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HARPO - TPC for High Energy Astrophysics and Polarimetry from the MeV to the TeV

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Observation of high-energy sources requires gamma-ray telescopes aboard balloons or satellites to study thermal and non thermal phenomena (black holes, neutron stars, active galactic nuclei, supernovae, supernova remnants, and gamma-ray bursts). In recent years, R&D has been mainly active to improve the sensitivity required for polarimetry. In this context, a concept of a Time Projection Chamber (TPC) was proposed as an active target and pair production imager with a high angular resolution and background reduction capabilities.

After introducing the HARPO TPC and its potential as gamma-ray telescope, we will present the characterization of the TPC readout plane which provides gas electron amplication within a microstructure composed of the association of a Micromegas and Gas Electron Multiplier. Recent results using cosmic-ray events will be shown and nally the beam test, scheduled this year, with polarized photon at MeV energy will be discussed.

Summary

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