

Employment of nanodiamond photocathodes on MPGD-based HEP detector at the future EIC

Thursday, 27 May 2021 06:24 (18 minutes)

In high momenta range, the construction of a Ring Imaging Cherenkov (RICH) detector for the particle identification at the future Electron Ion Collider (EIC) is a complicated task. A compact collider setup imposes to construct a RICH with a short radiator length, hence limiting the number of photons. The number of photons can be increased by choosing a far UV region, imposing to initiate a R&D for a novel and robust photo-cathode (PC) material based on nanodiamond particles for a windowless RICH approach. To characterize the performance of nanodiamond PC coupled to THGEM-based photon detectors is the main objective of our ongoing R&D.

The first phase of these studies includes the characterization of THGEMs coated with nanodiamond PC, the comparison of the effective QE in vacuum and in gaseous atmospheres and the aging effects with ion bombardment.

The approach is described in detail as well as all the results obtained so far with these exploratory studies.

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

Funding information

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Session Classification: Sensors: Photo-detectors

Track Classification: Sensors: Sensors: Photo-detectors