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A new generation of GEM detectors and their applications

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We have developed a new generation of GEM-like detectors with double layered electrodes instead of commonly used metallic ones: with an inner layer consisting of thin metallic strips and an outer layer made of resistive grid manufactured by a screen printing technology. By measuring signals induced by avalanches on the inner strips one can obtain 2-D information about the position of the avalanches. The resistive grid makes the detector intrinsically spark protected: in the case of sparks the resistive layer restricts their current and thus the destructive power. The new detectors have several other advantages: they operate at ten times higher gains than conventional GEMs, have compact planar geometries, can operate in electronegative gases and so on, and this is why we believe that they will find a wide range of applications. As examples we will describe results of some experiments
demonstrating that new GEMs can be used in RICH and for the readout of noble liquid TPCs.

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