

Abstract Submitted  
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**Proposal of GEM-based position sensitive detector for the proton EDM measurement** SEONGTAE PARK, IBS, Korea, YANNIS SEMERTZIDIS, IBS/KAIST, Korea, SELCUK HACIOMEROGLU, IBS, Korea, STORAGE RING PROTON EDM COLLABORATION — Since the first invention in 1997, Gas Electron Multiplier (GEM) detectors have been extensively studied for the use as calorimeters or position sensitive detectors in variety of fields. Its robustness against severe radiation environment and fast response time make it one of the best candidates for high rate measurement. Here we propose the GEM detectors as polarimeter detector for proton EDM (pEDM) measurement. In pEDM experiment, about  $10^{11}$  protons will be stored in the storage ring and 1% of the particles will be scattered into detectors. The stored protons are slowly extracted in 1000 s. Based on this design we can estimate the detector rate has to be about >MHz. Since GEM is a gas detector with special geometric shape, it's time response is very fast ( $\sim$  ns of rising time) and meets the requirement of the pEDM measurement. For the pEDM polarimeter, precise position sensing of the scattered protons is critical. The GEM detector can provide high flexibility in design and construction not only in detector's shape, but also in size and shape of the anode pads which collect signals which are directly connected to the spatial resolution of the detector. In this paper, we report the study results of the possibility of using GEM detectors for the pEDM measurement

Seongtae Park  
IBS, Korea

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