

Status on the construction of the straw tube tracker for the COMET experiment Phase-I

The COMET experiment at J-PARC aims to search for the charged lepton flavor violating process of neutrinoless muon to electron conversion with an improvement of a sensitivity by a factor of 10000 to the current limit. When the muon to electron conversion occurs, almost all the energy of the muon mass is carried out by the electron which is expected to have the monochromatic energy of about 105 MeV. The experiment requires detecting such electron with an excellent momentum resolution, better than 200 keV/c, to achieve the goal sensitivity. Thus, the very light material detector which is operational in vacuum is indispensable. Based on the requirement, we have developed the thin-wall straw-tube tracker which is operational in the vacuum and constructed by the extremely light material. The straw-tube tracker consists of 9.8 mm diameter tube, longer than 1 m length, with 20 μm thickness Mylar foil and 70 nm aluminum deposition. Recently, we started the assembly of the final straw tube tracker for COMET phase-I. In this presentation, we report the status on the construction of the straw tube tracker. The prospect of the development of the straw tracker towards the COMET phase-II is also described.

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