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Very-thick transparent GEMs with wavelength-shifting capability for noble element TPCs

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A new concept for the simultaneous detection of primary and secondary scintillation in time projection chambers is described. Its core element is a type of very thick GEM structure machined from a wavelength shifting material and supplied with PEDOT:PSS-based transparent electrodes.

Such a device is scalable to very large surface areas needed by future generations of noble element TPCs. Because of its optical properties it can significantly improve the light collection efficiency, energy threshold and resolution of conventional micropattern gas detectors as well as wire mesh TPCs.

Production, optical and electrical characterization, first measurements performed with the new device will be reported. Further tests and R&D steps will also be discussed.

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