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# The COMET Straw Tracker System

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The COMET experiment at J-PARC aims to search for a lepton-flavour violating process of muon to electron conversion in a muonic atom, $\mu$-e conversion, with a branching-ratio sensitivity of better than $10^{-16}$, 4 orders of magnitude better than the present limit, in order to explore the parameter region predicted by most of well-motivated theoretical models beyond the Standard Model.

The need for this sensitivity places several stringent requirements on the detector development.

The experiment requires to detect the monochromatic electron of 105 MeV, the momentum resolution is primarily limited by the multiple scattering effect for this momentum region.

In addition, high power proton driver is essential to accumulate an enough statistics, $ie.$ high rate capability is necessary.

Thus we need the very light material detector which can handle the high intensity beam in order to achieve an excellent momentum resolution, better than 200 keV/$c$, and to accumulate an enough statistics, up to $5 \times 10^{9} \mu^{-}$/s.

In order to fulfill such requirements, we decided to develop the straw-base planar tracker which is operational in the vacuum and made by the extremely light material.

The COMET straw tracker consists of 10 mm diameter tube, longer than 1 m length, with 20 $\mu$m thickness Mylar foil and 70 nm aluminum deposition, even thinner material down to 12 $\mu$m thickness is under development by the ultrasonic welding technique.

In this presentation, the development of COMET straw tracker is described including the prospect of final detector construction.

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