Cabling Test Early Results

2024/08/12 Upgrade Meeting

By Stefano Gramigna on behalf of the working group

INPUT

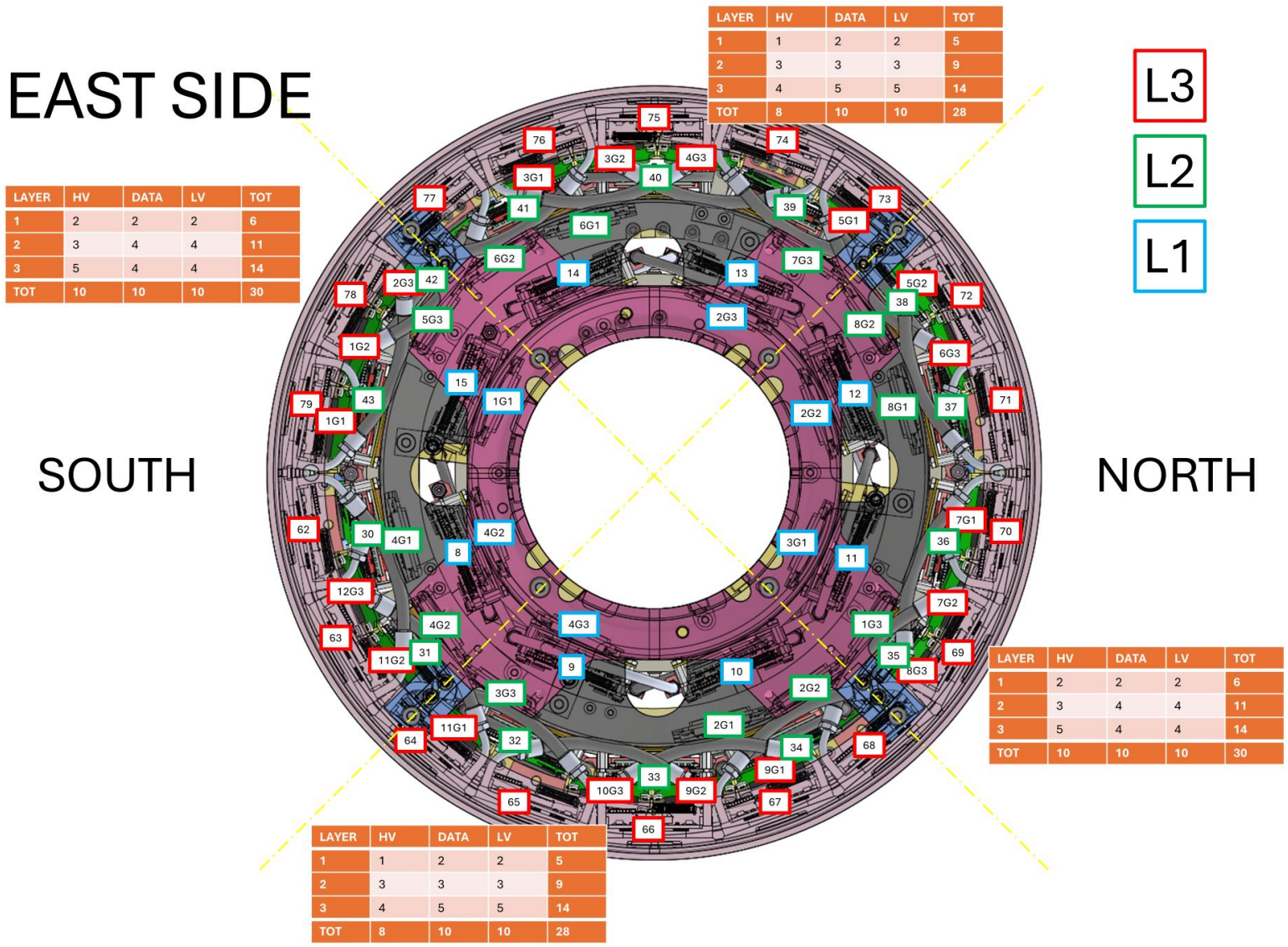
DETECTOR

The four-spoke flange defines 4 sectors, about 30 cables come out from each sector

Layer 1 cables must travel the longer path

LV cables are the shortest (1 m)

Half of the GEMROCs will be positioned on the north side, half on the south side



INPUT

PREAMP MOUNTING POINTS

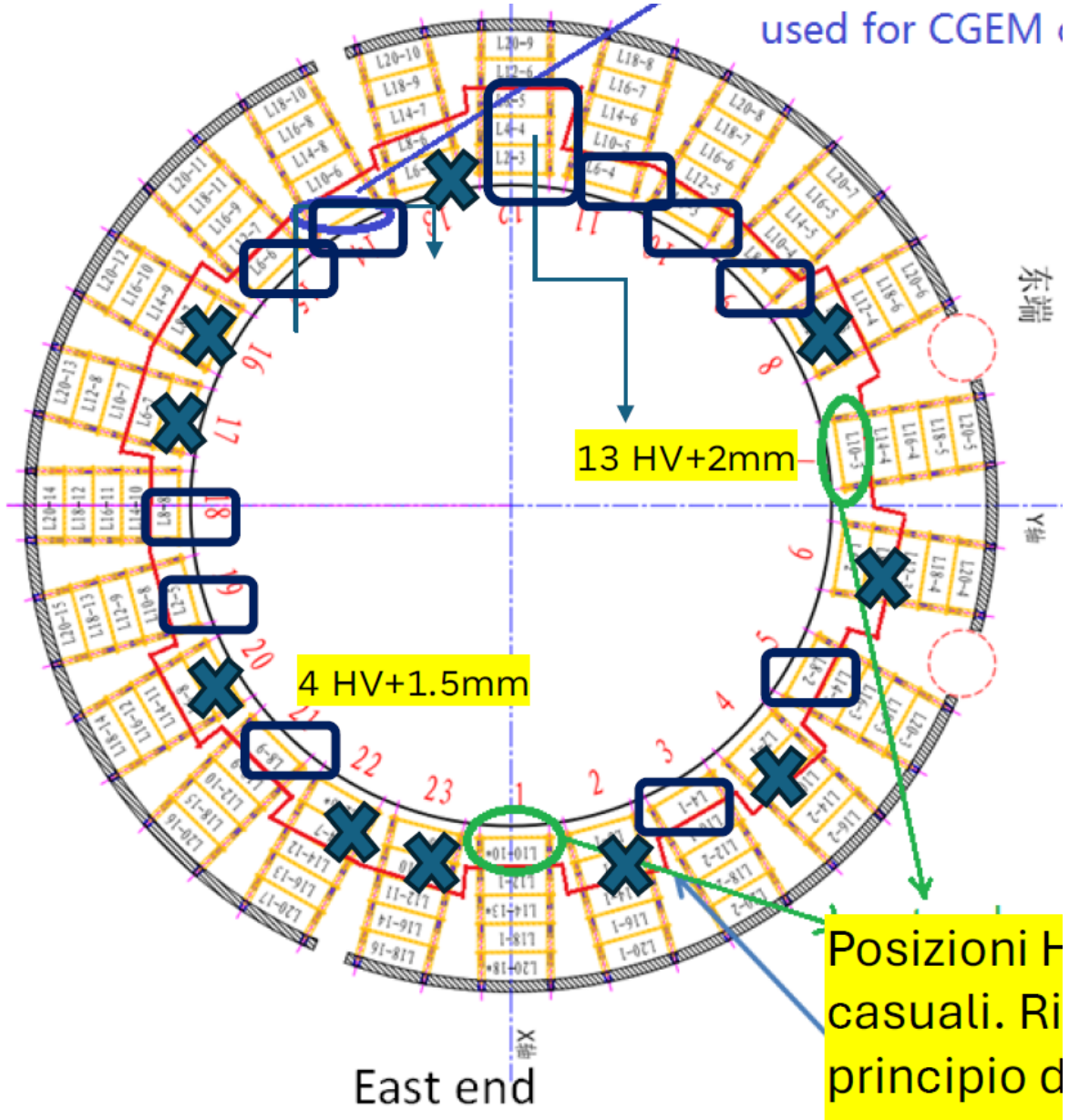
Some preamplifier boards will be removed according to the red line on the scheme

In a single preamplifier slot we can fit:

- Up to 2 DLVPCs
- Up to 4 HVPCs (5 if the slot is one of the innermost ones)

We prefer to keep HVPC and DLVPC stacks separate

Each HVPC stack must also fit at least 1 GNDPC



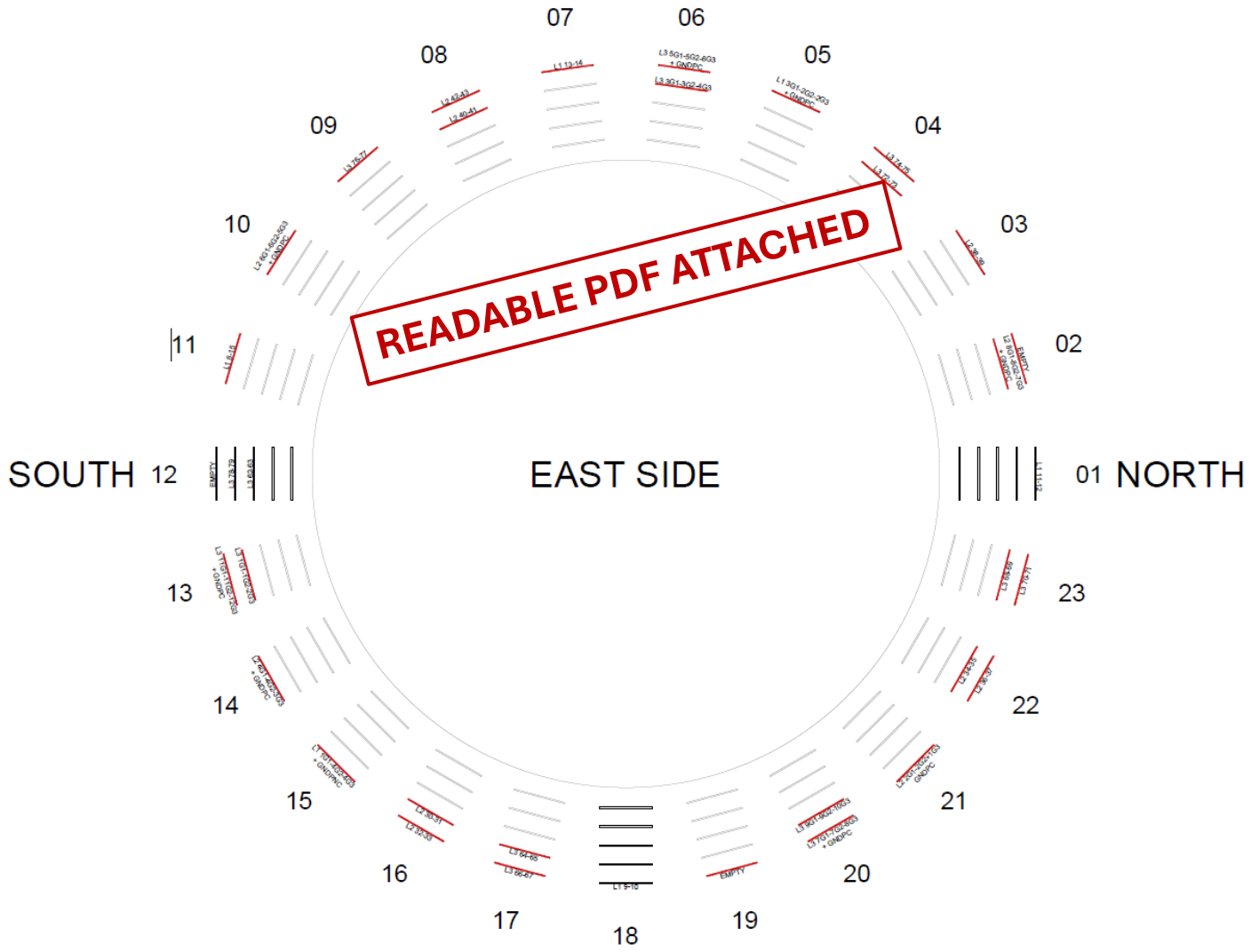
OUTPUT

PATCH CARD POSITIONING

Scheme is flipped inside out due to mock-up construction, cable's travel path is conserved

33 slots available according to the documentation, 32 were actually used

FUNDAMENTAL TO CHECK WHICH SLOTS WILL BE FREED AND THE CORRECT ORIENTATION OF THIS SCHEME



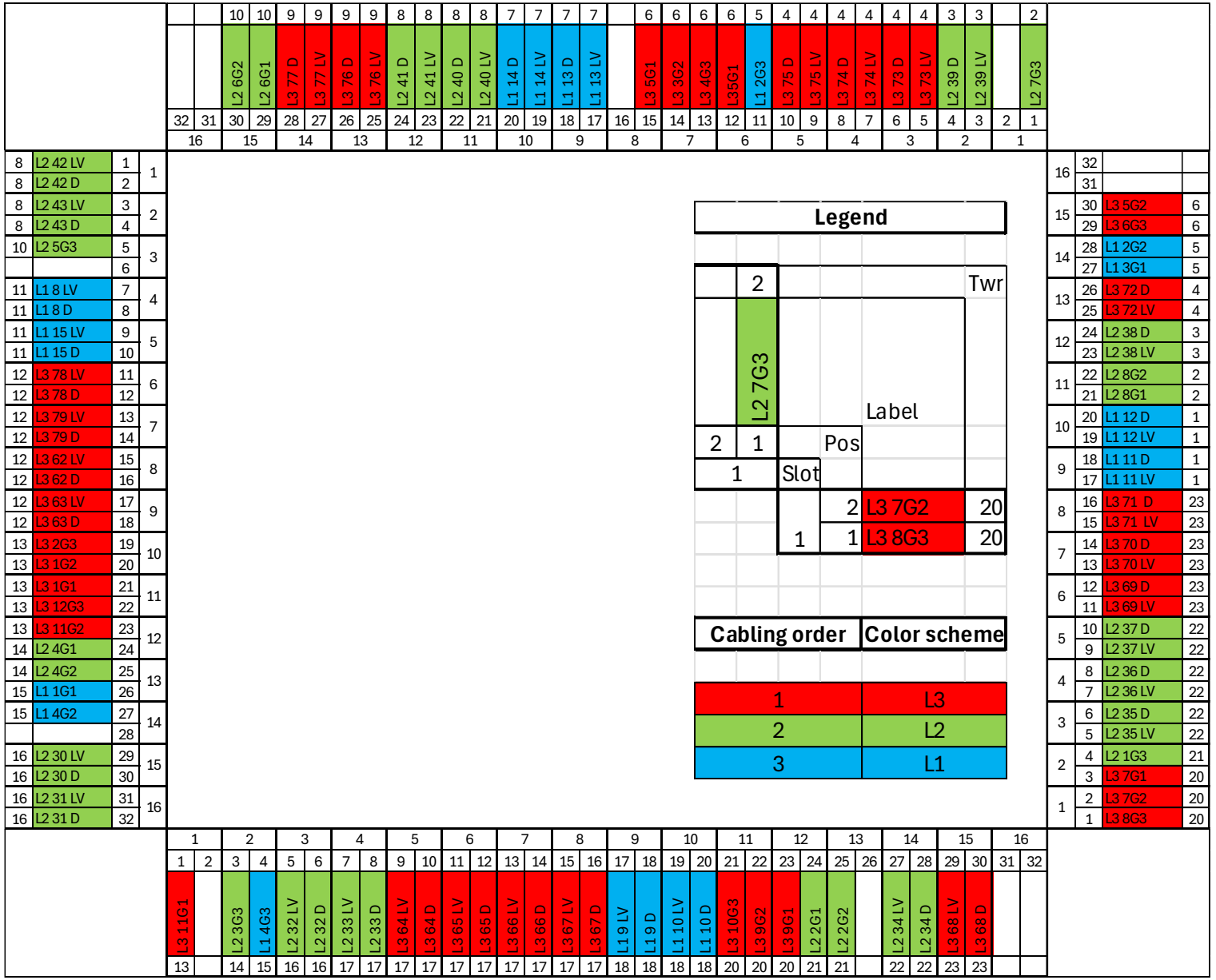
OUTPUT

CABLE HOLDER FIXING SCHEME

Patch card positioning drives the fixing of the cables near the detector

Cables are fixed to the four cable holders in couples using cable ties

Cables must be fixed in order (L3, L2, L1) to prevent knots near the flange's bottleneck



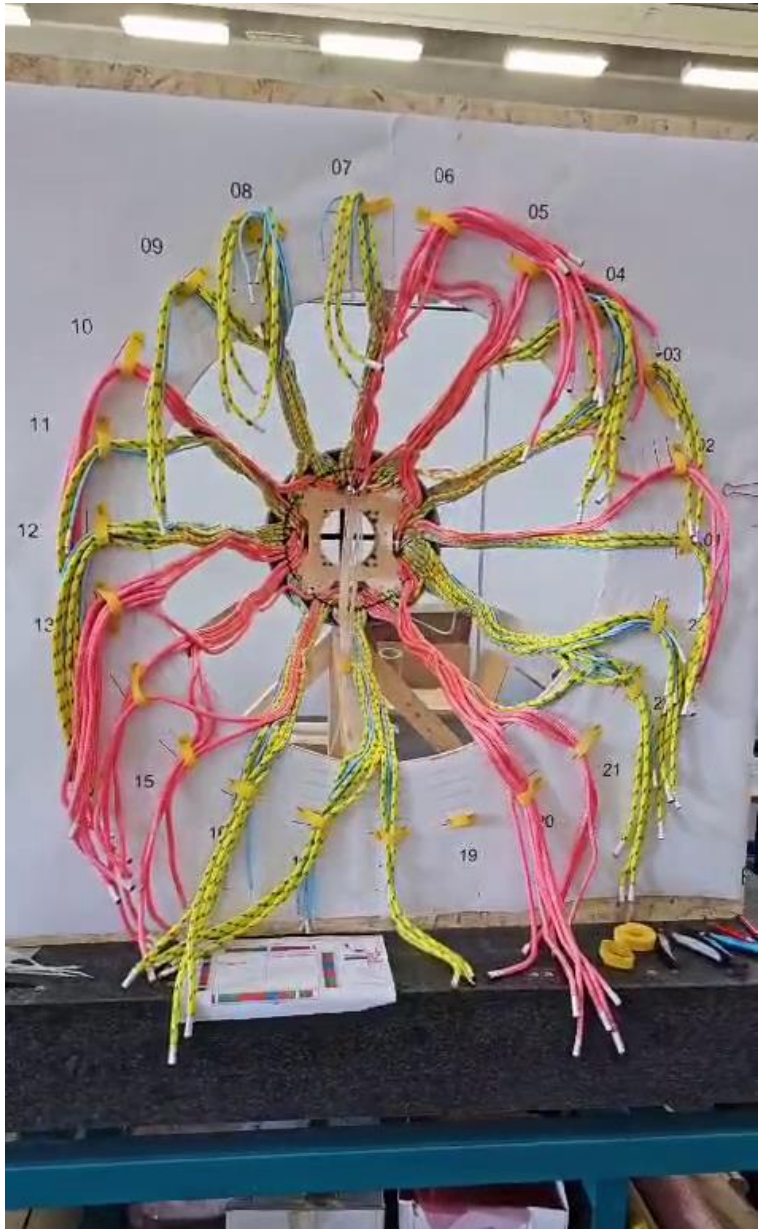
EAST SIDE TEST

The presented scheme is feasible, all cables reach their destination with a reasonable amount of extra length

Cables are stretched to evaluate extra length available

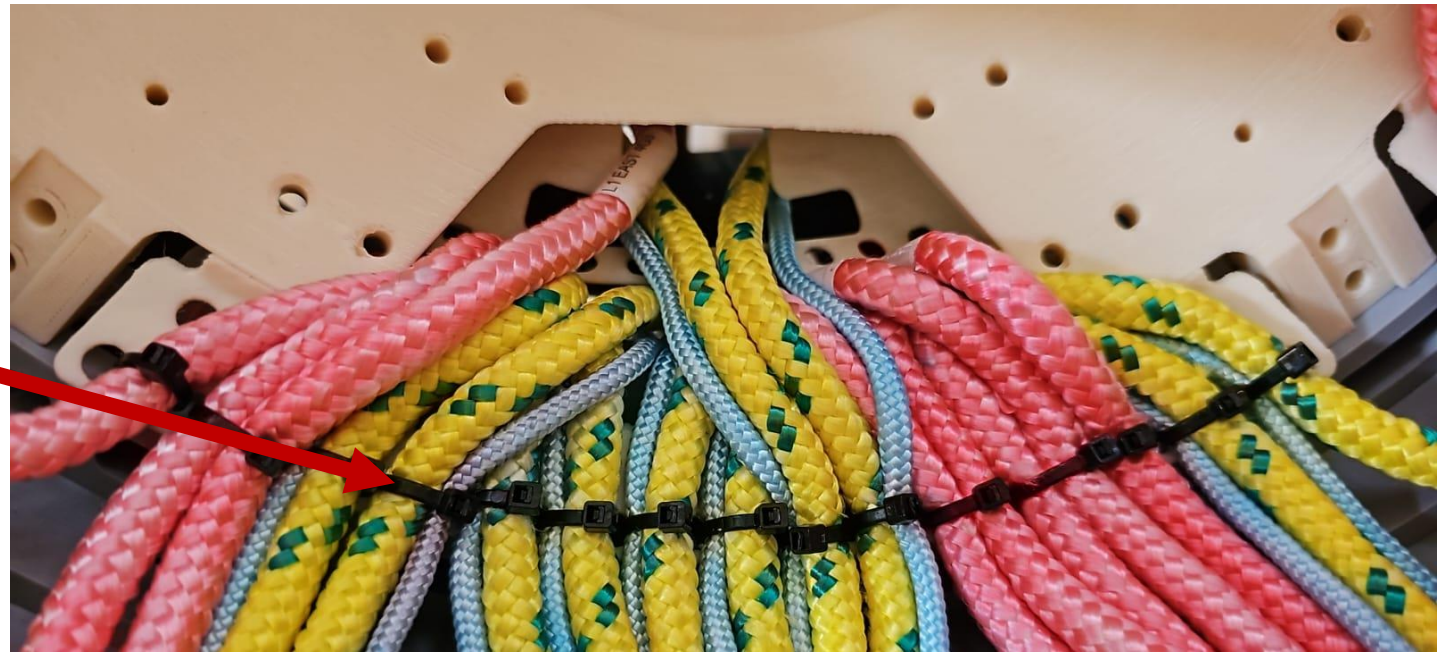
Limiting the cable routing to 0°, 90°, 180°, and 270° as requested earlier this year, to separate CGEM and MDC cables, is not possible

Access to cable grooves over the full 360° is necessary due to the shortness of LV cables (the length of which was determined in 2018 according to the possibility of accessing **all** the slots to be freed)



EAST SIDE TEST

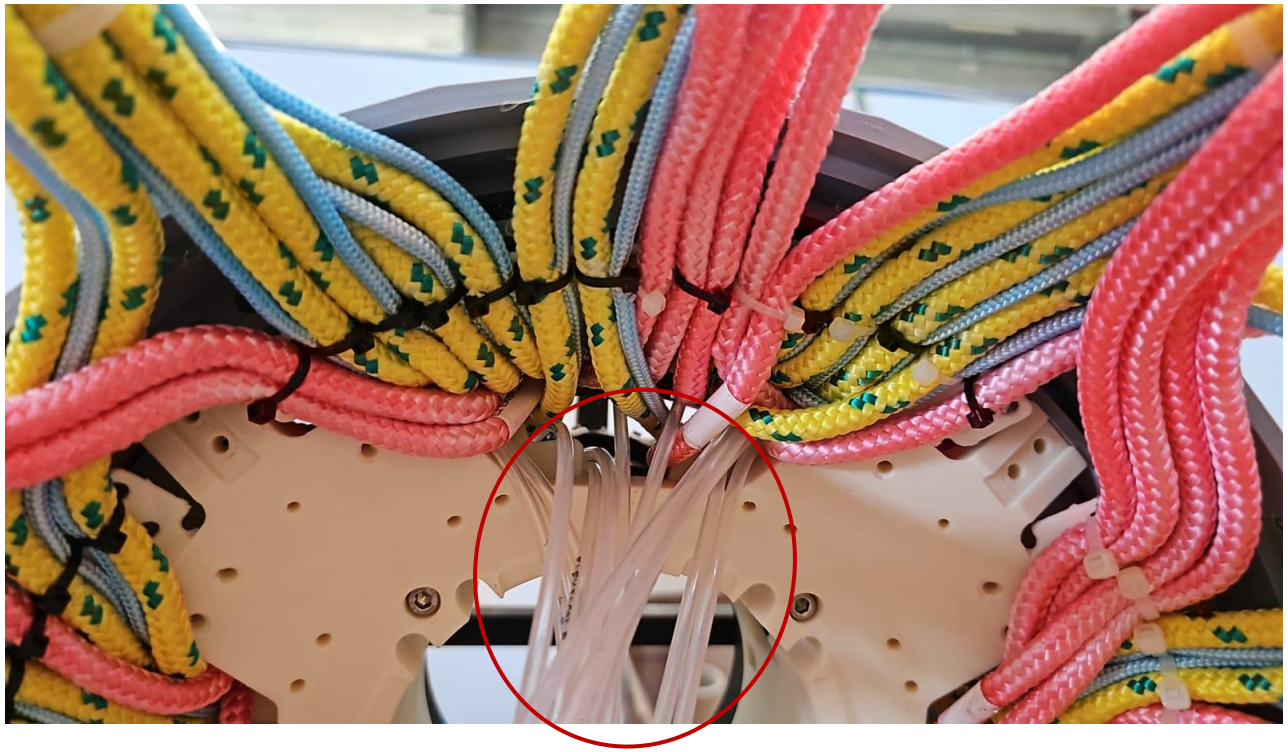
Clean exit at the flange, knots are handled in the back or in the MDC cone



Inner cable holder not serviceable, outer cable holder redesigned to accommodate all cables in pairs

Tools for adjusting the beam pipe positioning screws identified (ratchet combination keys, probably hinged)

EAST SIDE TEST



Routing of the gas pipes still undefined, **input from the gas system group necessary**

Conclusion and Future Plan

- The **schemes** presented are **still subject to changes** (few minor adjustments still being discussed), final schemes will be submitted via e-mail upon finalization
- **Mock-up conversion** for west side test within the next **two weeks**
- **West side test** and **cabling scheme production** within the **end of August**
- Mandatory stop of the cabling studies in September (**all people working on this will be at IHEP in early September**)