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The MAIA Detector for a 10 TeV Muon Collider

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Over the last few years, muon colliders have emerged as an exciting option for enabling access to the 10 TeV energy scale in the post-HL-LHC era; however, realizing this promise still requires significant research and development in both accelerator and detector technologies. Two potential designs for a 10 TeV center-of-mass energy muon collider detector are currently under study in both the US and internationally under the International Muon Collider Collaboration: MAIA (Muon Accelerator Instrumented Apparatus) and MUSIC (MUon Smasher for Interesting Collisions). Both designs are optimized to deal with the specific challenges of a muon collider, namely the large beam-induced background (BIB) from muons decaying in and around the detector. In this talk, I will give an overview of the proposed MAIA design, discuss how it addresses these challenges, present the latest results of new performance studies conducted over the past year using realistic simulations of the BIB, and talk about some of the outstanding challenges and next steps for this R&D effort.

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