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Ultra-low mass Drift Chambers

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We present a novel low mass drift chambers assembling technique, developed in order to fulfill the stringent requirements imposed by the experiments for extremely rare processes, which require high resolutions (order of 100-200 KeV/c) for particles momenta in a range (50-100 MeV/c) totally dominated by the multiple scattering contribution (e.g., the positrons in MEG at PSI and the electrons in Mu2e at Fermilab).

Detailed studies for defining proposed geometries and the choice of materials designed for the mechanical structure, leading to end plates thicknesses of the order of 0.2 g/cm^2 , corresponding to 0.5% of a radiation length, inclusive of the front-end electronics, will be illustrated.

We describe the new wiring strategy and the feed-through-less wire anchoring system developed and tested on a drift chamber prototype under completion at INFN-Lecce.

Its first results, under a cosmic rays test stand, are expected in the forthcoming weeks.

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