Contribution submission to the conference Würzburg 2018

ROPPERI - A TPC readout with GEMs, pads and Timepix

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A novel anode readout structure for time projection chambers is presented. It combines GEM amplification with small pads on a separate PCB (for flexibility) and a pixel chip, the Timepix, as on-board digitization electronics (for high integration). Pad sizes in the order of a few 100 μm allow for the identification of the initial electron clusters which leads to an improvement of particle identification capabilities via dE/dx. This talk summarizes the current hardware status of the first board designed for a proof-of-principle, highlighting the challenges of the production and discussing first data. The adapted MarlinTPC simulation chain, including usage of the astrophysics software 'Source Extractor' for cluster identification, is explained leading to performance prospects of a future intermediate or large scale system.

Part:	**T**
Type:	**Vortrag;Talk**
Topic:	**3.01 Gasgefüllte Detektoren; 3.01 Gaseous Detectors**
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