortmund University); VIJAYAN, Vivek (TU Dortmund University)

**Presenters:** RADHA KRISHNAN, Arjun (TU Dortmund University); BÜSING, Benedikt (TU Dortmund University); KHAN, Shaikat (TU Dortmund University); MAL, Carsten (TU Dortmund University); HELD, Arne (TU Dortmund University); USFOOR, Zohair (TU Dortmund University); VIJAYAN, Vivek (TU Dortmund University)

**Session Classification:** Tuesday posters

**Track Classification:** Seeded FEL