

Active Target and Time Projection Chamber (ACTAR TPC)

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The Active Target and Time Projection Chamber (ACTAR TPC) is the foremost European project in the development of a high-luminosity and versatile gas-filled detection system for experiments in nuclear physics. The core of the detector will consist of micro pattern gaseous detectors coupled to a highly pixelated pad plane (25 channels per cm²) with a total of more than 16k electronic channels. Physics cases include rare and exotic modes of nuclear decay, resonant elastic and inelastic scattering, and single and multi-nucleon transfer reactions that will be performed at rare isotope beam facilities worldwide including GANIL and ISOLDE. Technical challenges associated with mechanics and readout of such a high-density front end have required several parallel developments including the design and construction of a comprehensive ASIC-based electronics system within the General Electronics for TPCs (GET) collaboration. An overview of the ACTAR TPC project and first results obtained from an in-beam test with a 2048-channel prototype version of the final design will be presented.

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