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The Research and Development Program towards an Energy-Frontier Muon Collider

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The physics potential of a high-energy lepton collider has been shown to be extraordinary. This facility is capable of detailed studies of potential new physics uncovered at the LHC and can extend the search to mass scales beyond those accessible at the LHC. The Muon Collider provides a possible realization of a multi-TeV lepton collider. A muon accelerator facility that leads to a multi-TeV Muon Collider presents the unique opportunity to explore new physics within a number of distinct programs that can be brought online as the facility evolves. This paper will give an introduction to the Muon Collider facility and its unique capabilities, will discuss the Research and Development program that strives to make it a reality and finally will briefly give some detail regarding the machine-detector interface, background issues and detector performance.

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