



Contribution ID: 2617 Contribution code: MOPL144

Type: **Poster Presentation**

Steering to a wakefield reduced trajectory using RF kick data in the SLAC linac

Monday, 8 May 2023 16:30 (2 hours)

Wakefields kick the electron bunch to a non-linear tilt causing emittance growth. Any additional correlation like an energy chirp (energy vs z dependence) will filament the disturbance further causing a nearly unrecoverable bigger emittance. For C3 (Cool Copper Collider) the emittance preservation numbers seems to be about 1000 times more stringent than achieved. It is actually “only” about 30 times trickier (square root of 1000) which is still a big number. During two-bunch setups for LCLS (Linac Coherent Light Source) it was observed that the same transverse beam offset reduced the wakefield kick and at the same time the RF kick from the most probably misaligned accelerating structure. To turn this around an RF kick can be easily measured with RF on and off, or a phase scan using a single bunch. The plan is to test this at FACET-II where the emittance growth is quite high due to a high charge. Experimental results where RF kicks are locally minimized and therefore give a better starting value for emittance tuning will be presented in a later paper.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: DECKER, Franz-Josef (SLAC National Accelerator Laboratory)

Co-authors: Dr HALAVANAU, Aliaksei (SLAC National Accelerator Laboratory); YOCKY, Gerald (SLAC National Accelerator Laboratory)

Presenter: Dr HALAVANAU, Aliaksei (SLAC National Accelerator Laboratory)

Session Classification: Monday Poster Session

Track Classification: MC1: Colliders and other Particle Physics Accelerators: MC1.A08: Linear Accelerators