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Development of a Cylindrical Trigger Hodoscope for the COMET experiment

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Charged lepton flavour violation (CLFV) provides an experimental probe into new physics beyond the Standard Model. The COMET experiment at J-PARC in Tokai, Japan will be using the highest intensity muon beam yet to search for muon to electron conversion, a CLFV process, with the best sensitivity so far. Taking a staged approach to this search, Phase-I of COMET will begin in 2024 with a planned single event sensitivity of 3×10^{-15} . In order to reach this sensitivity, a cylindrical trigger hodoscope detector (called the CTH detector) is being developed in order to trigger on high momentum electrons coming from conversion events. The CTH detector will be capable of operating in a high hit rate, high radiation environment. This presentation will give an overview on the development of the CTH detector scintillator counters and readout electronics, as well as performance tests undertaken on these counters at the Australian Synchrotron.

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