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## Conception and optimisation of Micro-Pattern Gas Detectors for the future Electron-Ion Collider

Micro-Pattern Gas Detectors (MPGD) are now commonly used in particle physics experiences (COMPASS,ALICE,ATLAS...), mainly as a particle tracker. For the new Electron Ion Collider (EIC) in the USA, planned for 2030, a collaboration between CEA-Saclay, Brookhaven National Laboratory and Stony Brooks University have been created with the goal of improving MPGDs based tracking chambers. By using “zigzag” readout pattern instead of the standard straight parallel strips, we are proving that it is possible to reduce the number of strips by at least a factor of 2 and still achieve a spatial resolution better than 100um thus reducing the cost of the instrument.

Three different MPGDs technologies are studied and compared : Micromegas, micro-RWell and GEM. The principle of the Zigzags readout will be presented followed by recent results of the characterisation using a proton beam done earlier this year showing an improvement of the spatial resolution.

### Field

Particle physics/EIC/MPGD

### Language

English

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