

# **RPC-BARi Laboratory Activities Report**

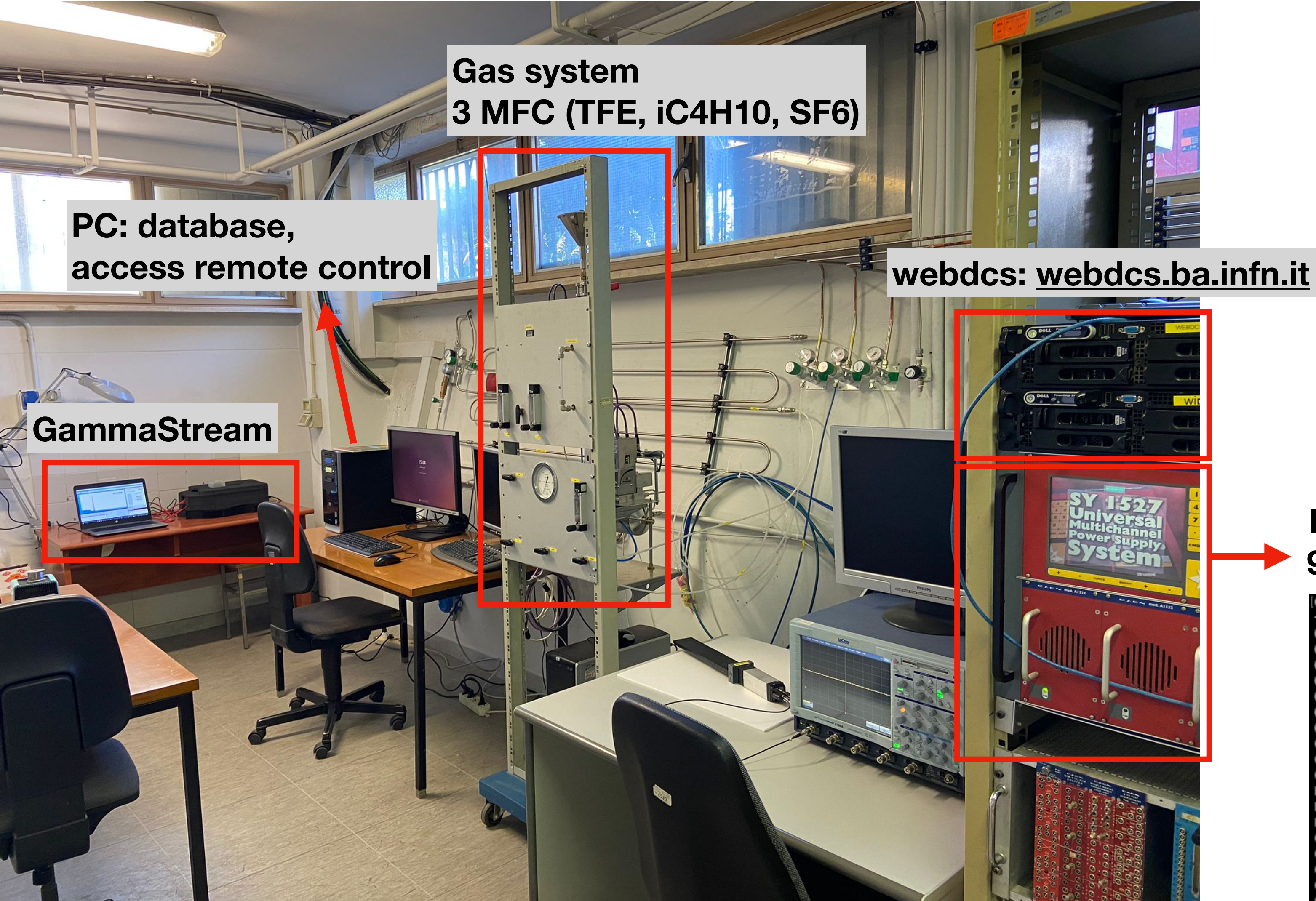
Dayron Ramos

# Overview

- Laboratory infrastructure: gas system, HV main frame, environment sensor, webdcs, main ground
- Setup of MRPC for beam monitoring
- New chamber for test with FATIC chip



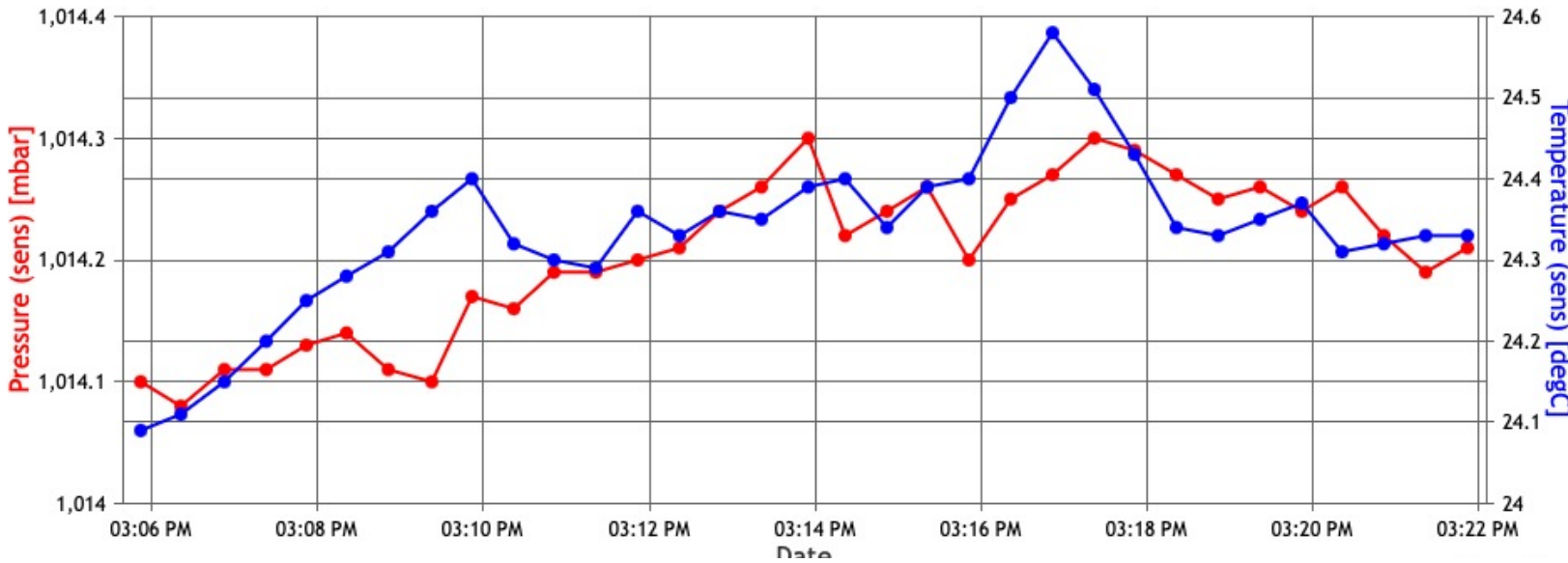
# Lab infrastructure



Ground hub: 8 ports



Environment sensor ->  
P, T, RH for online PT correction



HV mainframe (SY1527)  
9 HV channels available

Channel	Name	V0Set	I0Set	VMon	I0Mon	Pw	Status	Ch#
0		100.00 V	100.00 uA	0.00 V	0.00 uA	Off		0.06.005
0		100.00 V	100.00 uA	0.80 V	0.20 uA	Off		0.06.006
0		100.00 V	100.00 uA	0.00 V	0.00 uA	Off		0.06.007
0		100.00 V	100.00 uA	0.40 V	0.00 uA	Off		0.06.008
0		100.00 V	100.00 uA	0.40 V	0.00 uA	Off		0.06.009
0		100.00 V	100.00 uA	0.80 V	0.20 uA	Off		0.06.010
0		0.00 V	100.00 uA	0.40 V	0.00 uA	Off		0.06.011
CH0		0 V	10.00 uA	30 V	0.14 uA	Off		0.09.000
CH1		8000 V	5.00 uA	27 V	0.14 uA	Off		0.09.001
CH2		7200 V	5.00 uA	26 V	0.13 uA	Off		0.09.002
Broken!		0 V	30.00 uA	19062 V	0.15 uA	Off		
Broken!		0 V	30.00 uA	19198 V	0.14 uA	Off		
Broken!		0 V	10.00 uA	5879 V	0.14 uA	Off		0.09.005
CHANNEL00		0 V	10.00 uA	1 V	0.00 uA	Off		0.13.000
CHANNEL01		500 V	10.00 uA	1 V	0.11 uA	Off		0.13.001
CHANNEL02		500 V	10.00 uA	1 V	0.01 uA	Off		0.13.002
CHANNEL03		500 V	10.00 uA	2 V	0.01 uA	Off		0.13.003
CHANNEL04		500 V	10.00 uA	1 V	0.00 uA	Off		0.13.004
CHANNEL05		500 V	10.00 uA	0 V	0.05 uA	Off		0.13.005

[Channels Display/Edit Screen      LocEn V0 I0      N | CAEN SY1527]



# MRPC setup

- Gas: 89% TFE, 10% iC<sub>4</sub>H<sub>10</sub>, 1% SF<sub>6</sub> (WP: 12100 V)
- Setup: MRPC + Al collimator + Gamma source
- DAQ: GAMMA128 DAQ-CPU
  - 128 channels + digital processor (Xilinx), LAN connection
  - Open trigger or external trigger

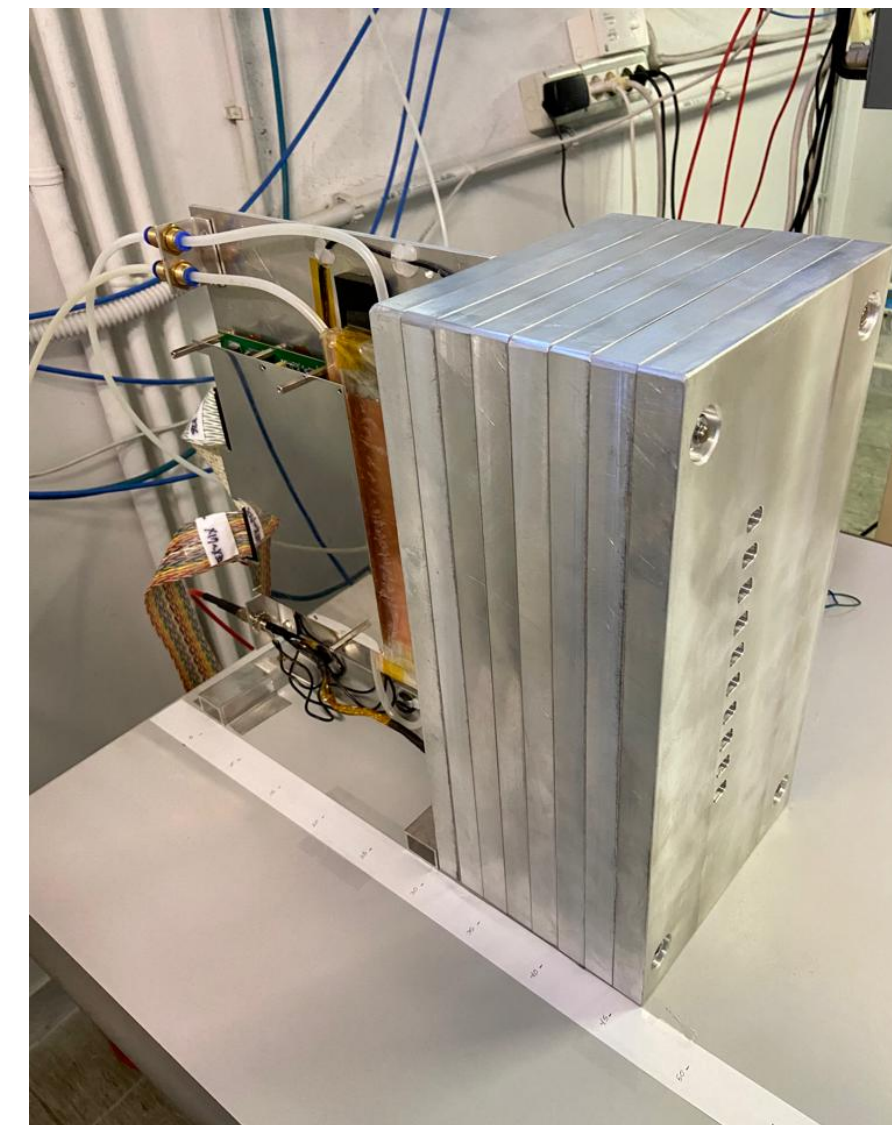
## Activities performed - MRPC-2p0

- Stability tests
- Trigger DAQ debugging (Channel mapping, THR adjustment, imaging codes)
- Raw test with gamma source

## TO BE DONE

- Cook MRPC-1p0
- Test powerful source
- External trigger debugging for Cosmic test (3 PMTs coincidence)

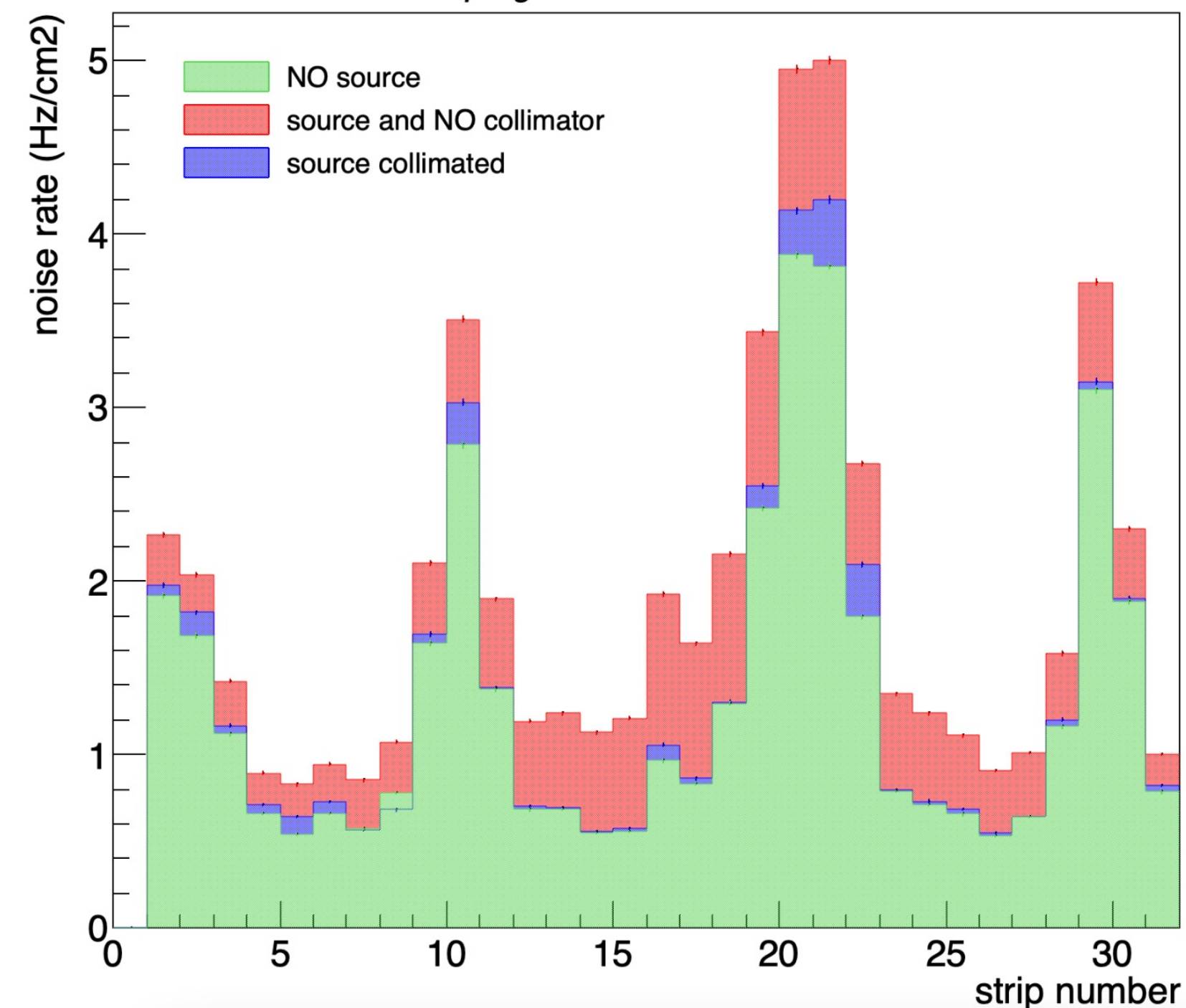
MRPC + Al collimator



GAMMA128 DAQ-CPU



INFN BARI work in progress

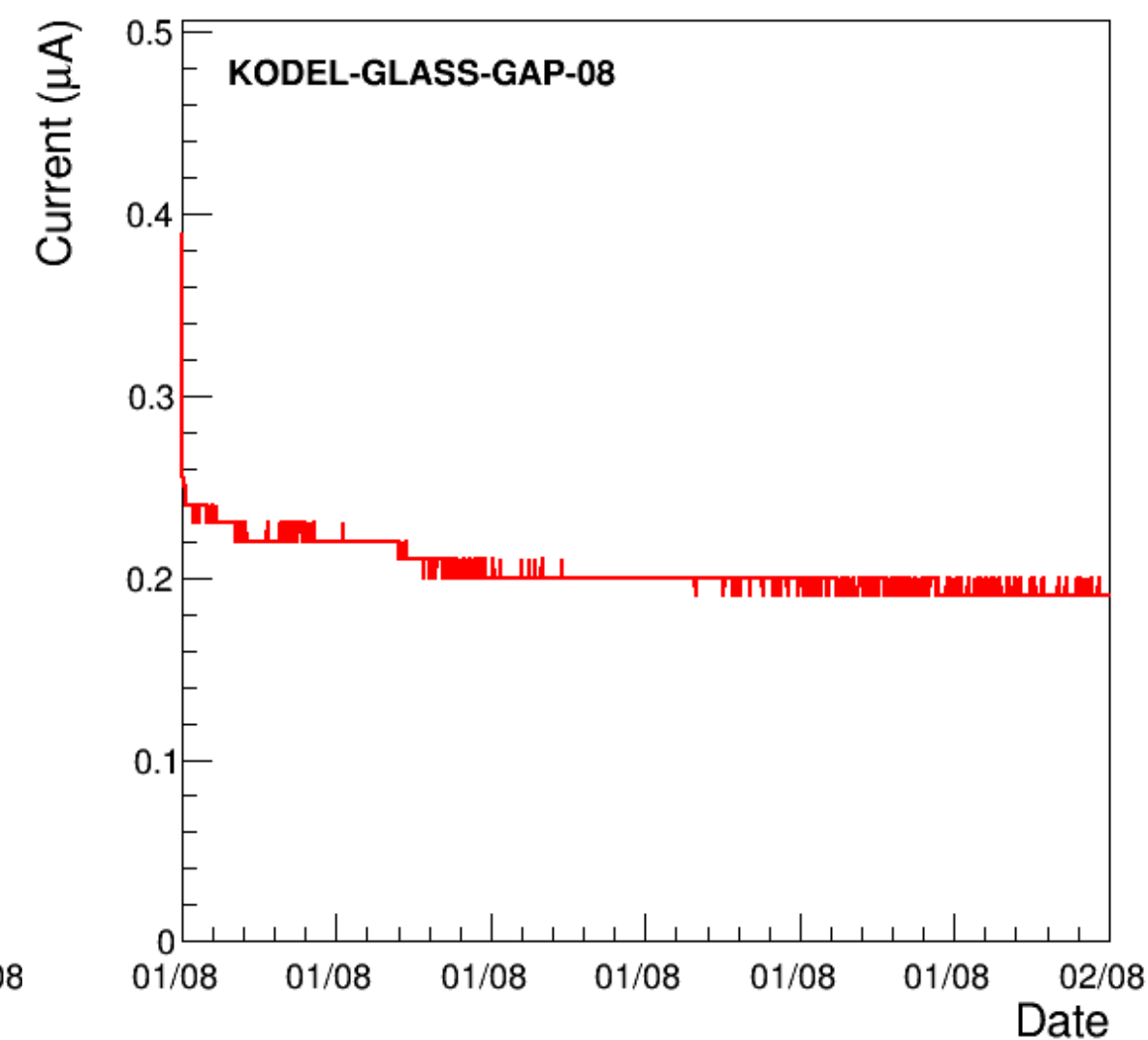
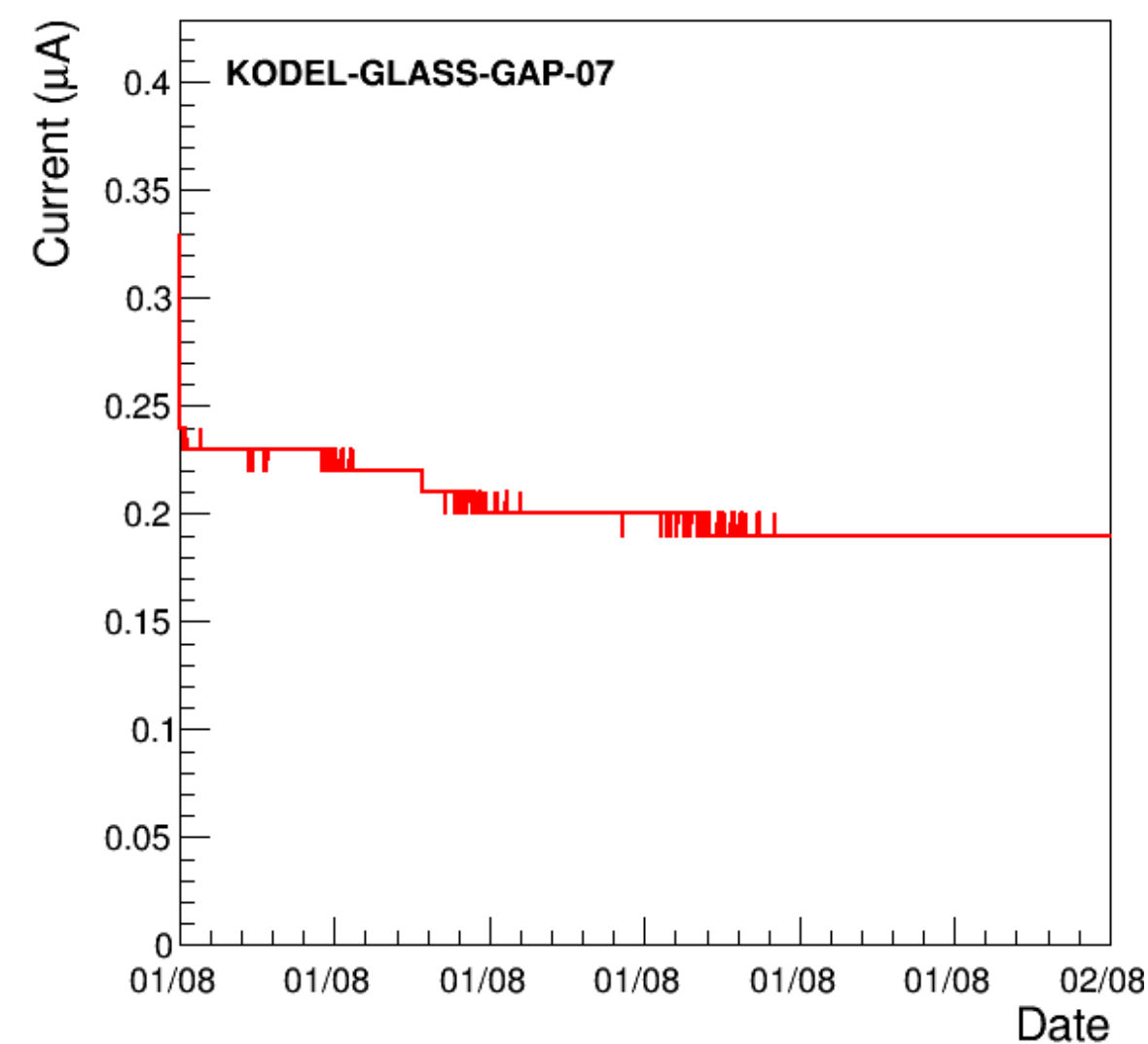




# RPC for test with FATIC chip

Readout electronic tests: **new electronic based on FATIC chip** on a **double-gap soda-lime glass RPC** (1.4 mm gap and 1.1 mm electrode thickness) → chamber assemble ongoing.

- Short stability tests to the gaps -> Around 1 day @ 7200 V. Current around 0.06  $\mu\text{A}$  (0.2  $\mu\text{A}$  - 0.14  $\mu\text{A}$  baseline)



## Chamber assembly

- Mechanical frame (DONE)
- Strips panel + 50 ohms termination (DONE)
- Gas installation (ready)
- Cooper foil for Faraday Cage (still missing -> 904)

