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Studies on the Spatial Resolution and Drift Properties Using Micromegas Equipped TPC

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R&D studies on the performance as well as on the gas properties of the Micromegas based time projection chamber with standard readout were carried out in June 2005 using 4 GeV/c pion beam in a magnetic field from 0 to 1 Tesla at the Proton Synchrotron beam line at KEK, Japan. Analysis on the electron drift velocity, diffusion constant and point resolution of padrow measurement for Micromegas TPC filled with 95% Argon and 5% Isobutane gas are presented. The underlying physical mechanism which determines the optimal TPC performance are briefly discussed. Preliminary measurements of gas properties in close agreement with the analytical calculation and Magboltz simulation are summarized and likewise presented.

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