



Contribution ID: 10

Type: not specified

## New RPC Gas Mixtures for Sustainable Operation in the CMS Experiment

*Wednesday 11 September 2024 09:30 (20 minutes)*

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.

**Author:** RAMOS LOPEZ, Dayron (Universita e INFN, Bari (IT))

**Presenter:** RAMOS LOPEZ, Dayron (Universita e INFN, Bari (IT))

**Session Classification:** Ecogases and longevity (part I)