

# High-performance 1D- and 2D-readout planes with optimized charge sharing properties for Micro-Pattern Gas Detectors

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We report on results which demonstrate that it is possible to achieve significant improvements in the spatial resolution of the planar 1D and 2D MPGDs with a relatively coarse pitch by using optimized zigzag-shaped readout electrodes instead of the conventional straight strips and square pads. The emerging readout plane configurations exhibit virtually no differential non-linearity (DNL) in response, therefore eliminate the need in the for so-called pad response functions. They can deliver spatial resolutions as good as  $\sim 50\text{-}60\ \mu\text{m}$  for pitch values of 2-3 mm, and show very little “tails” in the otherwise clean Gaussian residual distributions. Test beam data will be presented for various types of avalanche schemes (GEM, micromegas,  $\mu\text{RWELL}$ ) and several straight, and zigzag strip, and pad geometries, in a wide range of pitch values. Practical issues of readout board manufacturing via traditional wet etching as well as by a more advanced laser ablation process will be discussed.

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