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# Status and prospects of TPC module and prototype at high luminosity Z

To achieve the physical goals in the future circular collider, the high resolution tracker for the particle track reconstruction and particle identification are demanded. Time Projection Chamber (TPC) is one of the main concept proposal of the central tracker detector, it has an excellent performance on the moment measurement,  $dE/dx$  measurement and the spation resolution.

Based on the studies of the previous TPC module of the continue ion backflow suppression function, TPC  $dE/dx$  R&D from LCTPC collaboration and ALICE experimental collaboration, our group from Institute of High Energy Physics (IHEP) developed the TPC prototype with MPGD detector module integrated the laser calibration device. This prototype has an active readout area of  $200mm \times 200mm$  and the drift length of  $500mm$ , the narrow laser beams can imitate straight ionization tracks at predefined position ( $< 2\mu m$ ). it is placed on an anti-vibration pneumatic optical platform, where a central spring, a pendulum bar and an auto inflation system damp any vibration down to amplitudes of less than  $< 1\mu m$ , 1280 channels readout system and the high voltage of 20,000V for the field cage have been done, and the signal tests are very smooth for TPC prototype integrated 42 UV laser beams. In this talk, the first result of  $dE/dx$  and the position resolution will be presented too, and the update requirements, simulation and consideration will be given according that TPC detector will operate at the high luminosity Z.

## Scheduling Preferences

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