



Contribution ID: 88

Type: **Oral**

Cool Copper Collider Demonstrator Beam Dynamics and Diagnostics

Thursday, 18 May 2023 16:30 (15 minutes)

Cool Copper Collider (C3) offers a unique opportunity to study the Higgs physics. A C3 Demonstration R&D Plan, or the C3 Demonstrator (C3Demo), is an on-going effort to address the R&D and answer the technical questions in a staged approach, ending with a multi-cryomodule linac of 2 GeV electron beams. We report simulation on C3Demo beam dynamics with injector, acceleration, and compression. Emittance preservation is studied including the collective effects and machine jitter. The accompanying diagnostics at different stages will also be discussed with emphasis on emittance measurements with different approaches including utilizing undulator radiation. Multi-dimensional measurements integrating a transverse cavity and dipole magnet will be elaborated. Schemes with one bunch and two-bunches then provide a thorough mapping of the electron bunch properties and the wakefields in the RF cavities. The understanding of the beam dynamics challenges from both simulation and measurements then paves the base for a full beam dynamics performance optimization for the C3 main linac design.

Primary authors: WU, Juhao (SLAC); WHITE, Glen; SHUMAIL, Muhammad

Presenter: WU, Juhao (SLAC)

Session Classification: Accelerator: Beam Dynamics

Track Classification: Accelerator: Beam Dynamics