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New Trends in Micro Pattern Gaseous Detectors (MPGDs)

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With the advances in photolithography and micro processing in the past few decades, Micro Pattern Gaseous Detectors (MPGDs) are replacing the old generation Multi Wire Proportional Chambers (MWPCs) to play a pivotal role for low mass and high precision tracking system in large particle physics and nuclear physics (NP) experiments. Well established MPGD technologies such as Gas Electron Multiplier (GEMs) and Micro Mesh Gaseous (Micromegas) based trackers are being used in various current and future experiments. An active R&D is ongoing with the emergence of new structures to improve the performances in terms of spatial, timing and energy resolution, photo detection ... We will give a brief overview of the GEM and Micromegas detectors in particle physics experiments over the past decades, follow by a state of the art of the new gaseous devices structures being developed for the next generation of collider experiment such as the Electron Ion Collider (EIC) or high luminosity LHC.