

Phenomenology 2022 Symposium: From Virtual to Real



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CP Structure of the Top Yukawa at a Multi TeV Muon Collider

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CP Violation was first discovered in the weak interaction in the 1960s. Since its discovery, efforts have been made to find new sources of CP Violation to account for matter antimatter asymmetry. This project proposes a search for CP Violation in the top Yukawa interaction through high energy muon collisions. Signal processes include $t\bar{t}h$, $t\bar{t}h\nu\nu$, and $t\bar{t}h\mu\mu$ decaying semi-leptonically. Cross section dependence of signal processes with \sqrt{s} and cross section dependence with varying CP-phase, α , at different benchmark \sqrt{s} are presented. Luminosity required for 5σ discovery and 2σ exclusion for different α are shown. Projected bounds on α at 95% CL are shown given the Standard Model case, $\alpha = 0$, at benchmark \sqrt{s} .

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