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2D charge-sharing readout planes for GEM, uRWELL and other detector applications

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Charge sharing technique for various types of 1D (strip) gaseous detectors was applied several times in the past in an ad hoc fashion with varying results. If realized properly it allows one to reduce the number of instrumented channels, maintain a spatial resolution several times better than the canonical sigma ˜ pitch/√12 estimate, and eliminate the differential non-linearity in the detector response. In this talk, novel 2D readout plane designs with these properties will be presented. The spatial resolution for simultaneous 2D coordinate sampling by interleaved X- and Y-strip structures realized in the active area of the same kapton-based readout plane for the GEM and uRWELL detector prototypes will be presented. Results obtained with the similar readout planes for capacitively coupled LAPPDs will be shown. The prospects of replacing traditional pixel arrays by low channel count XY-strip readout planes with built-in redundancy in single-photon RICH applications will be discussed.

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No, this is an entirely new submission.

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