Contribution ID: **228** Type: **talk**

Spatial autocorrelation study for laser beam quality estimation

Tuesday, 17 September 2019 16:20 (20 minutes)

High brightness electron beam is required by several applications in the accelerator physics field, e.g., Plasma Wake Field Acceleration (PWFA) experiments and Free electron Laser (FEL) radiation sources. In order to have a high brightness beam, that means a high current and a low emittance beam, it is important to study, among other things, the beam's non uniformity due to the non perfect transverse laser beam uniformity. Regarding the transverse analysis of the beam, statistical tools as mean and standard deviation are usually used. In this contribution we will show how the autocorrelation function of a photocathode laser can be used for monitoring the spatial distribution of the beam non-uniformity, strictly connected with high the electron beam emittance: we will apply our analysis on the SPARC_LAB data.

Primary authors: SCIFO, Jessica (LNF); DEL DOTTO, Alessio (INFN); FERRARIO, Massimo (LNF); POMPILI, Riccardo (LNF); VILLA, Fabio (LNF)

Presenter: SCIFO, Jessica (LNF)

Session Classification: WG3 - Particle Sources

Track Classification: WG3 - Electron beams from electromagnetic structures, including dielectric and laser-driven structures