

Phenomenology of Vector-like Heavy Fermions at High Energy Colliders

Despite the success of the SM when compared with experiment related to the electroweak and strong interactions, we have quite important reasons to believe that the SM is not complete. The SM does not provide a satisfactory explanation to the hierarchy problem. Many extensions of the Standard Model that solve the hierarchy problem result in new particles. We will study the phenomenology of vector-like fermions resulting in theories where the Higgs boson is typically a pseudo-Nambu-Goldstone boson. In these theories we study the case where a heavy fermion will be heavier than a heavy gluon, and then the channel of a heavy fermion decaying into a color octet is considered. We study this phenomenology at high energy colliders, both the LHC as well as future machines.

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