

# The gaseous QUAD pixel detector

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We have developed a gaseous pixel detector based on four Timepix3 chips that can serve as a building block for a large detector plane. To provide the required gas amplification a fine grid has been deposited on the chip surface by wafer postprocessing (GridPix technology). The precisely aligned grid holes and chip pixels having a pitch of 55  $\mu\text{m}$  and the high time resolution of 1.56 ns of the Timepix3 chip enable the reconstruction of each individual ionization electron where the accuracy is dominated by diffusion. The QUAD is designed to have minimum electrical field inhomogeneities and distortions, achieving a tracking precision in the pixel plane with systematics of better than 10 microns. Due to the high efficiency to detect the ionization electrons a precise measurement of the energy loss  $dE/dx$  can be performed.

The QUAD detector has all services located under the detection surface. In this way multiple QUADs can be simply put together to create a detection surface of arbitrary dimensions. A possible application is in the readout modules of a large TPC.

In the presentation we show details about the construction of the QUAD and the results from a recent test beam experiment performed at the ELSA electron beam in Bonn where a silicon telescope was used to provide accurate tracking.

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