DNP15-2015-000426

Abstract for an Invited Paper
for the DNP15 Meeting of
the American Physical Society

Micro Pattern Gas Detectors for Nuclear Physics Experiments

KONDO GNANVO, University of Virginia

Gaseous detectors have played a pivotal role as tracking devices in the field of particle physics experiments for the last fifty years. Nowadays, advances in photolithography and micro processing techniques have enabled the transition from the old generation of multi wire gaseous chamber (MWPCs) to a new family commonly refer to as Micro Pattern Gaseous Detectors (MPGDs). MPGD technologies combine the basic gas amplification principle with micro-structure printed circuits to provide detectors with excellent spatial and time resolution, high rate capability, low material budget and high radiation tolerance. Several technical breakthroughs over the past decade have allowed the possibility for large area MPGDs, making them cost effective and high performance detector candidates for future nuclear physics (NP) and high energy physics (HEP) experiments. We give in the present talk, an overview of the state of the art of the MPGDs. We will then briefly present the CERN-based RD51 collaboration established in 2008 with the goal of further advancing technological developments and applications of MPGDs and associated electronic-readout systems. Finally we report on the rich and diverse R&D activities on MPGDs to prepare for the detector challenges of the next generation of accelerators and for the frontiers of physics research.