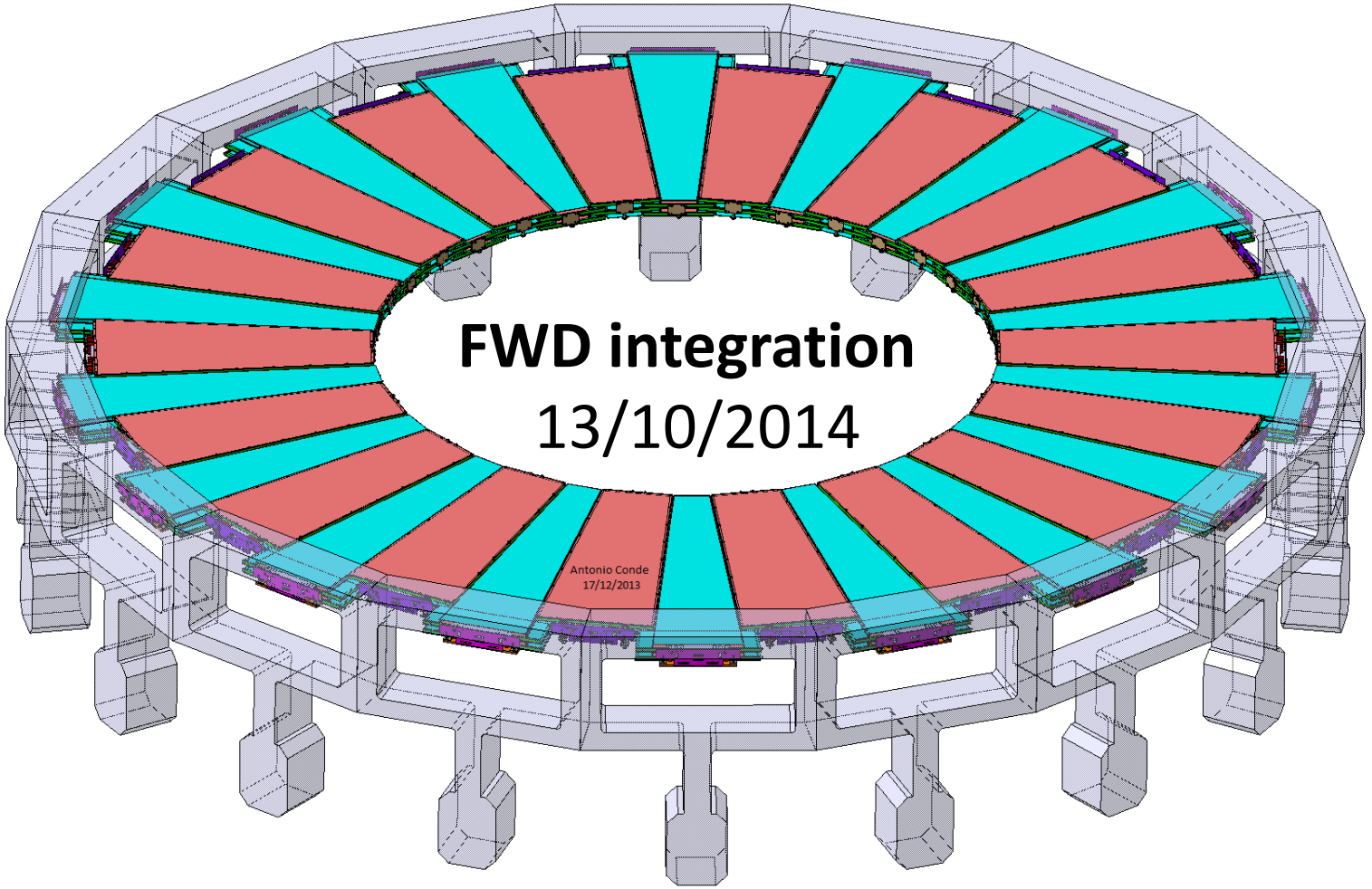
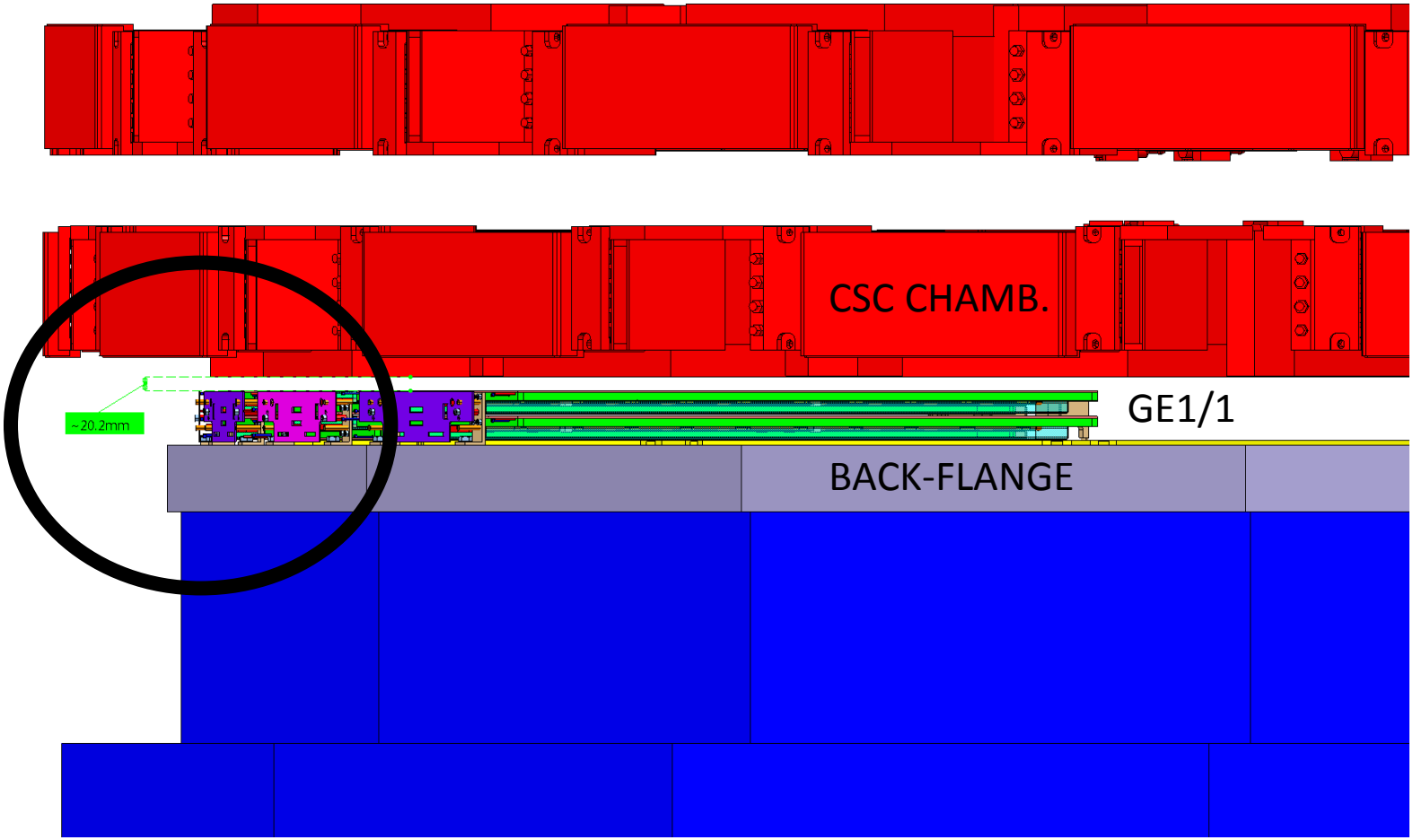
GEM ENVELOPES

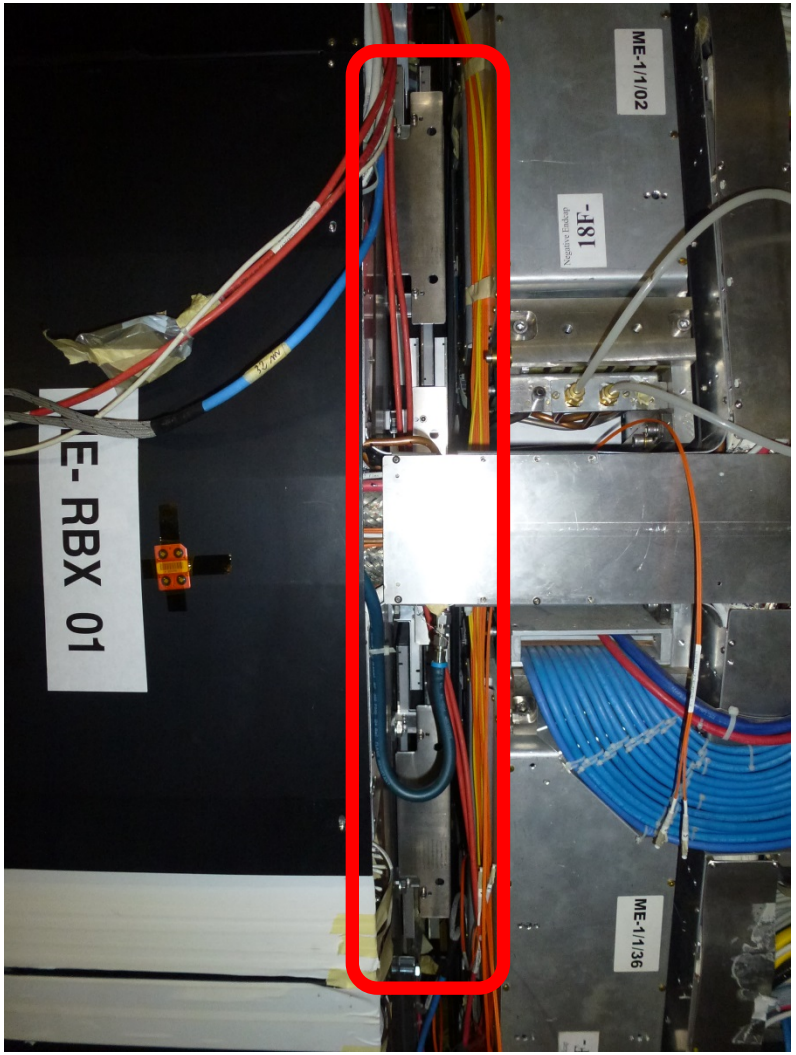


Antonio Conde CERN PH-CMX

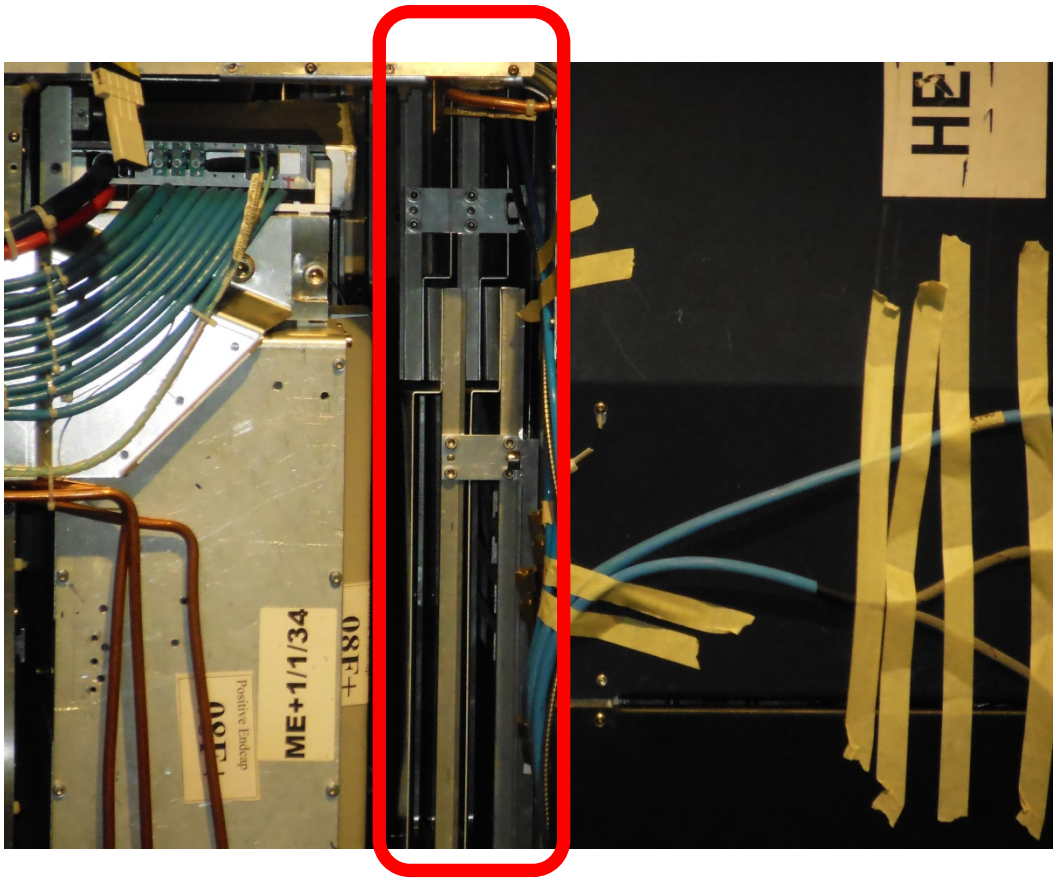
GE1/1



GOOD GAP VERIFIED



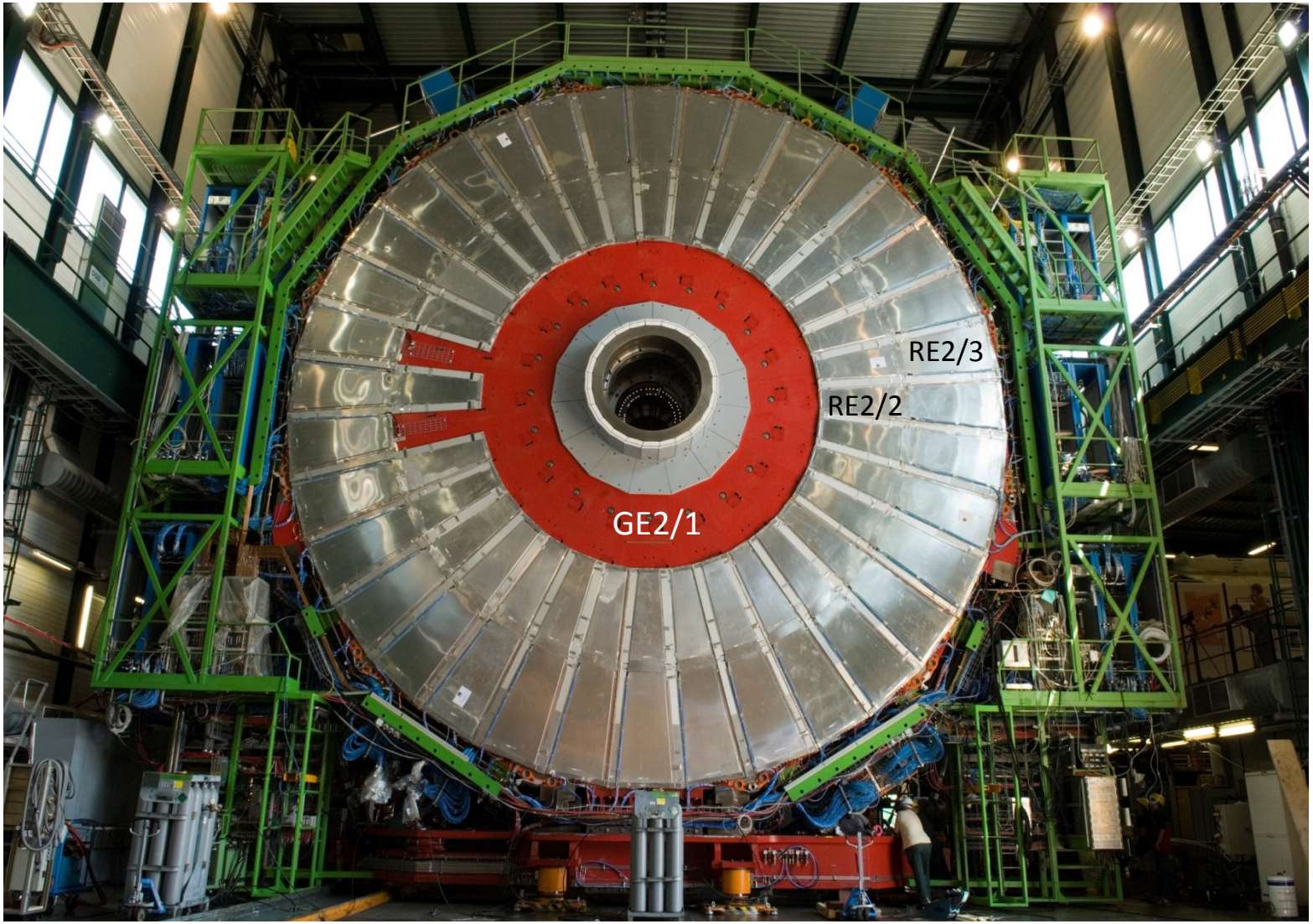
3 EQUAL DUMMIES INSERTED IN MAY 2013 IN NEGATIVE SIDE (still in place)



2 SHORT & 1 LONG DUMMIES INSERTED IN APRIL 2014 IN POSITIVE SIDE (removed in July)

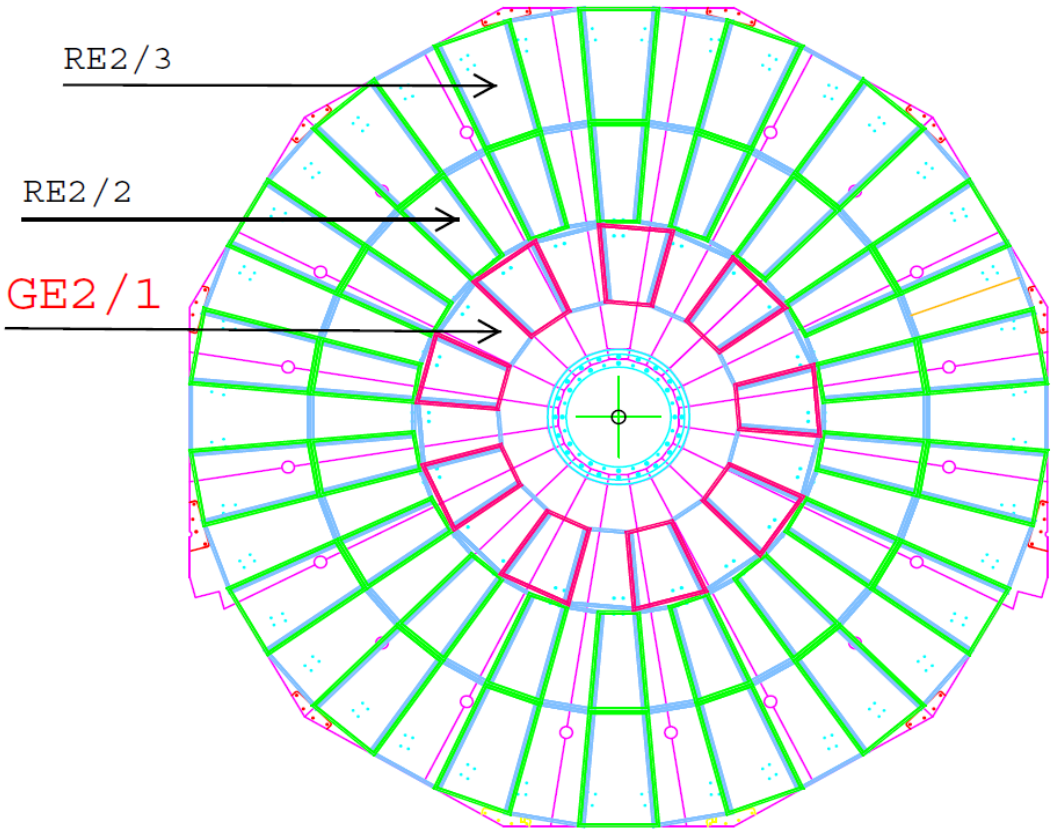
(GE1/1 **ETA** COVERAGE: 1.55 TO 2.18)

GE2/1

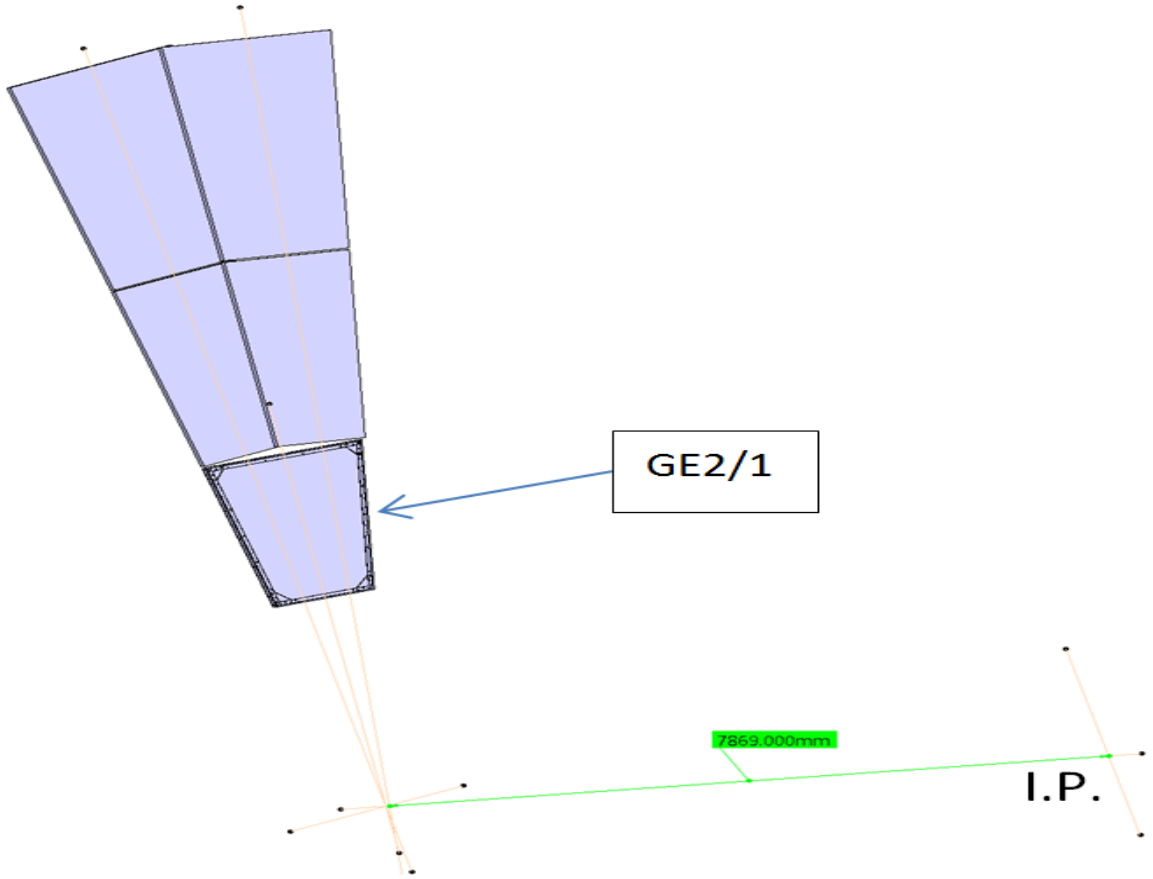


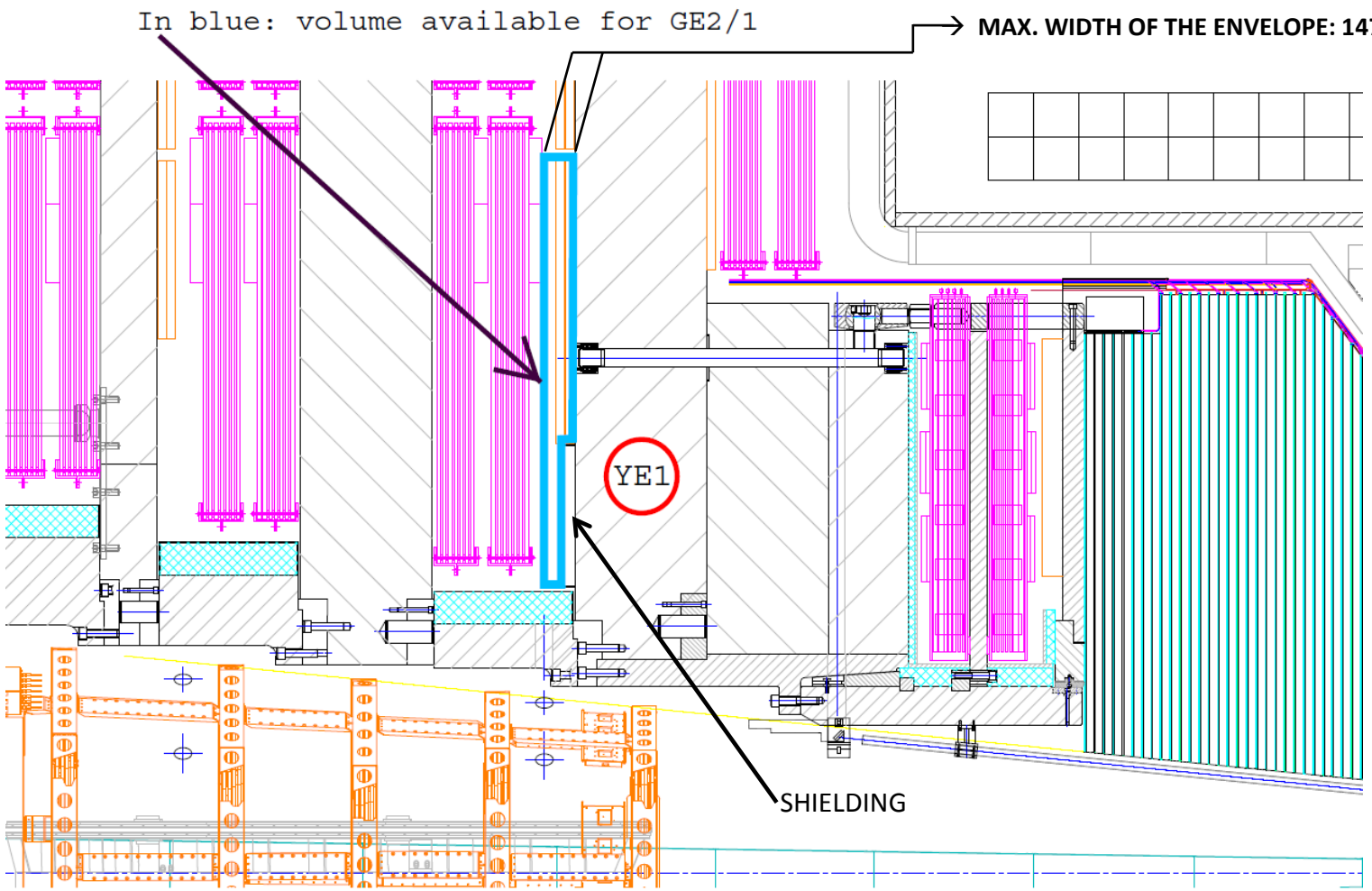
- The zone in red was in principle foreseen to contain also RE2/1 chambers but only RE2/2 and RE2/3 were installed

In each side of CMS the set consists of 18 GE2/1 chambers, each spanning 20° in ϕ angle

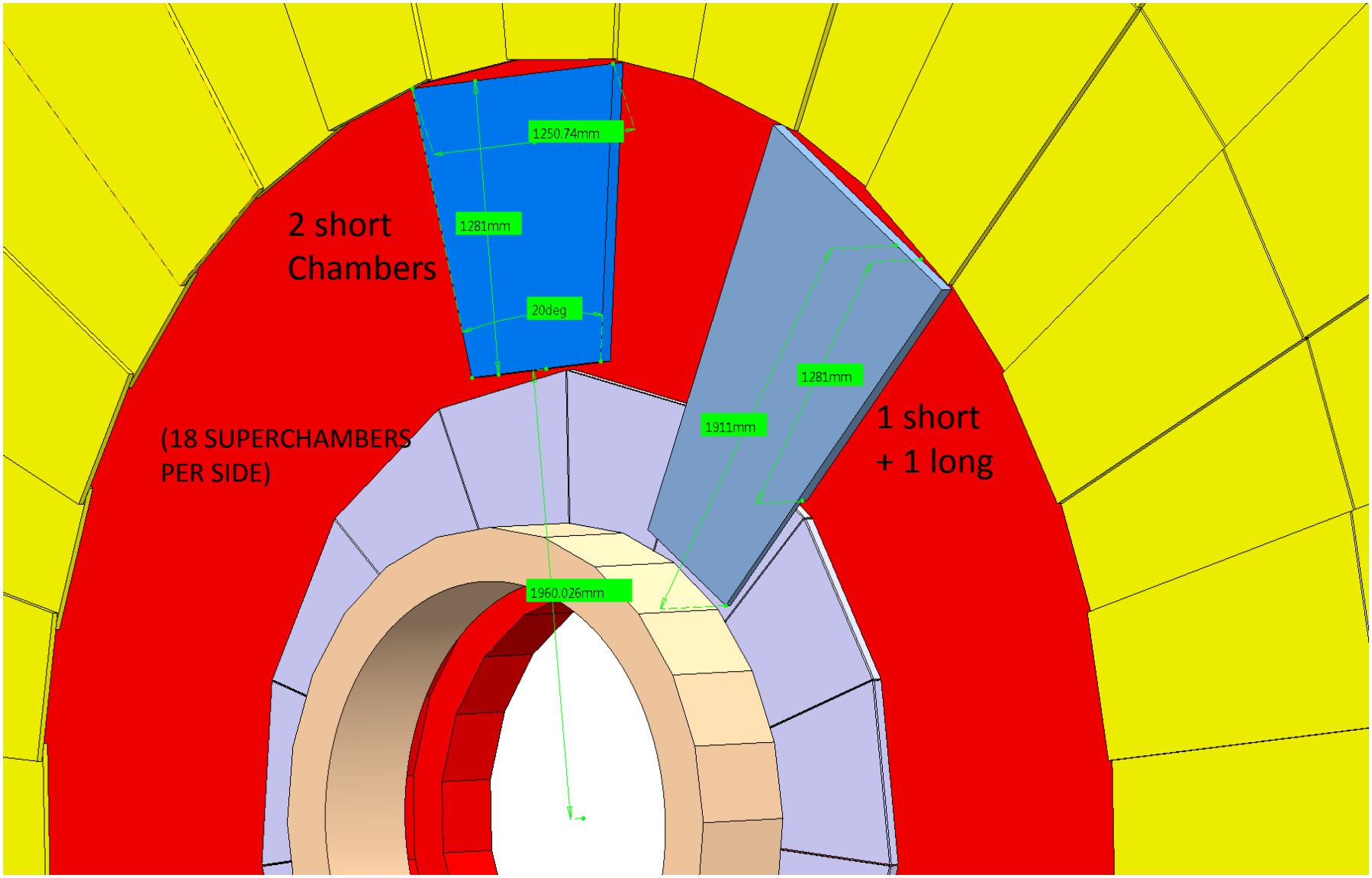


The distance from the IP to the backside of the yoke is **7869**mm



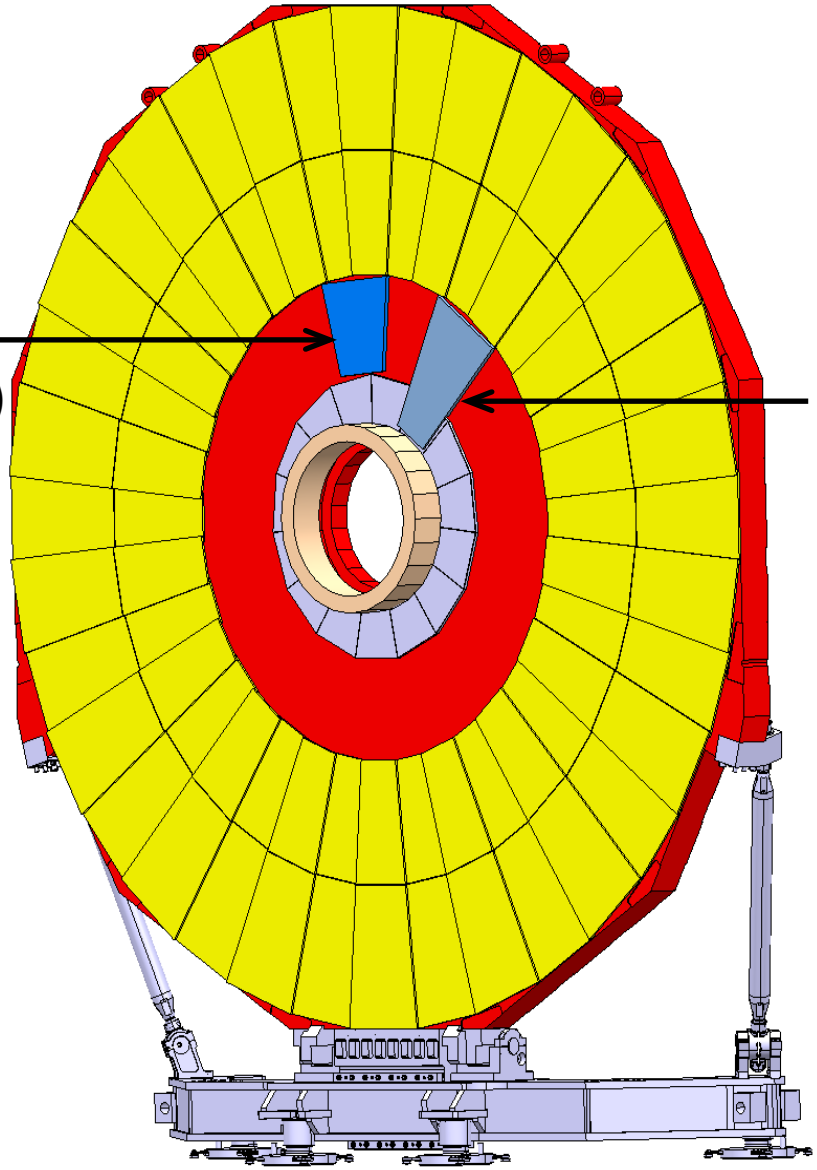


Based on the work accomplished for GE1/1, we have begun studies with the purpose of also installing GEM chambers in ME2/1 zone, on the backside of YE1 (compression side).



There were **2 possible geometries** envisaged. They depended on the possibility of **cantileving** a part of the chambers on top of the **neutron** shielding of YE1 disk

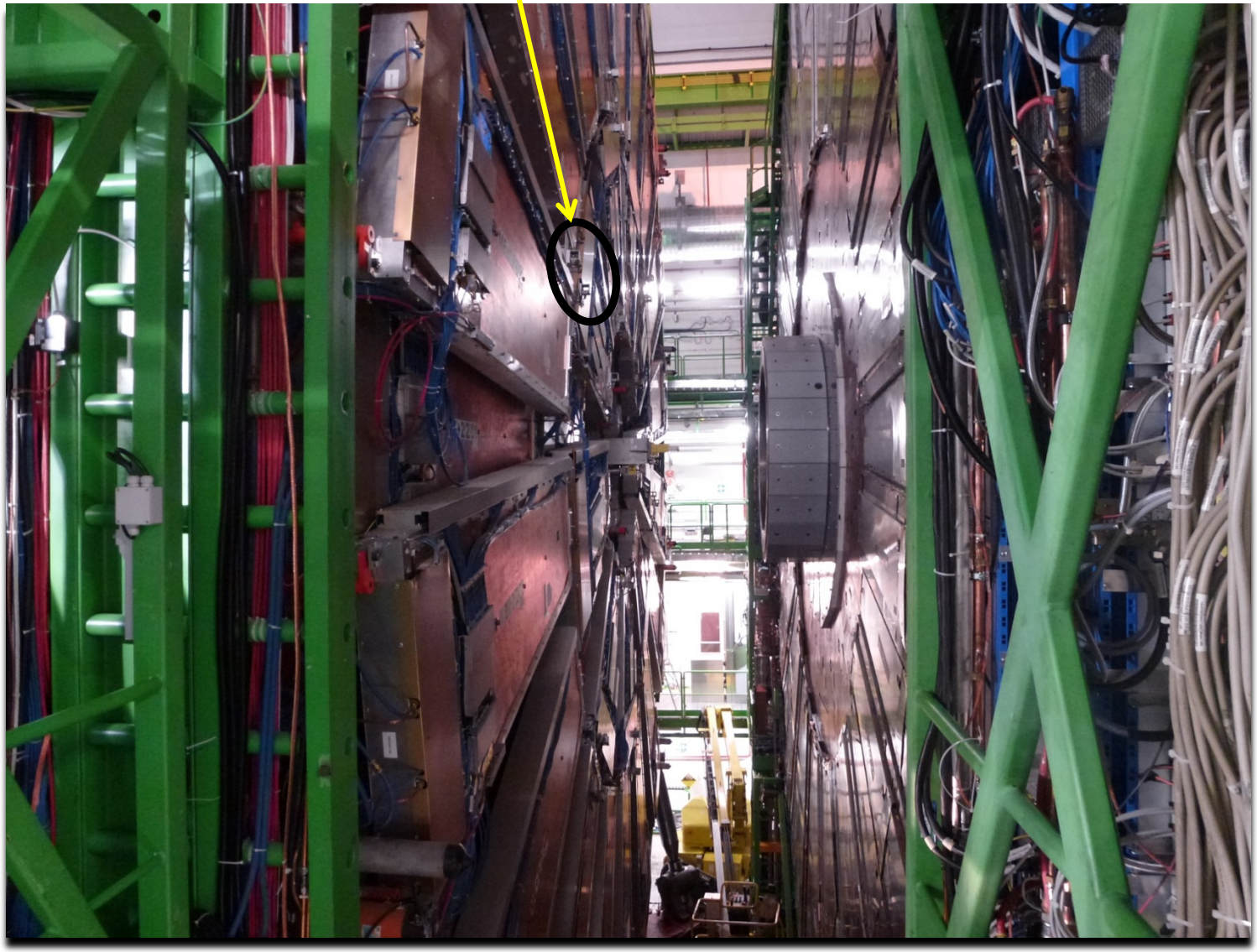
ETA 1.6 to 2.1
(short version **abandonned**)



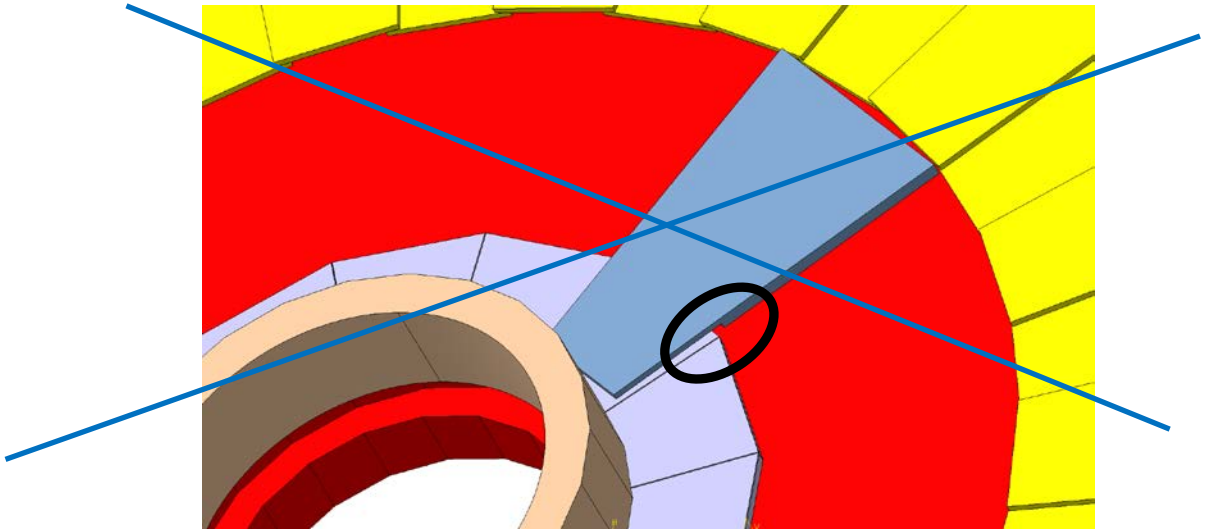
FOCUS ON LONG VERSION
ETA 1.6 to **2.4**

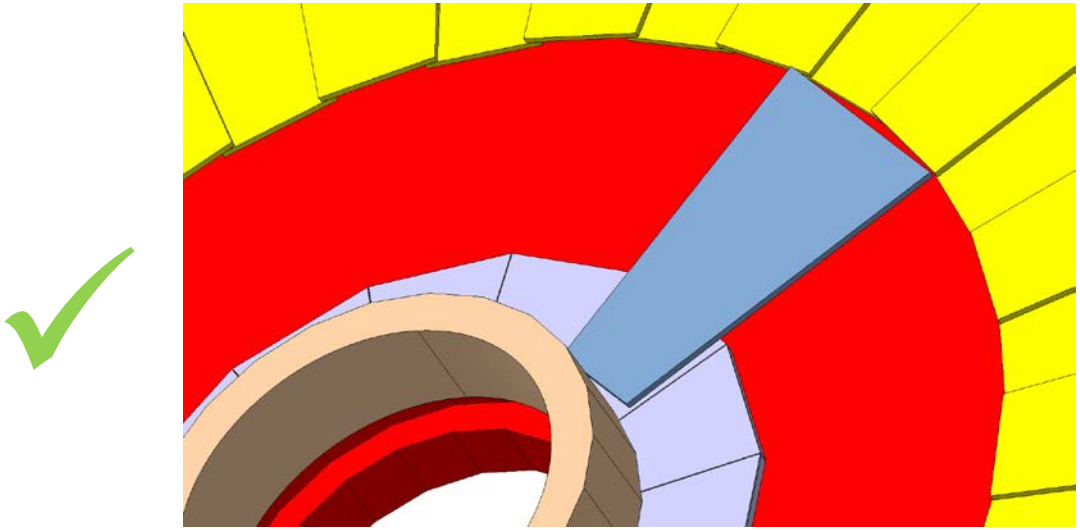
1.8 meters GAP BETWEEN YE1 AND YE2 OPENED DURING 3 DAYS IN DECEMBER 2013

ALIGNMENT DCOPS



REMOVING THE ALIGNMENT DCOPs WOULD ALLOW US MOUNTING FULLY LONG GEMs COVERING FROM 1.6 TO 2.4 ETA

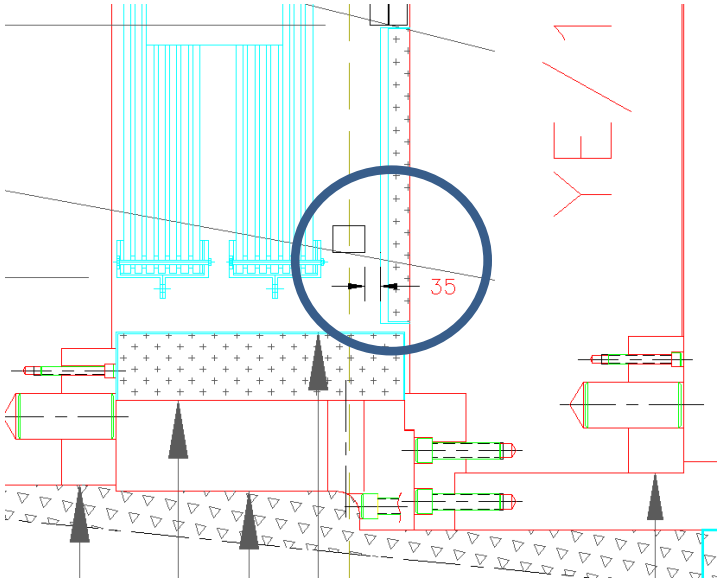




Input from Dan Wenman:

"Z" distance between DCOPS sensors and the lead/polyethylene shielding on the external side of YE1

Note: These are design dimensions not actuals. Also the height of the screws in the DCOPS will reduce this gap to 32 to 33mm.



Removal of the DCOPs possible:

From: Armando Lanaro
Sent: 23 January 2014 11:30
To: Archana Sharma
Subject: RE: GEMs in HGCal conceptual design

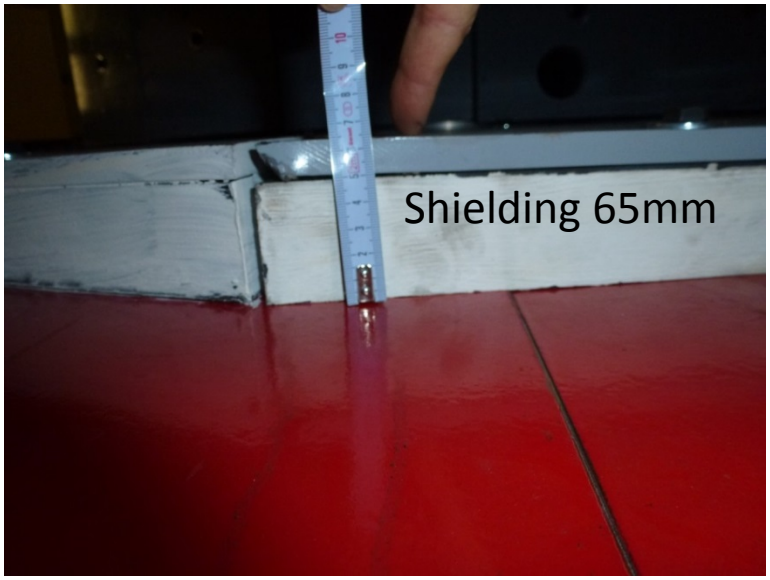
Hi Archana,

I asked Dick's opinion last night and he seemed sympathetic ...
Bottom line, I think it is realistic to assume that for phase 2 we will be removing the DCOPS installed on the ME2/1 to allow maximum overlap for the GE2/1.
Please, use this as the baseline model for the GE2/1 conceptual design.

Best,
Armando

WE STILL HAVE TO DEAL WITH THE LIMITED ENVELOP

DISTANCE FROM YOKE TO CSC CHAMBERS: 147mm
SHIELDING: -65mm
GAP: 82mm
SAFETY MARGIN: -5mm
77mm



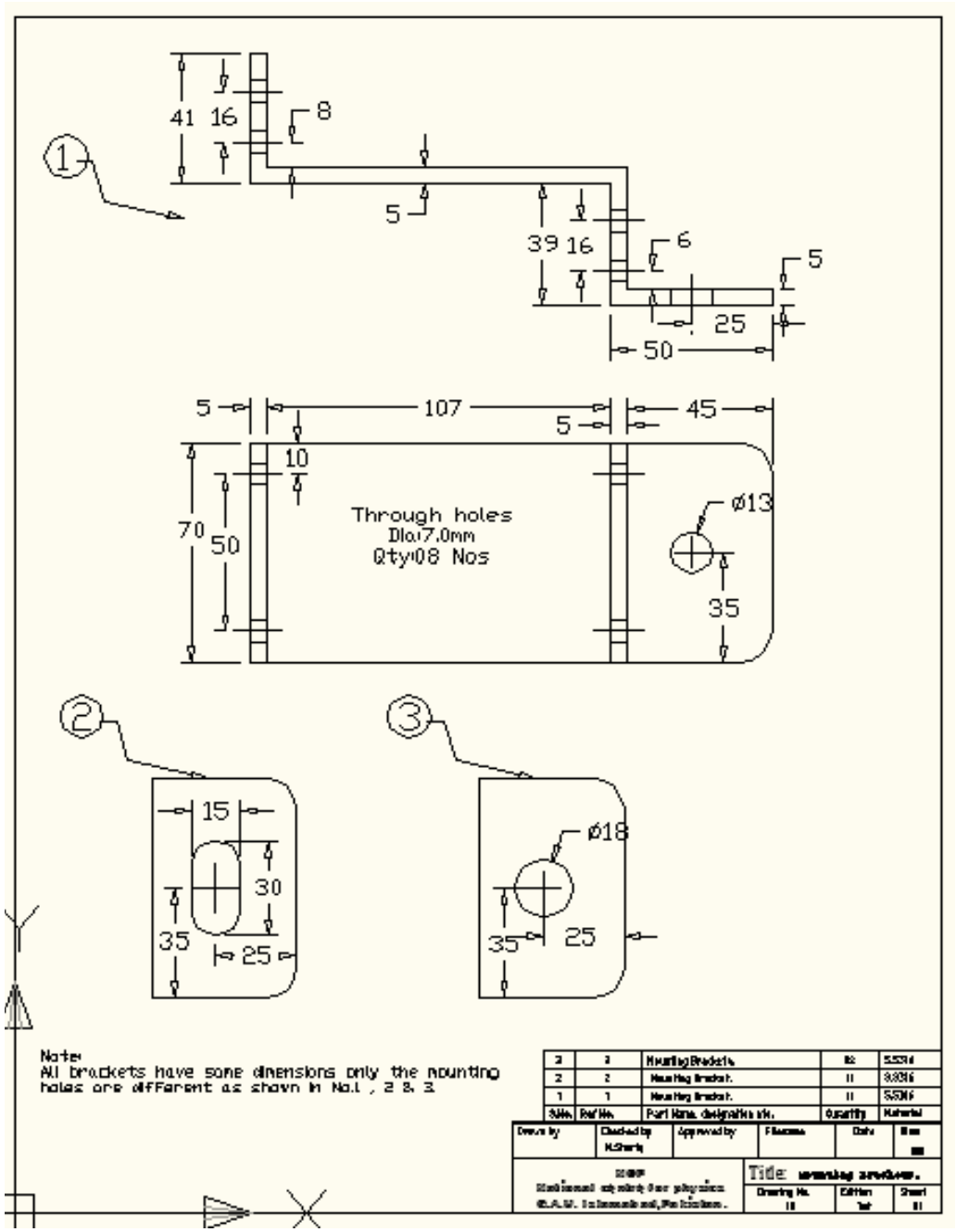
THEN, CONSERVATIVE ENVELOP WITH NO DCOPS IS 77mm (for GE 1/1 is 74mm)

DIFFICULTIES TO BE STUDIED:

- COMPARED TO GE 1/1, **BIGGER DIMENSION** OF THE SUPERCHAMBERS (**1911x1250mm**)
  → NEED TO INCREASE THE THICKNESS OF THE BOX, REINFORCE THE DRIFT, ETC.?

- HOW TO FIX TO THE YOKE WHILE KEEPING THE OVERLAP IN SUCH A DOUBLE SANDWICH STRUCTURE
  →WITH RAILS, LIKE IN GE 1/1? PIECE **INTERFACE** BETWEEN YOKE HOLES AND SUPERCAHMBERS?

BRACKETS
USED IN RE2/2
& RE2/3



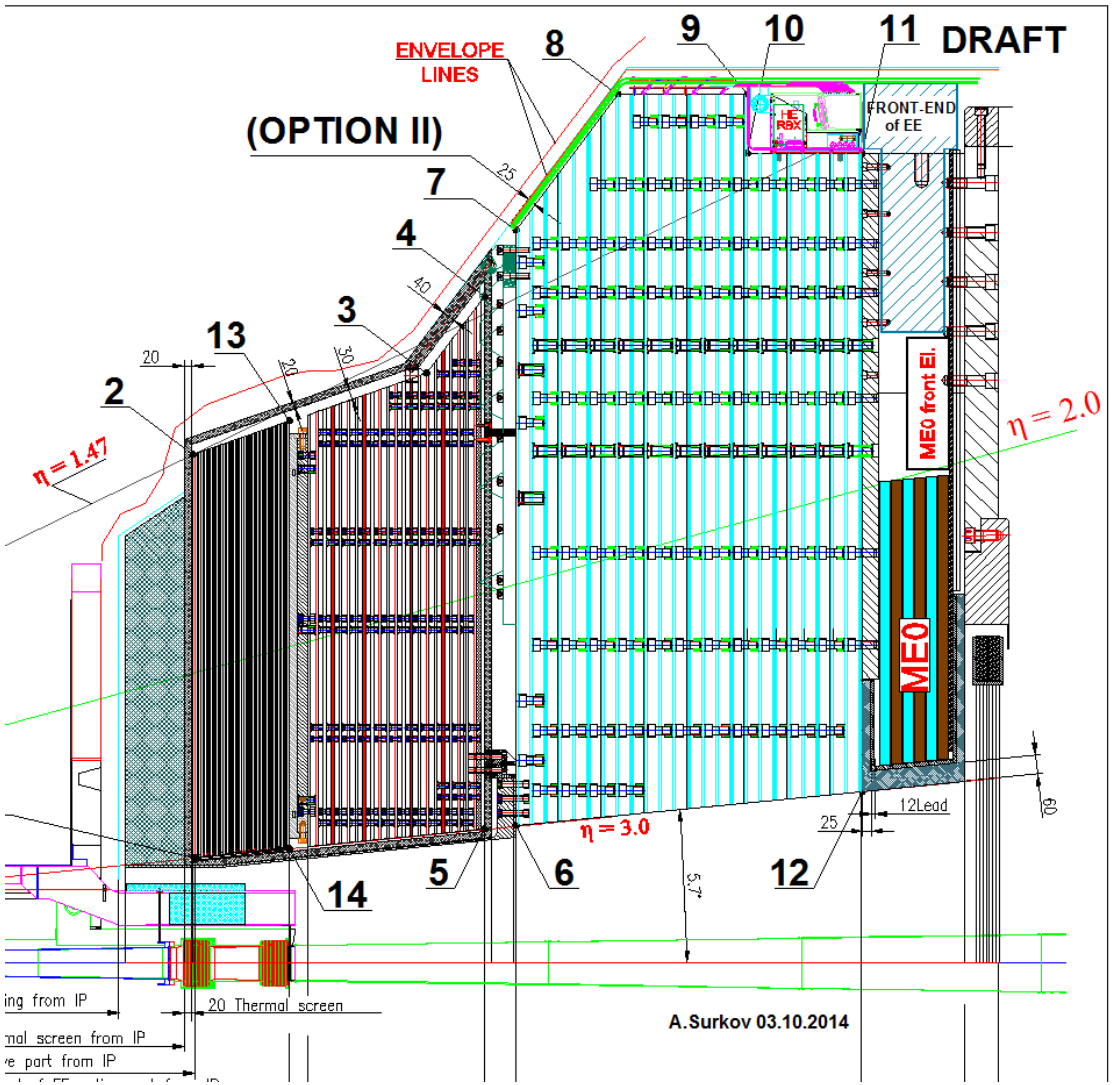

BRACKETS
LOCATIONS
BASKET
18.04.2007 15:35

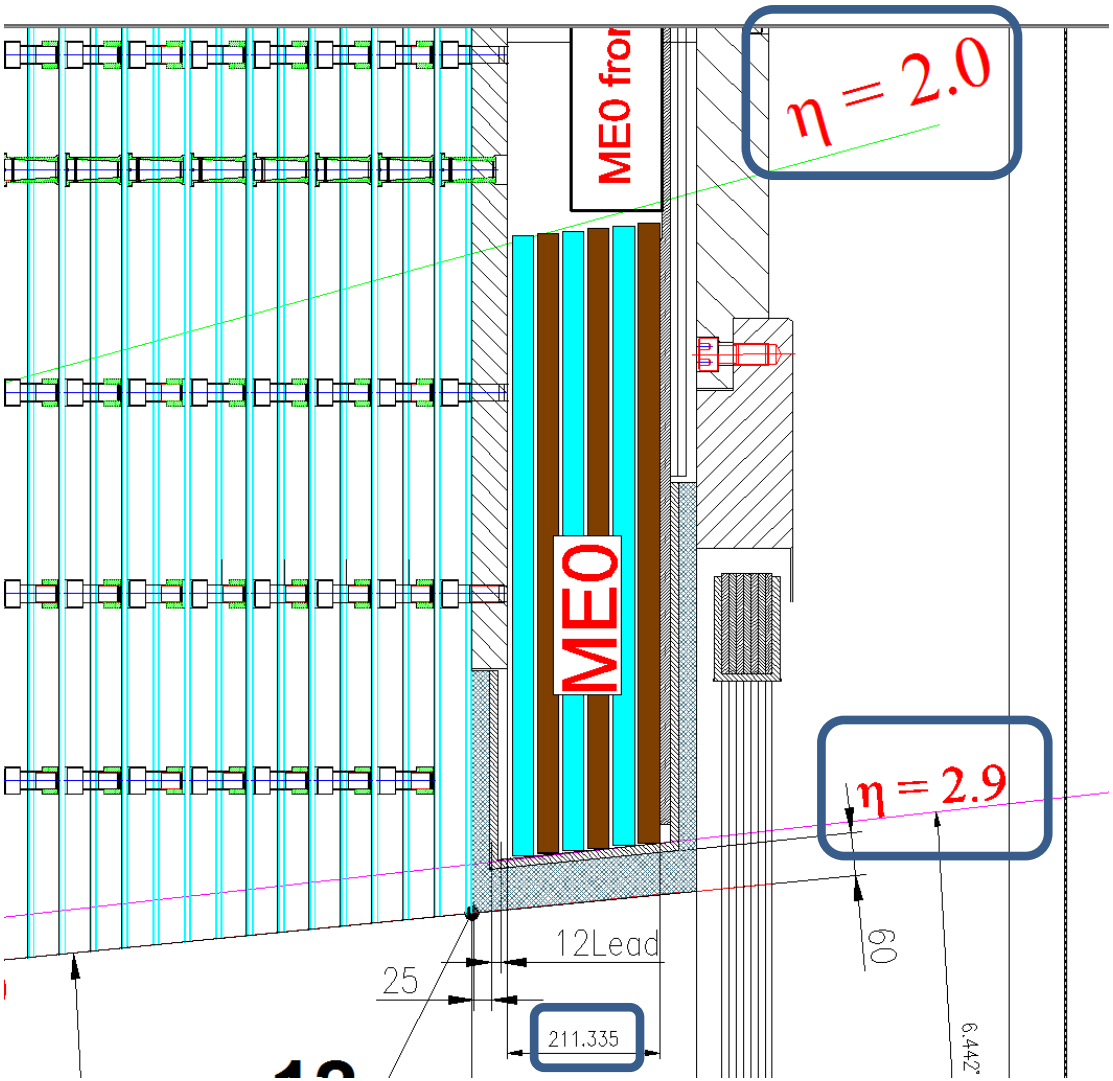
M12 FIXATIONS HOLES AVAILABLE IN GE2/1 ZONE

COPPER PIPES AND PROBES PROBABLY INVADING VOLUME OF INSTALLATION

ME0

LATEST DRAWING COURTESY OF SASHA SURKOV:





ETA COVERAGE : 2 TO 2.9

ENVELOPE: 211mm
(6 chambers)

THANKS