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Plans for EIC generic R&D based on MPGD technology

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The versatility of MPGD technology has drawn tremendous interest in both Nuclear and High Energy Physics communities to use as particle detector in experiments. Particle tracking detectors are integral part of Nuclear Physics experiment and MPGDs has established themselves as reliable tracking detectors due to their moderate material budget, low cost, moderate spatial resolution and relatively easier fabrication as large size detector. Many Nuclear and High Energy experiments including ePIC at EIC has incorporated multiple MPGD technologies as tracking detectors and there is possibility of utilizing same technology either as possible second EIC detector or any future Nuclear and High Energy Physics experiment.

Apart from its role as tracking detector, MPGD technology has also demonstrated excellent timing performance with timing resolution of a few tens of picoseconds. Even it is in early stage of R&D, MPGDs has potential for being an alternate for currently existing technologies for Time-of-Flight Particle Identification Detectors in Nuclear and High Energy Physics experiments. Over the past decade significant progress has been made on this front in terms of optimizing the amplification structure, optimizing gas mixture, improving longevity of photocathode and increasing the active area of the detector itself.

The EIC generic R&D program is focused on advancing cutting edge detector technologies for Nuclear Physics experiment and currently there are focus on advancement of MPGD technology both as tracking detectors and picosecond timing detectors in Nuclear and High Energy Physics experiments. This presentation will focus on overview of various ongoing R&Ds using MPGD technology under EIC generic R&D program.

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