The drift chamber of CMD-3 detector

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ABSTRACT

The construction of TraPld is driven by two main purposes:
- Maximize the transparency in terms of radiation length.
- Maximize the mechanical stability by reducing to acceptable limits the deformations of the endplates under the total load of the wires.

A significant reduction in the amount of material at the end plates is obtained by separating the gas containment function from the wire tension support function. The wires are anchored to a self-sustaining light structure ("wire-cage") surrounded by a thin skin ("gas vessel") of suitable shape to compensate for the gas differential pressure with respect to the outside. Schematically, the wire-cage is made of a set of radial spokes, constrained at their inner ends into a tiny cylinder and extended to the outer endplate rim.

TralPld (Tracking and Particle Identification), the Central Tracker proposed by the Bari and Lecce INFN groups for the detector for a generic flavour factory is an ultra-light drift chamber equipped with cluster counting/timing readout techniques. Main peculiarities of this design are the high transparency in terms of multiple scattering contributions to the momentum measurement of charged particles and the very promising particle identification capabilities. A drift chamber prototype for TraPld (initially to be used as the central drift chamber of the CMD-3 experiment at VEPP-2000) is going to be developed and tested by groups from INFN Lecce, INFN Bari.

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