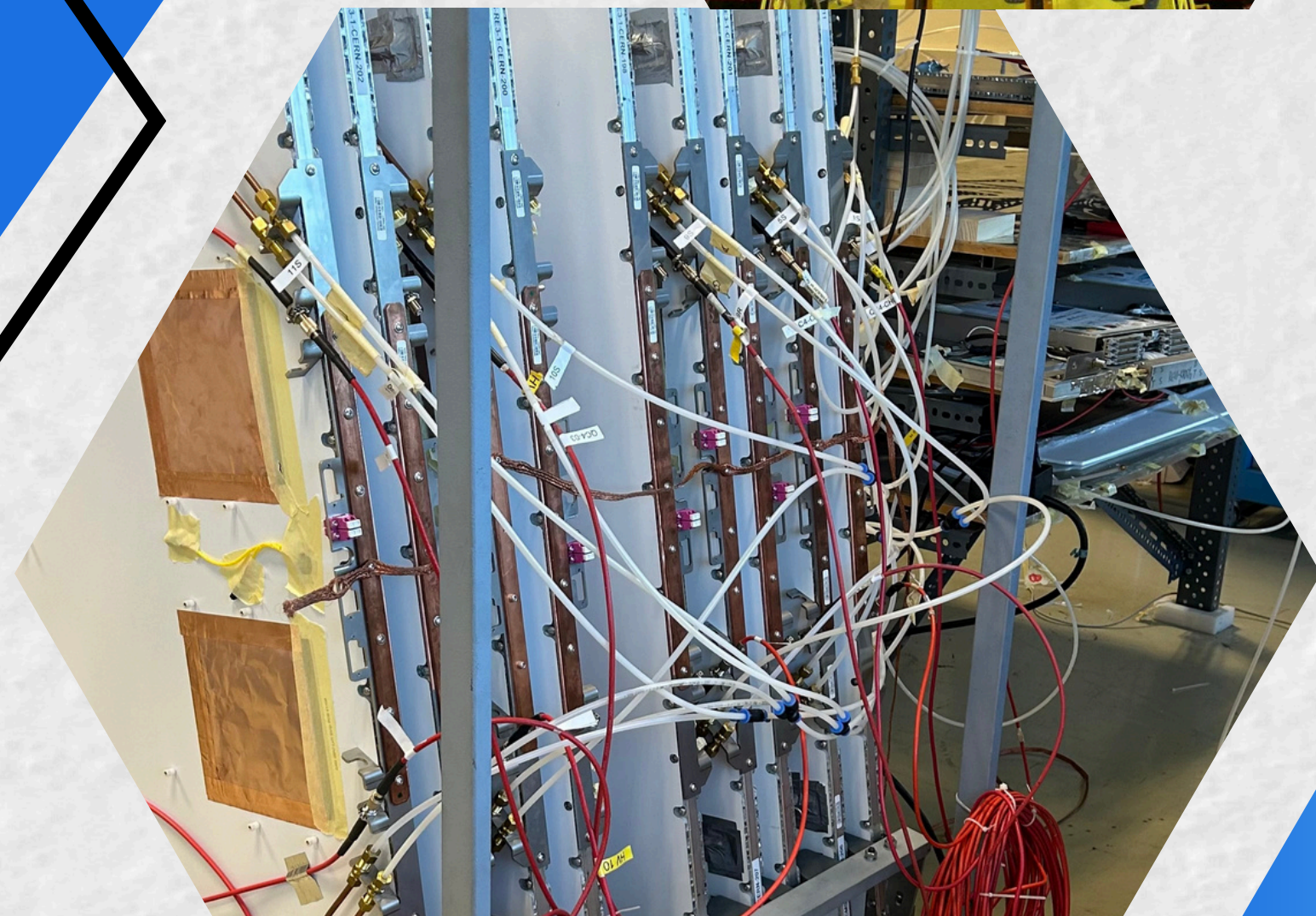
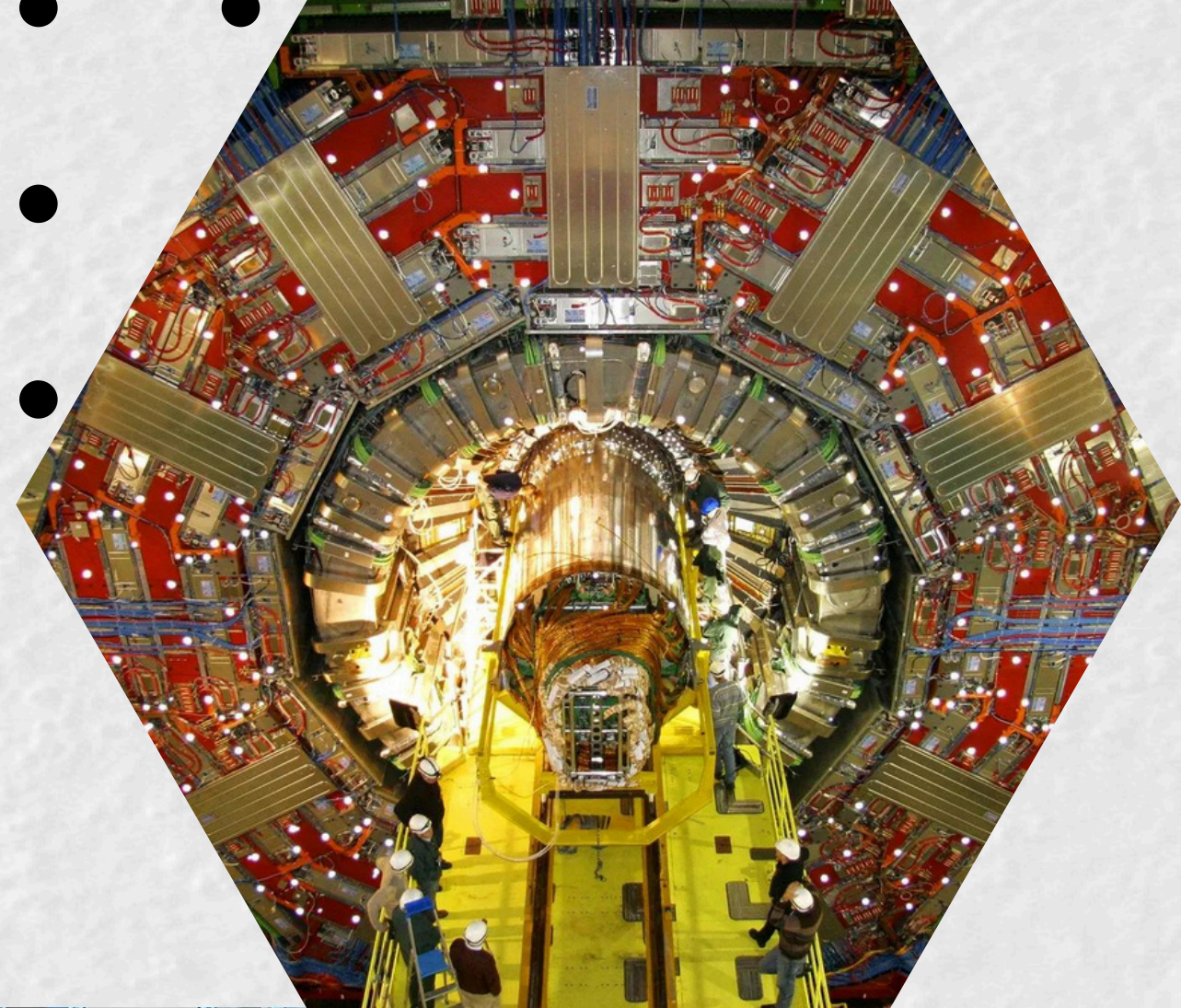


IRPCS' ASSEMBLY, QUALITY CONTROL AND ECO-GAS FOR THE HL-LHC PHASE

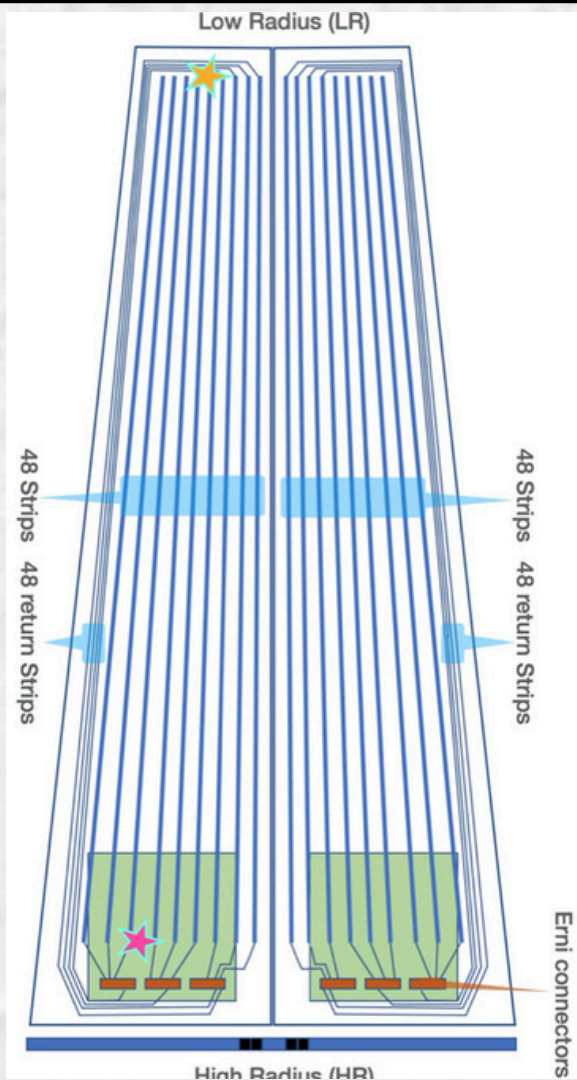
STUDENT: CAROLINA MARISOL AGUILAR RIVERA
CERN SUPERVISOR: MEHAR ALI SHAH, JOAO PINHEIRO
UNIVERSITY SUPERVISOR: HUMBERTO SALAZAR IBARGUEN

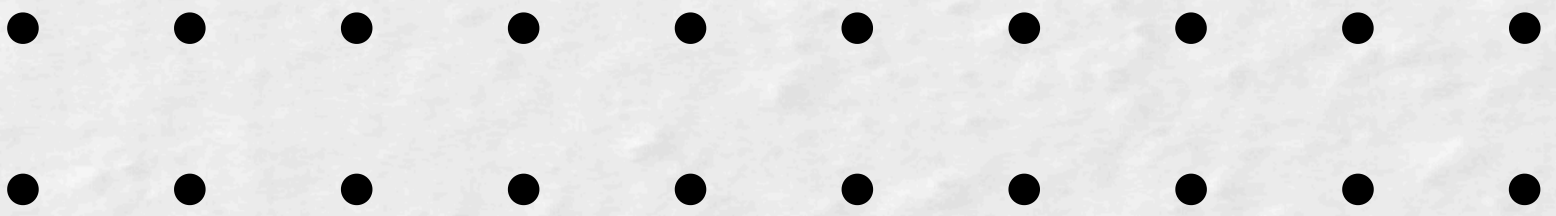
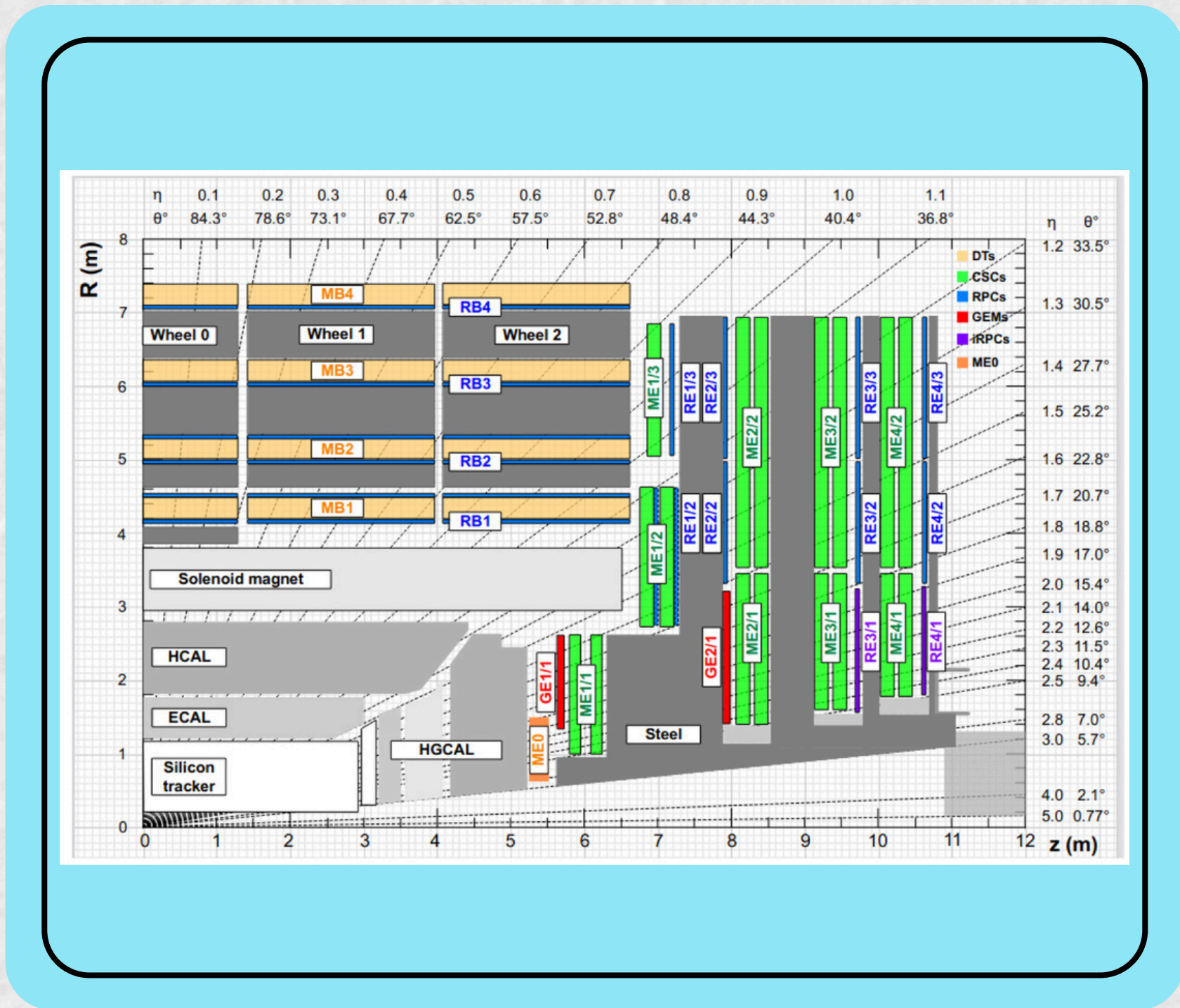
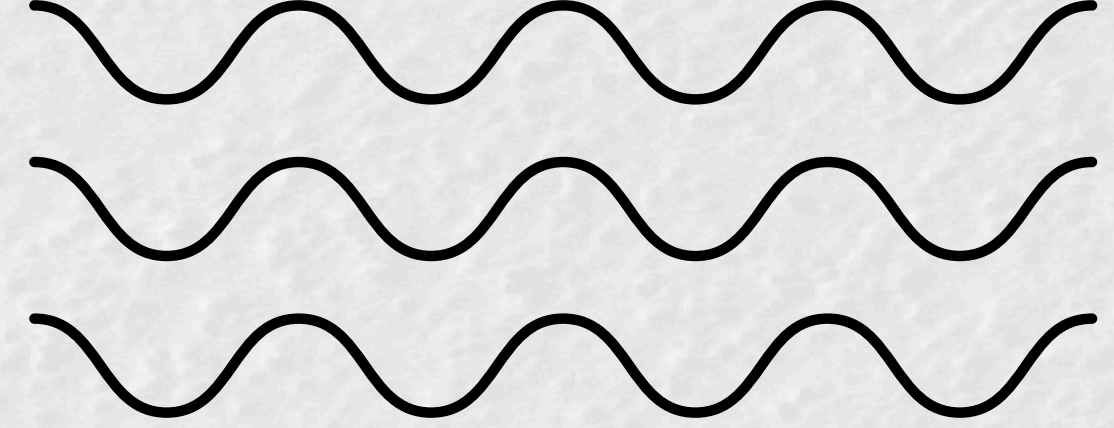
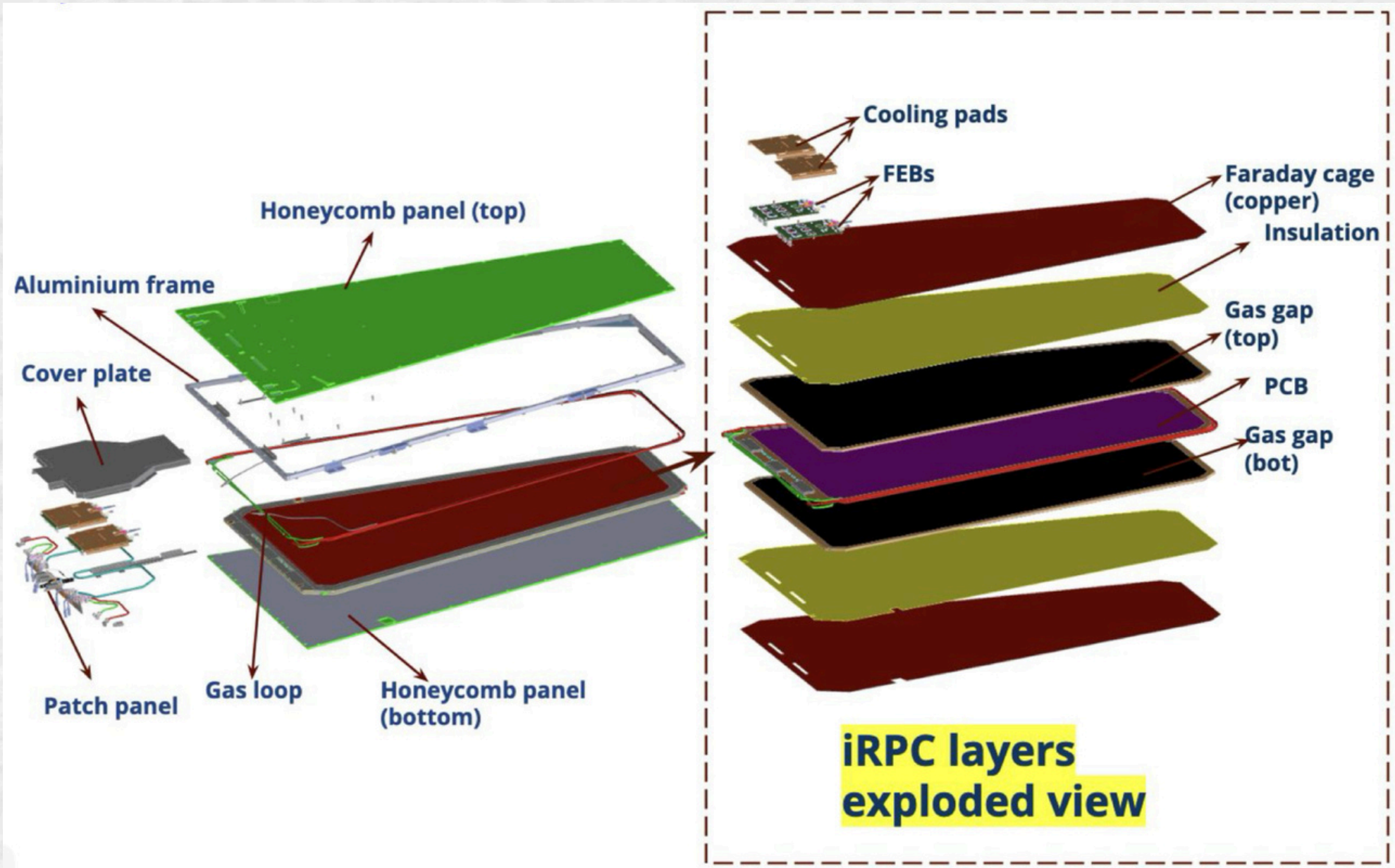


IRPC DETECTORS

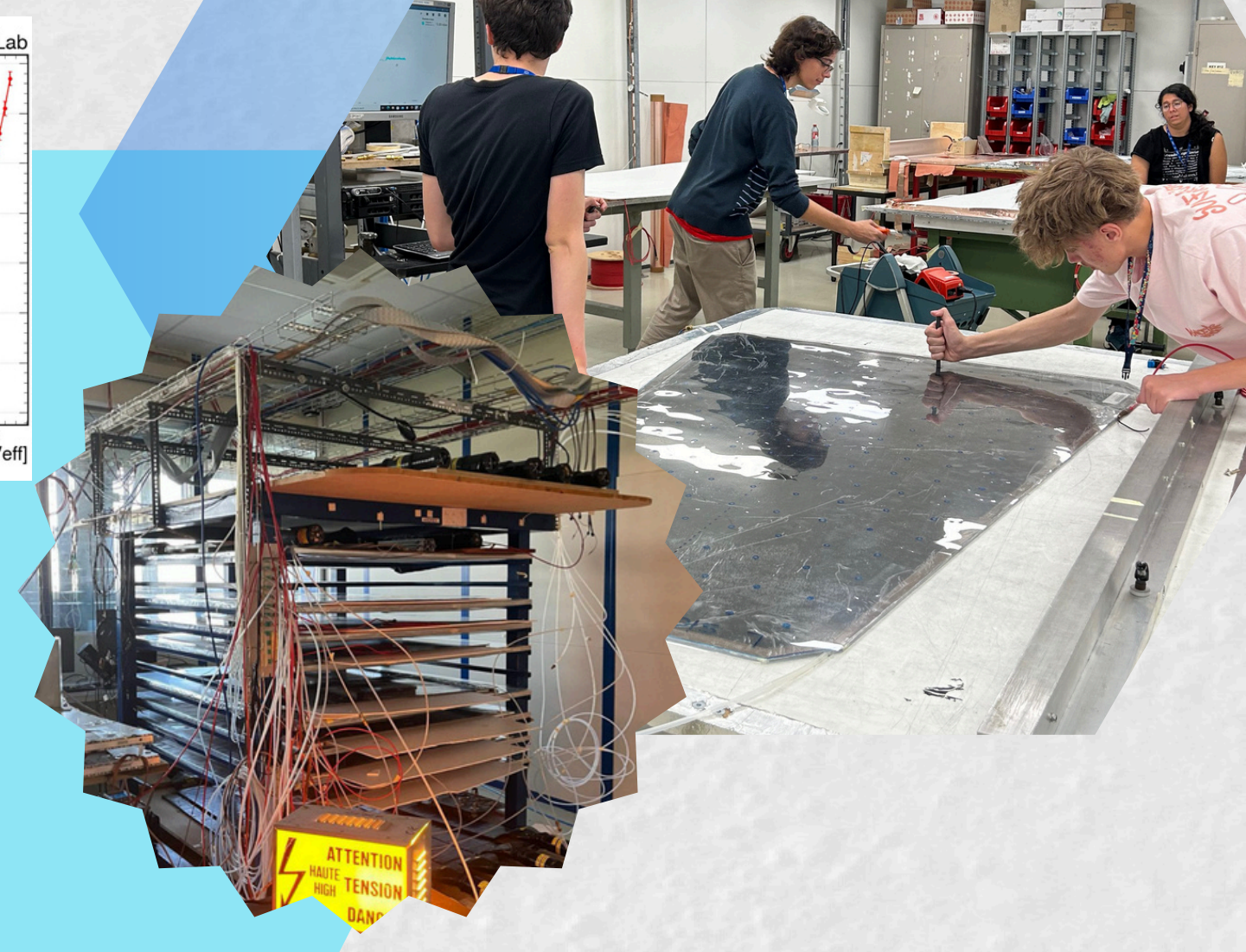
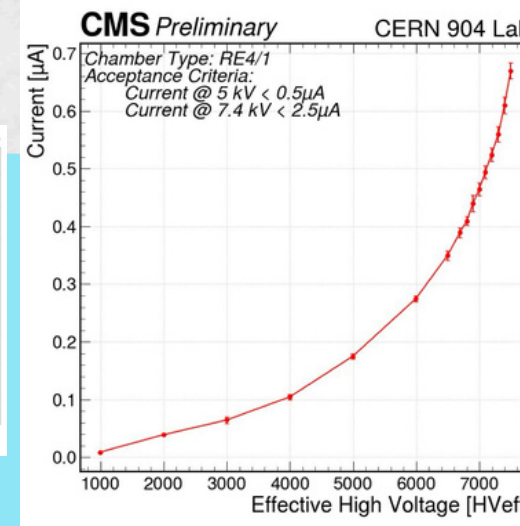
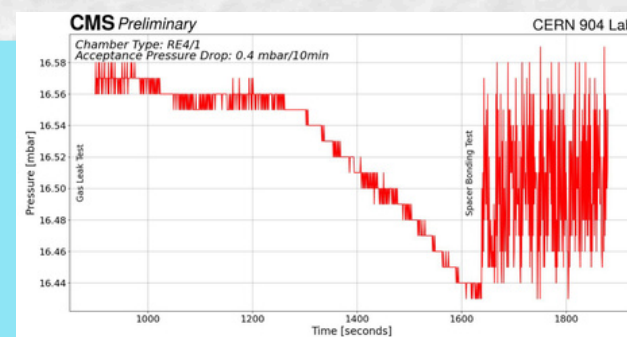


- +1000 RPCs
- Phase-II Upgrade (iRPC & GEM detectors at forward region)
- iRPCs are narrower (1.4 mm)
- Charge threshold $>30\text{fC}$
- Double readouts



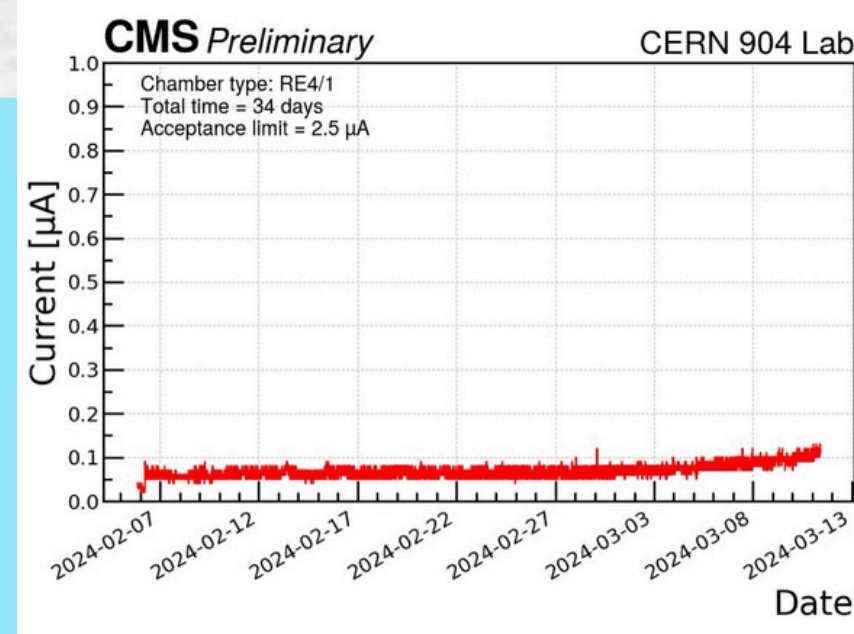


QC2

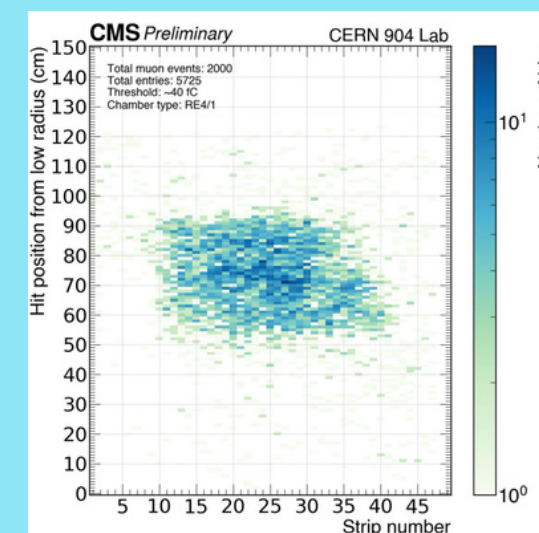
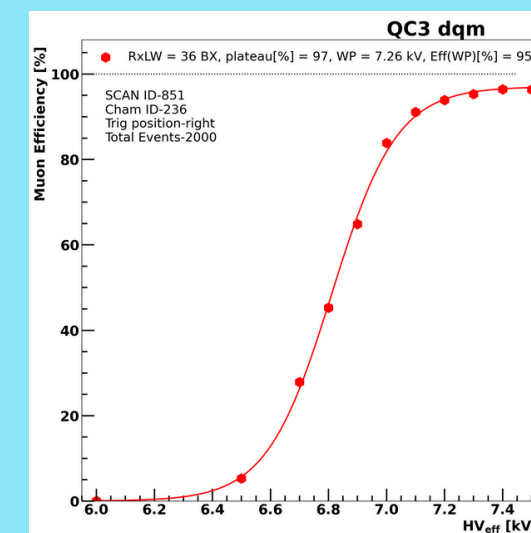
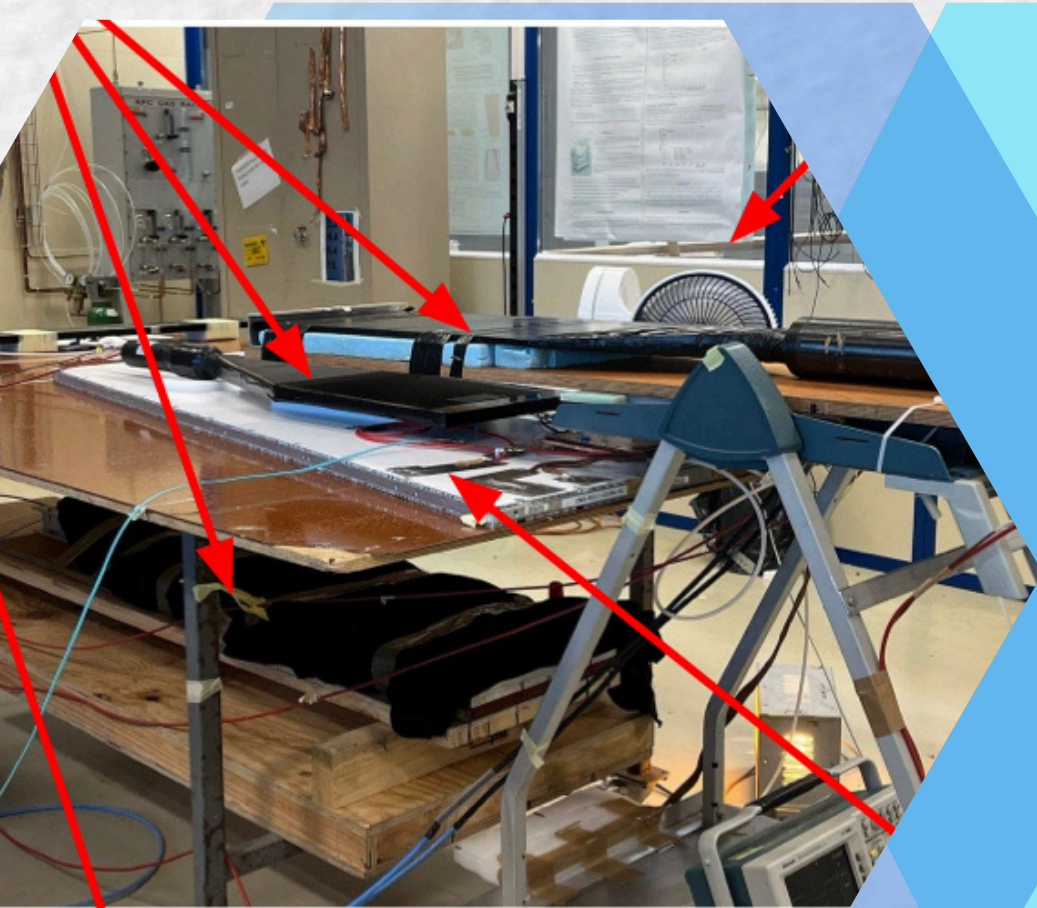


- Gap visual inspection (DB)
- Gas pressure leak test (~0.5 mbar, spacers, argon, DB)
- Create HV and ground connections
- Dark current scans (WebDCS, DB)

QC3

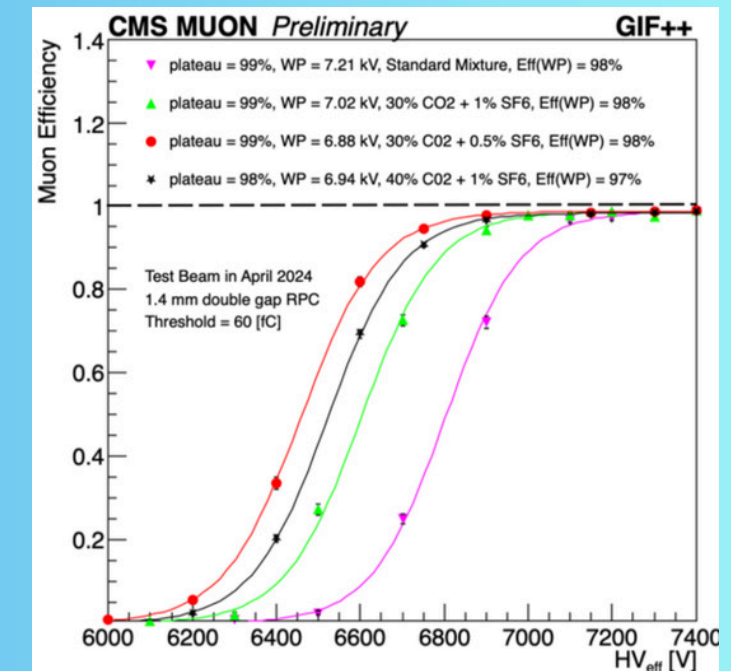
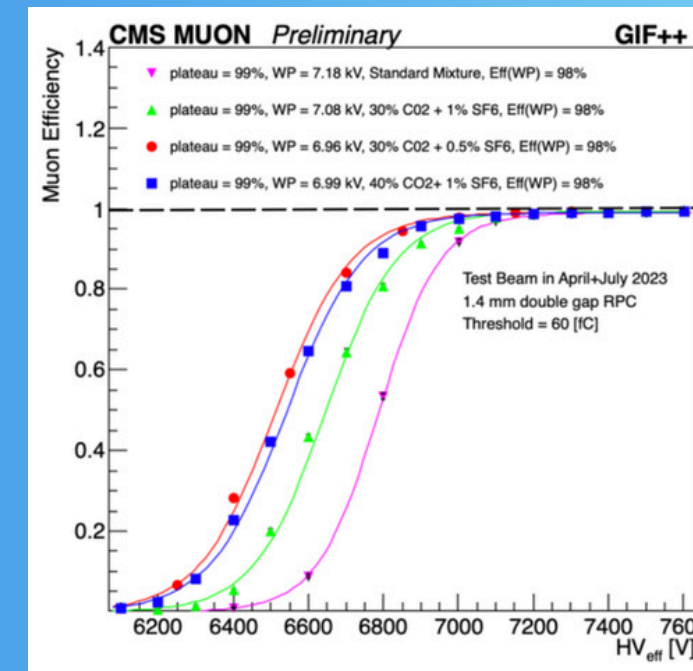


- Noise scans (PCB, scintillators)
- Long stability test (2.5 uA)
- Efficiency (sigmoid)

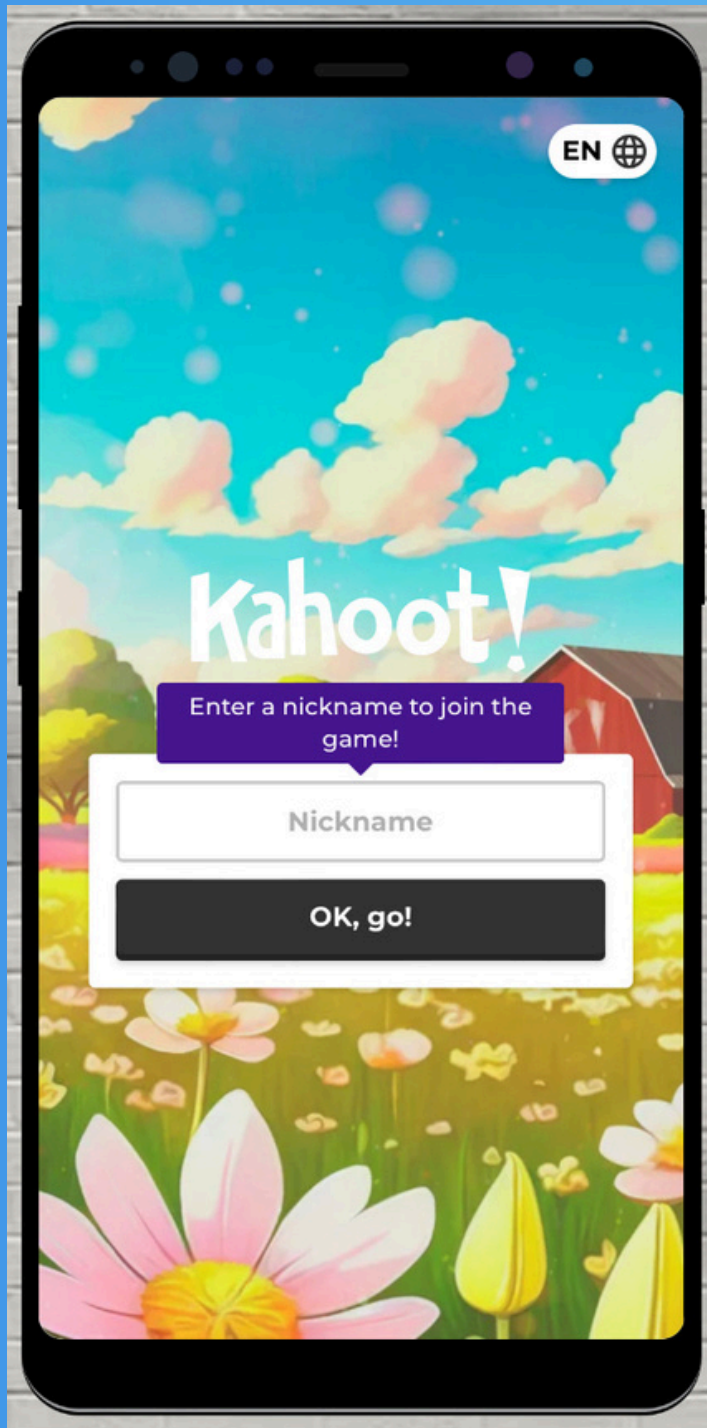


ECO-GAS

TEST BEAM AT GIF++ EFFICIENCY SCANS



Mixtures	C ₂ H ₂ F ₄	CO ₂	i-C ₄ H ₁₀	SF ₆	CO ₂ ^{equiv} (t)
STD	95.2%	0	4.5	0.3	664
MIX1	64%	30%	5%	1%	565
MIX2	54.5%	40%	5%	1%	500
MIX3	64.5%	30%	5%	0.5%	494



CONTACT: CAROLINA.MARISOL.AGUILAR.RIVERA@CERN.CH