

Investigation of tracking chamber made of six layers of mylar drift tubes.

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New thin-wall drift chamber stations are developed to upgrade tracking system of the experimental setup "FODS" at the Institute for High Energy Physics of the National Research Center "Kurchatov institute".

The station consists of 2 mutually orthogonal chambers (X- and Y-). Each chamber consists of 3 layers of 30 mm diameter drift tubes housed inside the body made of 125 microns thick mylar film coated with aluminium from both sides. The layer contains 24 tubes with a length of 810 mm. The chambers are equipped with 24-channel on-chamber electronics boards. The gas connection of the pipes in each layer is sequential, using gas jumpers made of plastic NORYL. The layers of each chamber are connected in parallel to the gas collectors. The gas volume of one chamber is 38.6 litres. All tests are carried out with the working mixture Ar+7%CO₂. Initial measurements are made at pressure about 1500 mbar.

Individual drift tube modules are checked using stand which is described. During tests the chamber works in the so-called "non-trigger" mode. Time-to-digital converter provides recording of the time of arrival of signals from drift tubes with an accuracy of 5 nsec, the threshold of amplifiers is about 0.6 μ A.

The chambers are investigated by detecting and analyzing cosmic muon tracks. Long exposures, about 3-10 hours of data collecting with cosmic particles, allow to test chamber. Reconstruction of cosmic particle tracks is performed only on the basis of information from the chamber itself. We also have started investigations of the chamber characteristics on the beam of Serpukhov accelerator.

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