

# CMS-HGCAL - 2021 beam at CERN SPS-H2

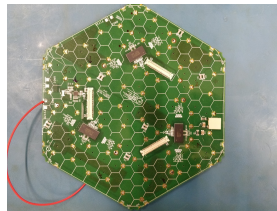
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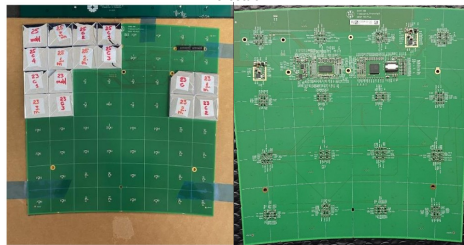
# Goal of the beam test

- 2×1 week at H2 (37 and 40)
- First beam test with close to finalized CMS-HGCAL silicon modules
  - ▶ 8" silicon detector segmented with  $\approx 1\text{cm}^2$  pads
- Test with tile-board modules
- Calibration with muon beam
- Characterization of modules with electron/positron beam:
  - ▶ check signal linearity with energy
  - ▶ study uniformity of signal across the modules
  - ▶ study long distance cross-talk effect with large signal
- Operate Si modules and TB modules with full readout chain (for 2nd week)

LD Si-module



Tile board



# Beam requirements

- Muon beam
  - ▶ Energy :  $\approx 100$  GeV
  - ▶ Intensity  $> 10\text{k}$  part/spill
  - ▶ Large beam spot to cover as many pads as possible
- Electron/positron beam
  - ▶ Energy : range between 20 and 300 (or higher?) GeV
  - ▶ Intensity  $> 10\text{k}$  part/spill

# Infrastructure needs

- Need to be a movable table
  - ▶ Quite small set-up, DESY table should be enough
- Need absorber material in front of our detector ( $\approx 10X_0$ ). We still have absorber plates from 2018 beam tests.
- Colling: if needed we will use our own chiller as in 2018 (better to operate with a stable temperature but no need to be really cold)
- In 2018, we were flushing our Si modules with  $CO_2$  to keep them dry and reduce leakage current. Need to clarify if we need this (probably not with the foreseen small setup).