Contribution ID: **726** Type: **Parallel session talk**

Z' boson mass reach and discrimination at muon colliders

Saturday 20 July 2024 12:10 (17 minutes)

BSM theories extending the Standard Model gauge group are well motivated by grand unification, compositeness or flavor symmetries, and naturally introduce additional gauge bosons. Existing experimental bounds coming from LHC exclude the existence of an additional neutral gauge boson Z' with masses of up to about 5 TeV, depending on the model. The reach could be extended at future lepton colliders due to a cleaner collision environment. In our contribution, we show that a muon collider operating at 10 TeV could extend this reach by an order of magnitude for a vast set of BSM scenarios, far beyond the collider energy. We also present a framework to efficiently discriminate between different Z' models due to their vector and axial vector couplings using leptonic observables. We briefly discuss the impact of systematic uncertainties as well as beam polarization if available at a muon collider.

Alternate track

I read the instructions above

Yes

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