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The Mu2e Straw Tube Tracker

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The Mu2e experiment will search for neutrinoless conversion of muons into electrons in the field of an aluminum nucleus. The signature of this process is an electron with energy nearly equal to the muon mass. Precise and robust measurement of the outgoing electron momentum, combined with other background rejection methods, is essential to the experiment. We rely on a low-mass straw tube tracker to achieve these goals. The tracking system must operate in a vacuum and a 1 Tesla magnetic field. We have chosen to use about 20,000 thin-wall Mylar straws held under tension to avoid the need for supports within the active volume. In addition to measuring distance from the wire by drift time, subnanosecond measurement of signal propagation time will be used to measure position along the wire. Charge will be measured using ADCs to provide particle identification capability. In this talk we will describe details of the Mu2e tracker.

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