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Advancing physics simulations at a Multi-TeV Muon Collider RICHARD RUIZ, Institute of Nuclear Physics Polish Academy of Sciences, AN-TONIO COSTANTINI, NFN, Sezione di Bologna, LUCA MANTANI, OLIVIER MATTELAER, FABIO MALTONI, XIAORAN ZHAO, Universite Catholique de Louvain — Starting from collider energies of a few TeV, electroweak (EW) vector boson fusion/scattering becomes the dominant production mode at lepton colliders for Standard Model and new physics processes that are relevant to studying the EW sector. In this regime, a muon collider would effectively act as a "high-luminosity weak boson collider," offering a wide range of opportunities to precisely measure EW and Higgs couplings as well as discover new particles. We present recent Monte Carlo developments in the context of the MadGraph5_aMC@NLO platform that allow for the precise exploration of arbitrary Standard Model and new physics processes.

> Richard Ruiz Institute of Nuclear Physics Polish Academy of Sciences

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