



Contribution ID: 36

Type: **not specified**

CLARA Dielectric Dechirper Performance Studied by Simulations

Wednesday 12 June 2024 13:05 (15 minutes)

Maximising the performance of free electron lasers relies on minimising the energy spread (chirp) within the electron bunch. Although several studies have proved the effectiveness of longitudinal wakefields induced in corrugated and dielectric structures in bunch dechirping, the impact of transverse wakefields on beam quality remains insufficiently explored. This study investigates the performance of a dielectric wakefield structure, designed for integration into the CLARA facility, through simulations. The dechirper includes two planar and orthogonally oriented dielectric waveguides with adjustable dielectric gaps. It is aimed to achieve optimal energy spread reduction while compensating transverse wakefields, so the beam quality is not compromised. Simulations conducted across varying parameters—bunch length, transverse size, bunch energy spread, and dielectric gap—offer insights into the longitudinal and transverse wakefield effects on beam dynamics within the dechirper.

Authors: HIGUERA GONZALEZ, Beatriz; HIGUERA GONZALEZ, Beatriz

Presenter: HIGUERA GONZALEZ, Beatriz

Session Classification: Parallel talks