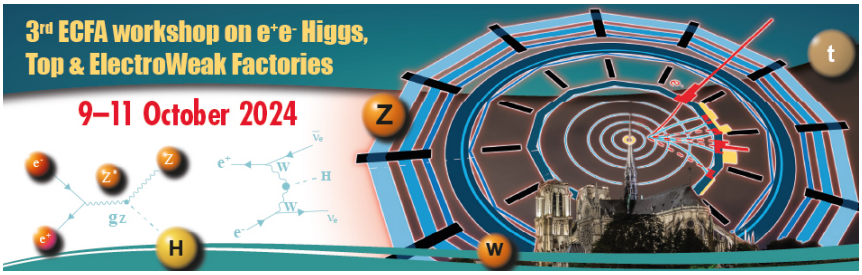

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Bunch Structure Studies at C3

Thursday 10 October 2024 12:40 (20 minutes)

The Cool Copper Collider (C3) accelerator concept has been found to be a compact, energy efficient accelerator design that is sufficient for studying the Higgs Boson in great detail. Studies to simultaneously optimize the scientific and environmental impact of C3's luminosity production have been underway for some time and here we present studies of these re-optimized machine configurations in a full GEANT simulation of the SiD detector concept. Some of these scenarios involve smaller bunch separations than the nominal 5.25ns (250 GeV) or 3.5ns (550 GeV) C3 bunch spacing, amplifying out-of-time pileup effects. We will evaluate background effects at both center-of-mass energies. We will consider these scenarios from the perspective of detector occupancy, performing full simulation of in-time and out-of-time beam induced backgrounds, discussing the merits and drawbacks of each configuration.

Primary authors: VERNIERI, Caterina (SLAC); NTOUNIS, Dimitris (Stanford University & SLAC National Accelerator Laboratory); GRAY, Lindsey (Fermi National Accelerator Laboratory)

Presenter: NTOUNIS, Dimitris (Stanford University & SLAC National Accelerator Laboratory)

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