

## Design and studies for the Mu2e-II tracker

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The upgrade of the Mu2e experiment at Fermilab, Mu2e-II, is proposed to improve the expected Mu2e sensitivity. Mu2e-II will search for the neutrinoless conversion of a muon into an electron in the field of an Al nucleus, with a sensitivity up to few  $10^{-18}$ .

As for Mu2e, the tracker system for the Mu2e-II will be responsible for precisely measuring the momentum of the conversion electron to distinguish it from the background electrons coming from the muons decay in orbit.

To meet the requirements, a preliminary calculation indicates that the Mu2e-II tracker system should be even lighter than the Mu2e tracker by reaching a total material budget of about  $4 \times 10^{-3} X/X_0$ . Moreover, it must preserve or increase the rate capability of the M2e tracker. We present the ongoing R&D studies and some preliminary simulation results for a tracker made with about 20,000 8um thin-walled straw tubes operating in a vacuum of  $10^{-4}$  torr and for possible alternatives.

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