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MPGD-based photon detectors for the upgrade of COMPASS RICH-1 and beyond

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After the realization of the MWPCs with CsI PC for the RICH detector of the COMPASS experiment at CERN SPS, we have upgraded COMPASS RICH by four novel gaseous Photon Detectors (PD) based on MPGD technology, never used before in RIChes, covering a total active area of 1.5 m2. The new PDs consist of two layers of THGEMs, the first also acting as a reflective PC thanks to CsI coating, and a bulk Micromegas on a pad-segmented anode; the signals are read-out by analog APV-25-based F-E.
Presently, we are further developing the MPGD-based PDs for operation at the future EIC. A compact collider setup imposes to construct a RICH with a short radiator length, hence limiting the number of photons. The last can be increased by detecting the photons in the far UV region. Another challenge is the need of improved space resolution, related to the shorter lever arm.
All aspects of the COMPASS RICH-1 PDs upgrade are presented, as well as the on-going development for collider application

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