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A new design of MPGD: Micro-Mesh Micro-Pixel Chamber

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A novel MPGD "Micro-Mesh Micro-Pixel Chamber (M^3-PIC) has been developed for particle imaging and/or TPC readout. The M^3-PIC consists of a Micropixel chamber (u-PIC) and a thin micro mesh film. A point-like electric field is formed around the anode electrode which provides a higher gas gain and more stable operation than existing MPGDs. In addition, ion back flow (IBF) into the detection volume is strongly suppressed. A prototype of this detector (of size 3cm X 3cm) has been manufactured and successfully operated. Stable operation with a gas gain of more than 5 X 10⁴ was achieved using an Ar:Ethane = 50:50 gas mixture, and the measured IBF rate was less than 1%.

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