Contribution ID: **220** Type: **Oral presentation (remote)**

A Sustainability Strategy for the Cool Copper Collider

Tuesday, 9 July 2024 16:15 (15 minutes)

In this talk, we will discuss the studies presented in PRX ENERGY **2**, 047001, where the carbon impact of the Cool Copper Collider (C^3), a proposed electron-positron linear collider operated at 250 and 550 GeV center-of-mass energy, is evaluated. We introduce several strategies to reduce the power needs for C^3 without modifications in the ultimate physics reach. We also propose a metric to compare the carbon costs of Higgs factories, balancing physics reach, energy needs, and carbon footprint for both construction and operation, and compare C^3 with other Higgs factory proposals –ILC, CLIC, FCC-ee and CEPC –within this framework. We conclude that the compact 8 km footprint and the possibility for cut-and-cover construction make C^3 a compelling option for a sustainable Higgs factory. More broadly, the developed methodology serves as a starting point for evaluating and minimizing the environmental impact of future colliders without compromising their physics potential.

Apply for poster award

Primary authors: BULLARD, Brendon (SLAC National Accelerator Laboratory); VERNIERI, Caterina (SLAC National Accelerator Laboratory (US)); NTOUNIS, Dimitris (SLAC National Accelerator Laboratory (US)); NANNI, Emilio (SLAC National Accelerator Laboratory); BREIDENBACH, Martin (SLAC)

Presenter: BULLARD, Brendon (SLAC National Accelerator Laboratory)

Session Classification: Industry

Track Classification: Accelerator: Sustainability