

Progress and status of the LCTPC

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LCTPC (Linear Collider TPC) is the TPC concept considered for tracking within ILD. Its goal is to achieve a momentum resolution of $9 \times 10^{-5} \text{ GeV}/c$ in the 3.5T magnetic field. It also requires a very low material budget to enable precise measurement in the highly granular electromagnetic calorimeter.

Different MicroPattern Gas Detector (MPGD) technologies are developed for electron amplification. Besides the usual pad readout, a silicon pixel readout based on the Timepix chip is studied. A light support frame is also designed to fulfill the robustness and low material constraints of the TPC.

All the technologies are tested in a large TPC prototype (LPTPC) which can accommodate seven gas amplification and readout modules similar to what is expected in the final TPC. It has been used for tests in a 1T magnetic field with an electron beam at DESY. The MarlinTPC software framework follows the developments with growing simulation and reconstruction capabilities.

The latest progress and future plans of LCTPC will be presented.

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