

# Compact Colliders of Tomorrow for High Energy Physics

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Collider physics is rich, diverse, and versatile. Over the last several decades, colliders have played a central role in experimental establishment of the SM, from discovery of the charm quark in 1974 to the Higgs boson discovery in 2012 at the LHC. New colliders are likely be necessary to shed light on the existence and nature of new physics. Muon Colliders present a highly attractive future collider option due to their small size, high efficiency, and the potential to reach very high energies. In this talk I will present the case for a future high energy muon collider, review associated challenges and technology needs and outline a path forward. I will also discuss the Cool Copper Collider, which is an attractive compact, power-efficient electron-positron machine capable of making percent-level measurement of Higgs couplings. Innovative power delivery to the C-band copper linac structure that is kept at liquid-nitrogen temperature, allows accelerating gradients of over 120 MeV/m resulting in a small collider foot-print.

## Abstract Category

Accelerators

**Primary author:** DASU, Sridhara (University of Wisconsin Madison (US))

**Presenter:** DASU, Sridhara (University of Wisconsin Madison (US))

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