

Abstract Submitted
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Development of read-out electronics for time projection chamber (TPC) ASUKA SAITO, Nuclear Physics, SHIGERU KIUCHI, Nuclear Physics — A time projection chamber (TPC) is being developed for a cosmic ray test bench. The TPC (20*20*20cm, P10 gas, 5 micro seconds maximum drift) is used as 3D tracking device to determine the position and the angle of the incoming cosmic ray and has been tested with a proto-type readout electronics. The purpose of this R&D is to build an electronic circuit that reads out full 8*9 (=72) signals from the TPC with 10 nano seconds sampling time and to evaluate the performance of the TPC. The electronic circuit is made up of pre amplifier, high speed flash analogue to digital converter (FADC), digital signal processor (DSP) with data storage memory, and computer interface. The circuit will be installed upon a printed circuit board for every 4 input channels. The TPC is triggered by external scintillation counter to read-out the data, the stored data will give 3D coordinates of hits along the trajectory after a calibration, then the charged particle tracks are reconstructed in order to investigate the position resolution and efficiency of the TPC and to be used for the cosmic ray test bench.

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