TEST FACILITY @ UNICAMP

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UNICAMP

19/11/24

SMALL SCALE PROTOTYPE

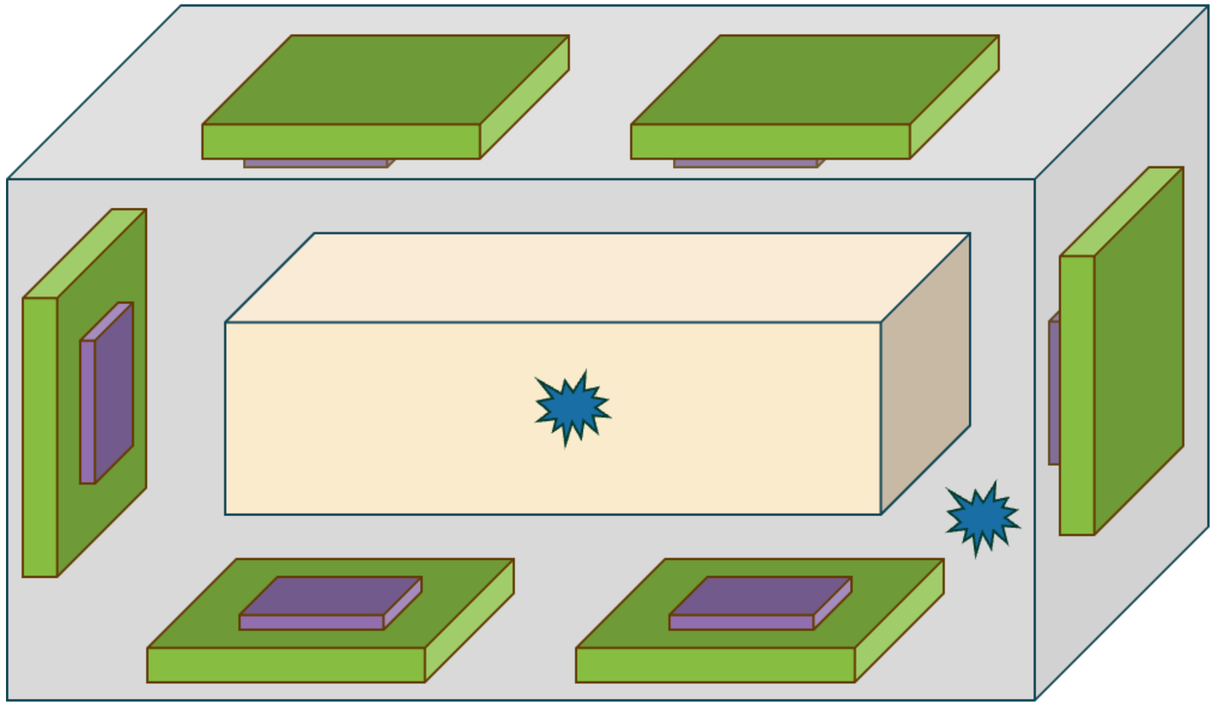
EXTERNAL CHAMBER:
COVERED WITH REFLECTOR

SIPM MATRIX ON THE SIDES
SIPM HAMAMATSU TYPE:
S14160-6050HS – VIS
S13370-6050CN – VUV

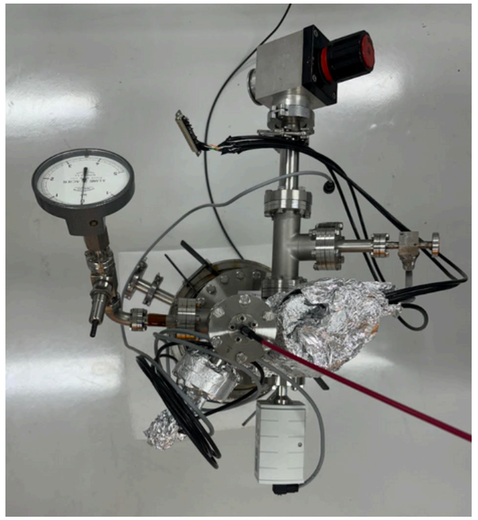
INTERNAL CHAMBER:
PEN OR PEN+ACRYLIC

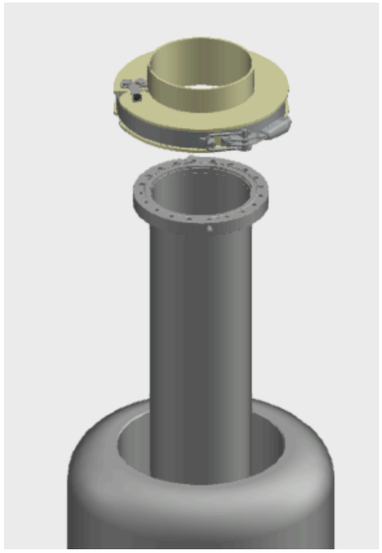
SOURCE – GAMMA,BETA,ALPHA

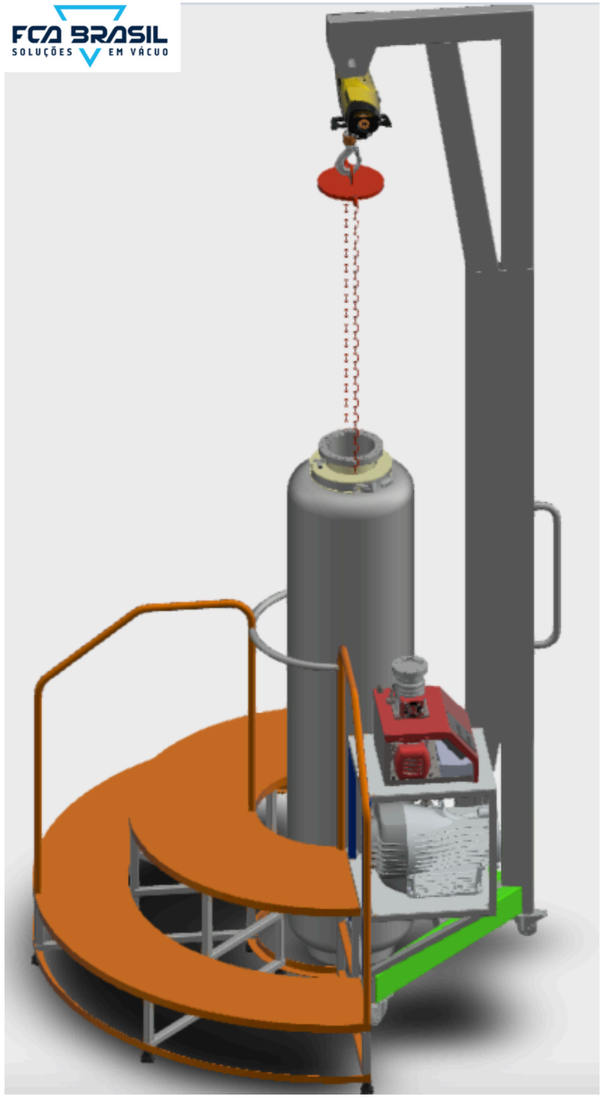
241Am - 133Ba - 57Co -137Ce - 22Na - 90Sr - 235U



SETUP







SETUP IS UNDER CONSTRUCTION

EXTERNAL BATH (160CM):
LIQUID ARGON

CILINDER (80CM):
PURE LIQUID ARGON 6.0

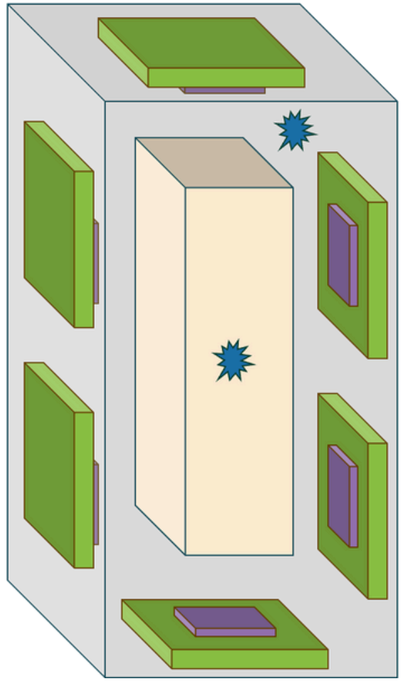
FLANGE:
CF160

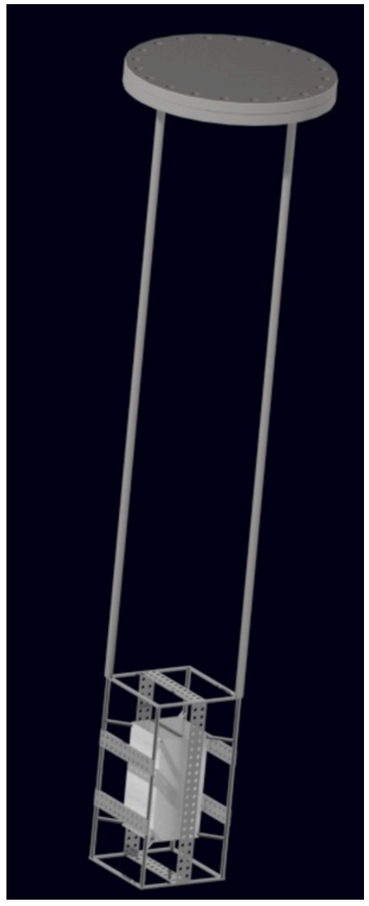
READOUT:
APSAIA +
CAEN DIGITIZER

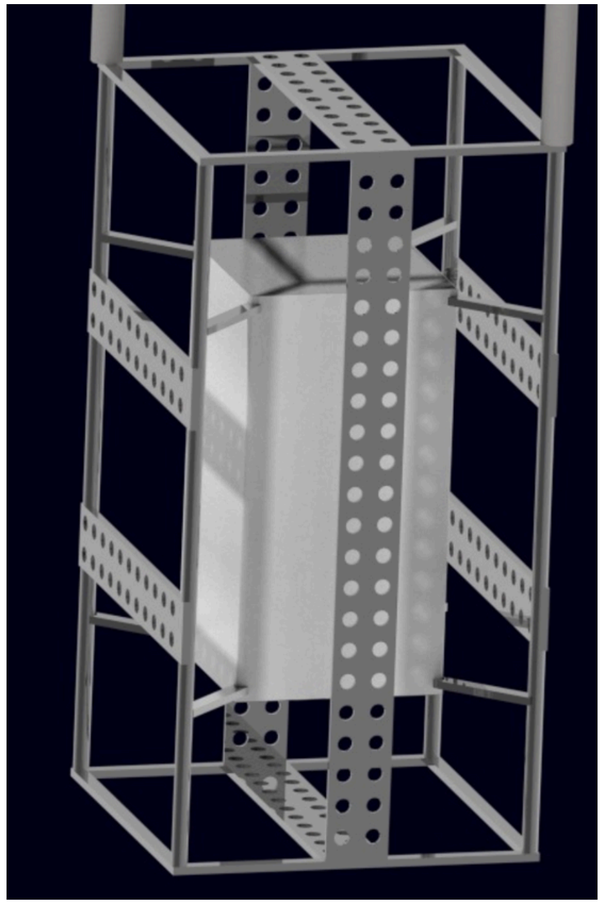
MOCK-UP

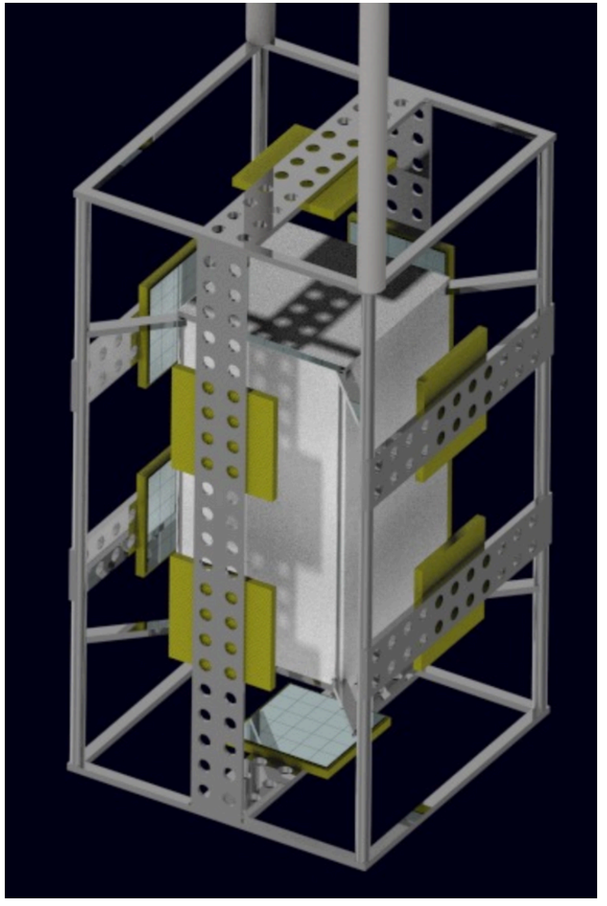
Mechanical design:

Heriques Frandini

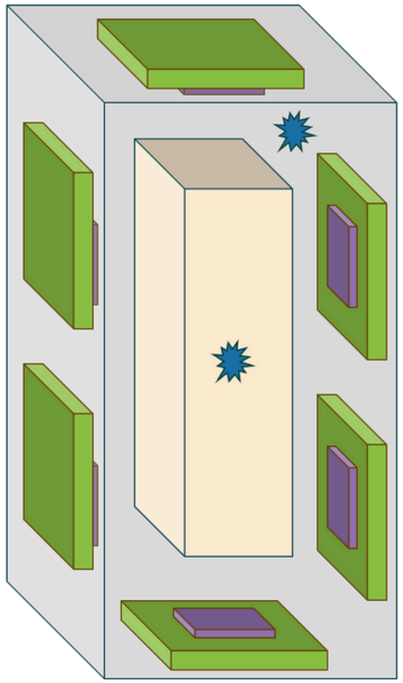




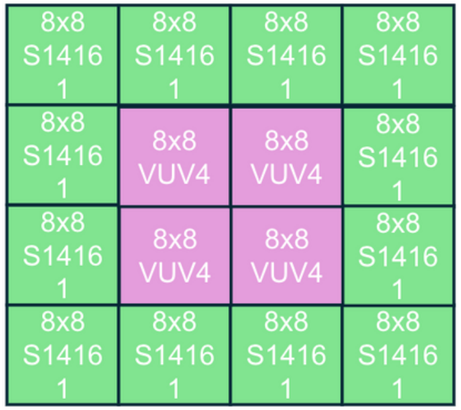


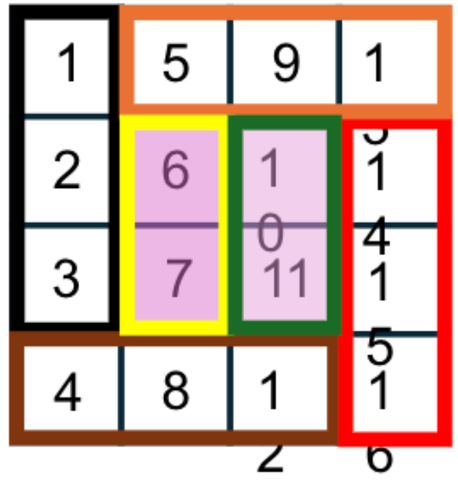


LIGHT-YELD



- 6 SiPM arrays
- Photosensor surface:
  (2,4cm X 2,4cm) = 5,76 cmˆ2
- Total active area: 6 X 5,76 =
  34,56 cmˆ2
- Reflector surface = 810 cmˆ2
- Coverage = 34,56/810 = 4,3%





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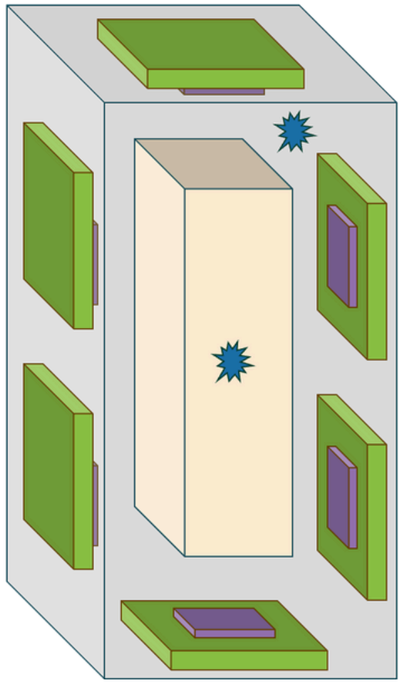
LIGHT-YELD

LY = PhotonYeld X PEN Eff X Collection Eff X PDE SiPM



Collection Eff = Coverage / (1-R(1-Coverage))

R --> reflectivity of (Reflector + PEN) @ 420nm

Collection Eff = 0,043 / (1-0,9(1-0,043)) = 0,31

LY = 40 X 0,5 X 0,31 X 0,5 ≈ **3,0 phel/KeV**

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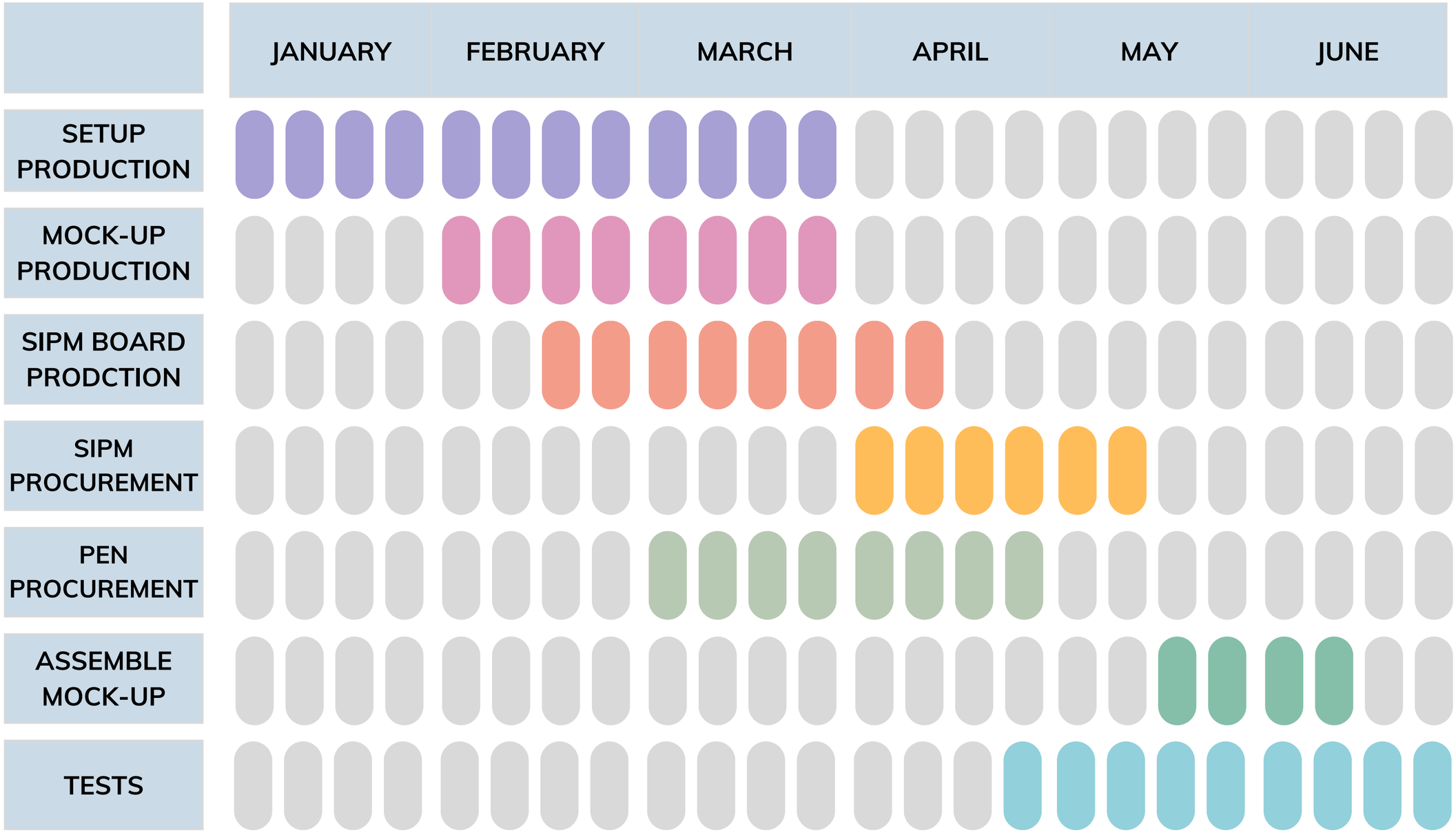
SCHEDULE– 2025



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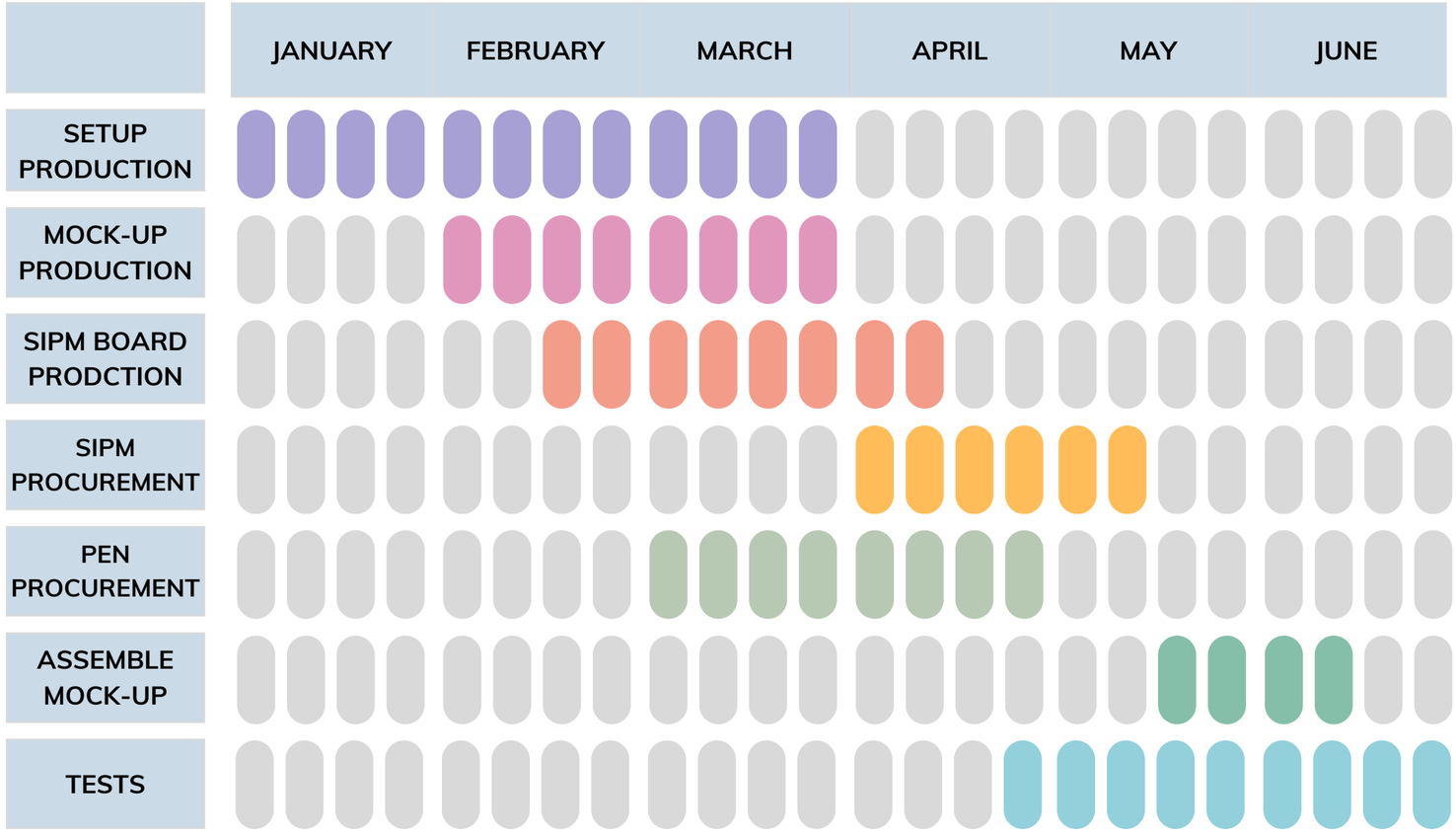
SMALL SCALE PROTOTYPE TESTS UNICAMP & UNINA

These tasks will be performed in collaboration with Naples



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SUMMARY

1. Setup is under production and will be finalized at beginning of next year
2. Mock-up chamber is under development and will be in production soon
3. SiPM board is in phase of design by Naples group and will be produced around March 2025
4. SiPM procurement could be late
5. The LAr tests @ UNICAMP should start in mid 2025

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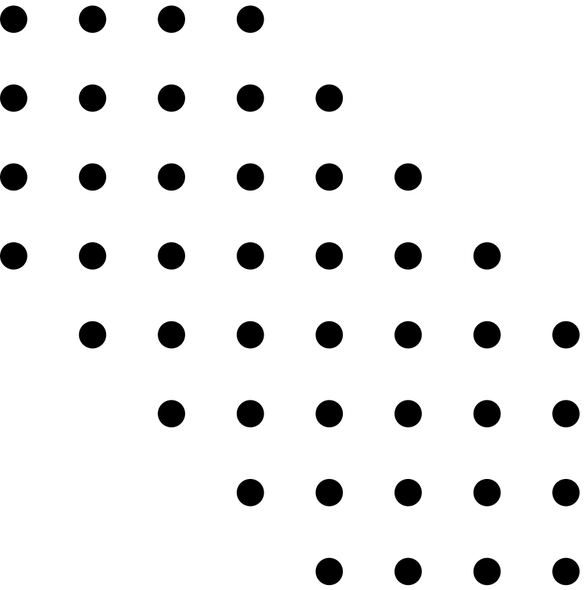

Thank You

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