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Muon shower tagging in the barrel muon system of the CMS experiment

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In the barrel muon system, stub building proceeds in two stages: the first constructs stubs using local information from individual muon stations, while the second combines, refines, and correlates information across multiple chambers before passing it to the track finders.

This work presents a muon shower tagging algorithm designed to efficiently detect and reconstruct muon showers, with potential application in the barrel muon system of the CMS experiment. The algorithm clusters hits to identify showers and then matches those clusters to muon stubs in neighboring stations. Such a method is particularly valuable for recovering efficiency lost when high-momentum muons radiate while traversing the detector.

Abstract

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