

New RPC Gas Mixtures for Sustainable Operation in the CMS Experiment

Friday, 31 May 2024 15:40 (1 minute)

The current operation of the Resistive Plate Chamber (RPC) system within the CMS experiment involves approximately 95% tetrafluoroethane ($C_2H_2F_4$, TFE). However, in response to climate change concerns, the European Union has instituted a ban on TFE owing to its elevated Global Warming Potential (GWP), resulting in an associated increase in market prices. In this framework, shared endeavors within the RPC EcoGas@GIF++ Collaboration, have been dedicated to investigating novel ecological gas mixtures based on tetrafluoropropene ($C_3H_2F_4$, HFO-1234ze) to ensure the sustainable functionality of RPCs. This presentation will delve into the performance outcomes derived from improved RPC gas gaps operating on HFO/ CO_2 -based mixtures as ecologically viable alternatives, particularly in anticipation of the High Luminosity LHC phase. Additionally, the utilization of TFE/ CO_2 mixtures will be explored as a pragmatic strategy to swiftly alleviate gas-related operational costs.

Collaboration

CMS Collaboration

Role of Submitter

The presenter will be selected later by the Collaboration

Presenter: RAMOS LOPEZ, Dayron (INFN - Bari)

Session Classification: Gas Detectors - Poster session

Track Classification: T6 - Gas Detectors