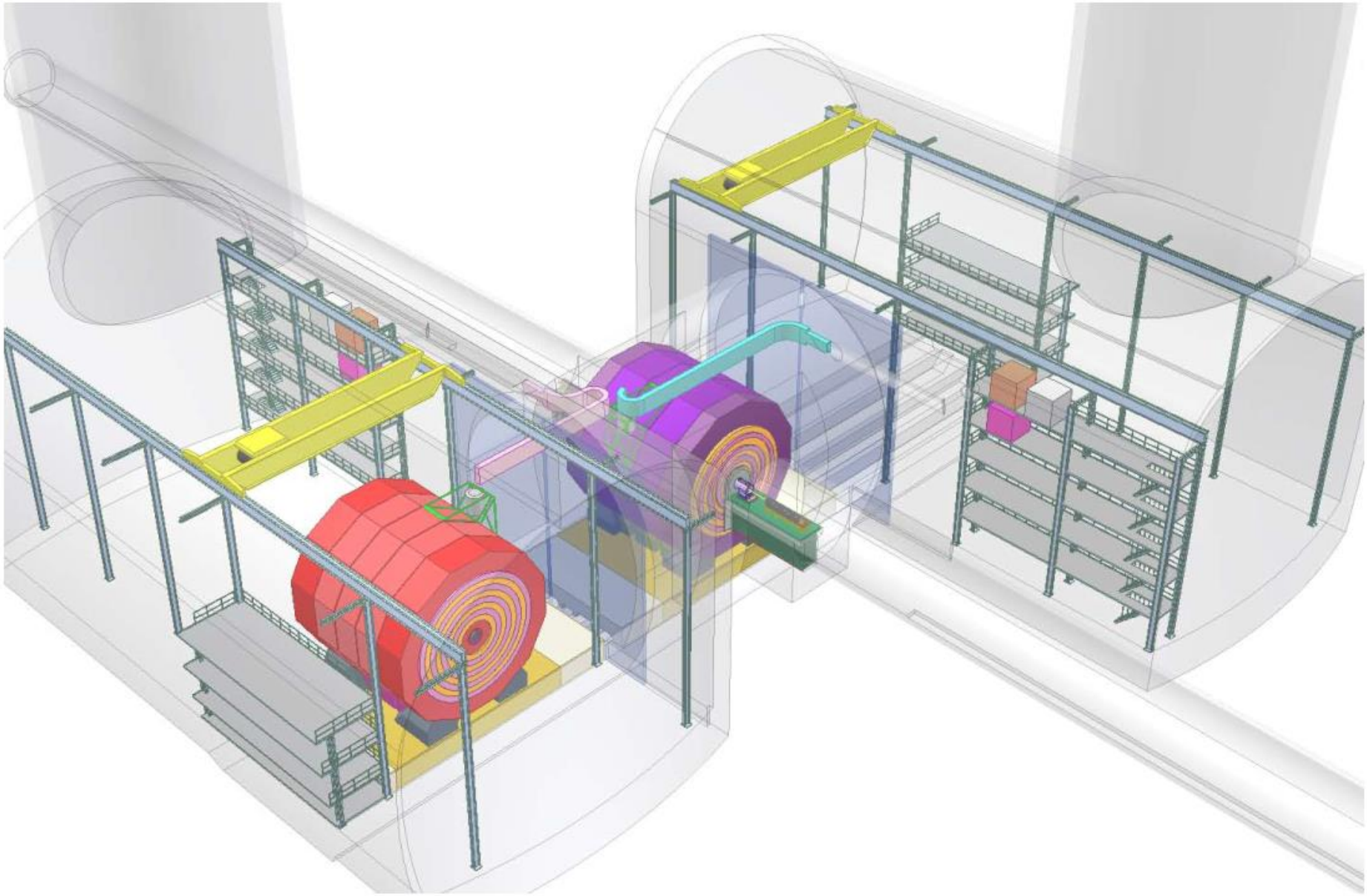
The new CLIC detector and (some of) the interaction region

Konrad Elsener (CERN), 5 May 2017

Reminder: the “old” layout – for the CDR



(CDR Volume 2, Fig. 11.10)

Reminder: the “old” layout – for the CDR

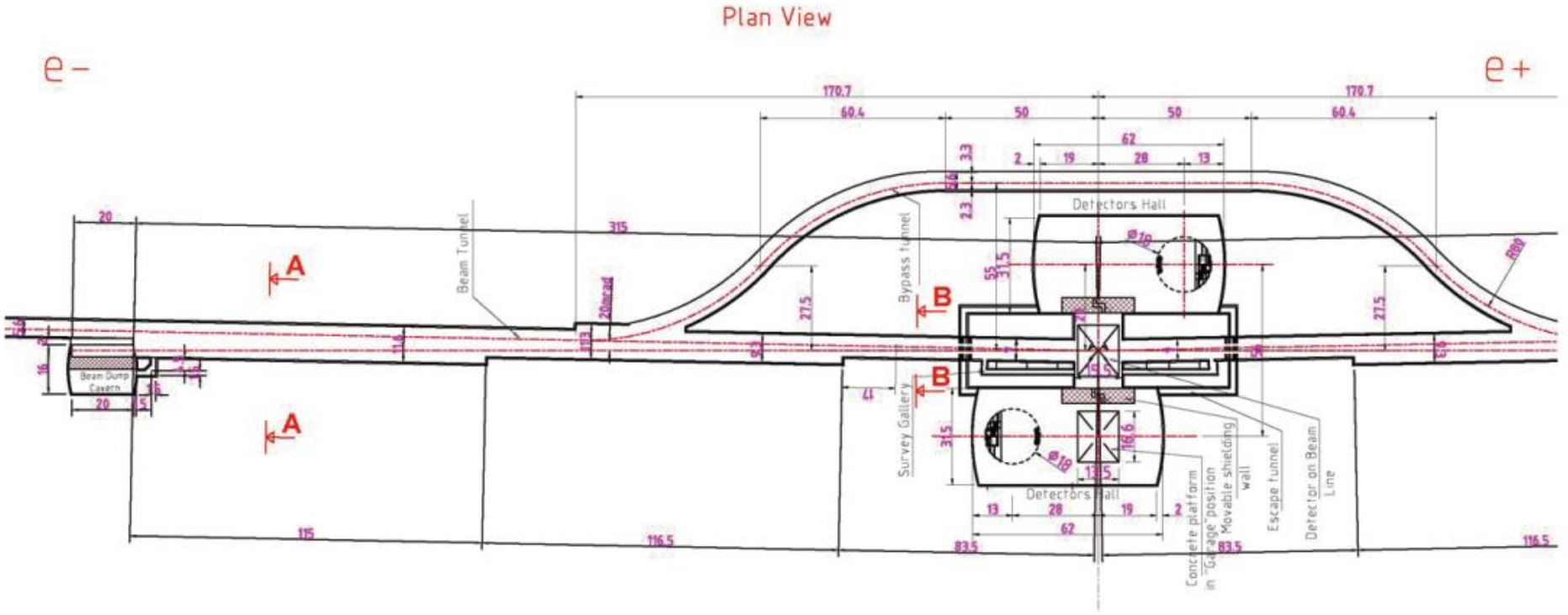
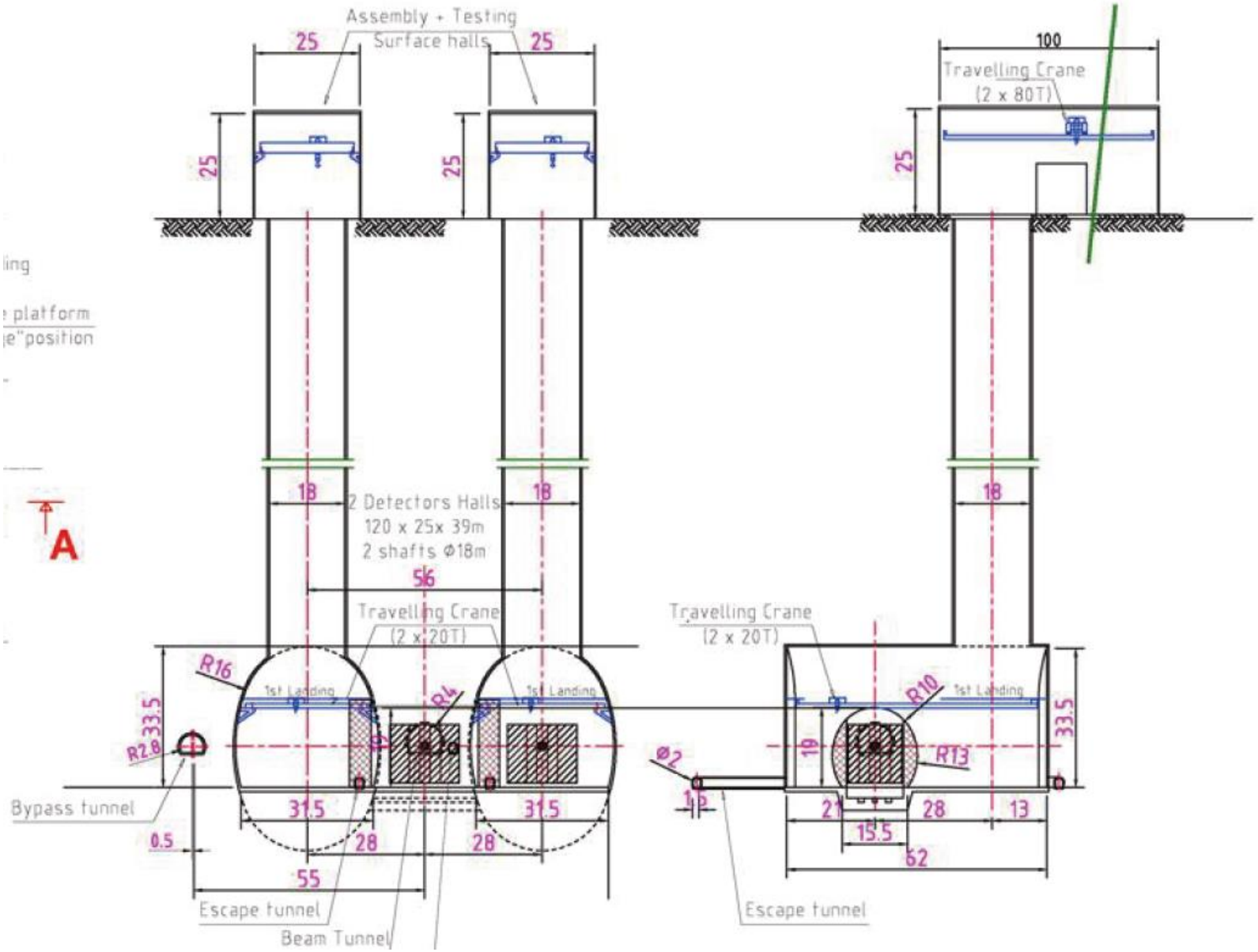


Fig. 6.17: Location and geometry of Main Beam dumps

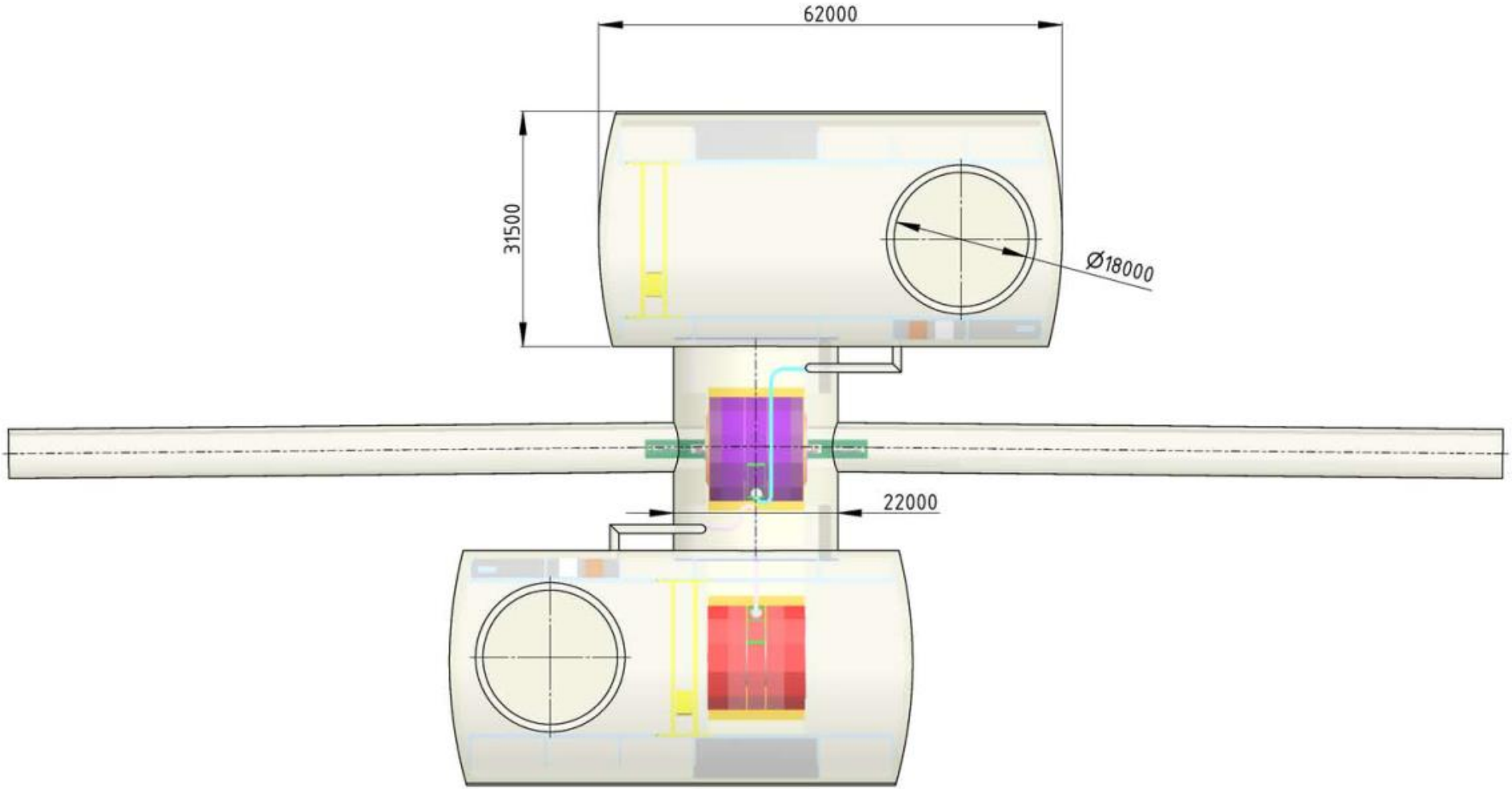
(CDR Volume 1)

Reminder: the “old” layout – for the CDR



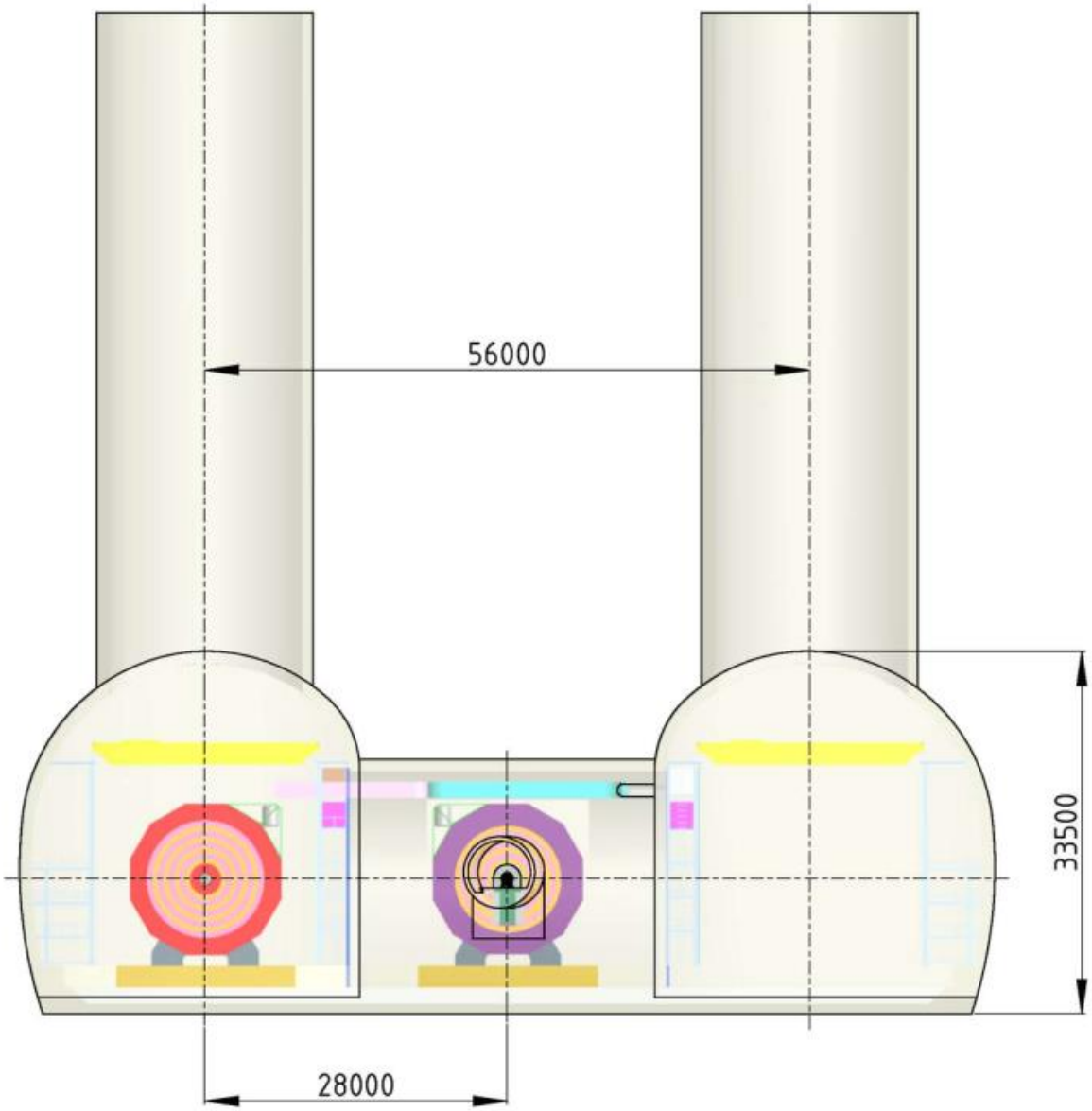
(CDR Volume 1, Fig. 6.19))

Reminder: the “old” layout – for the CDR



(CDR Volume 2, Fig. 11.11)

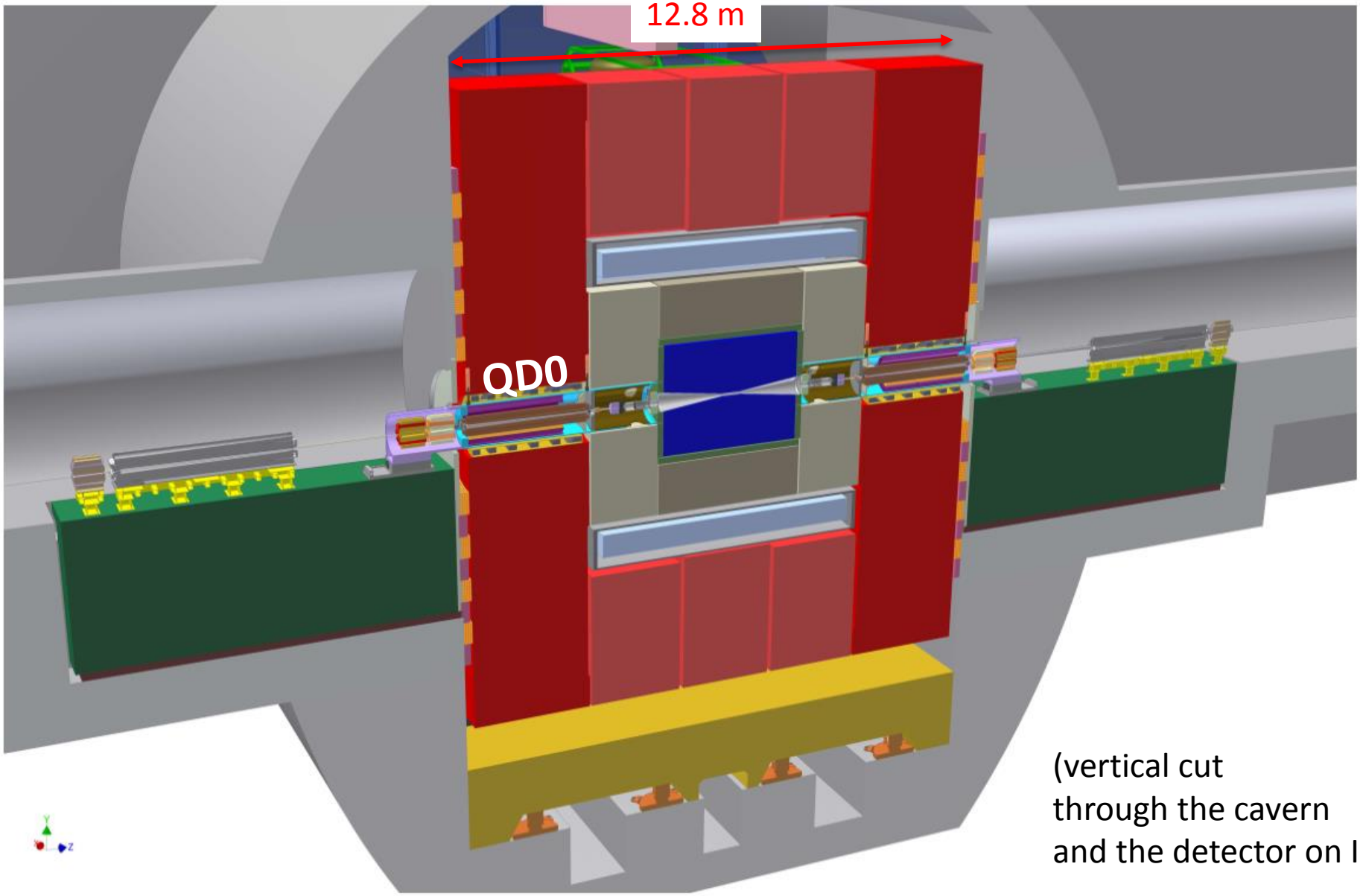
Reminder: the “old” layout – for the CDR



(CDR Volume 2)

Fig. 11.12: Side view with dimensions.

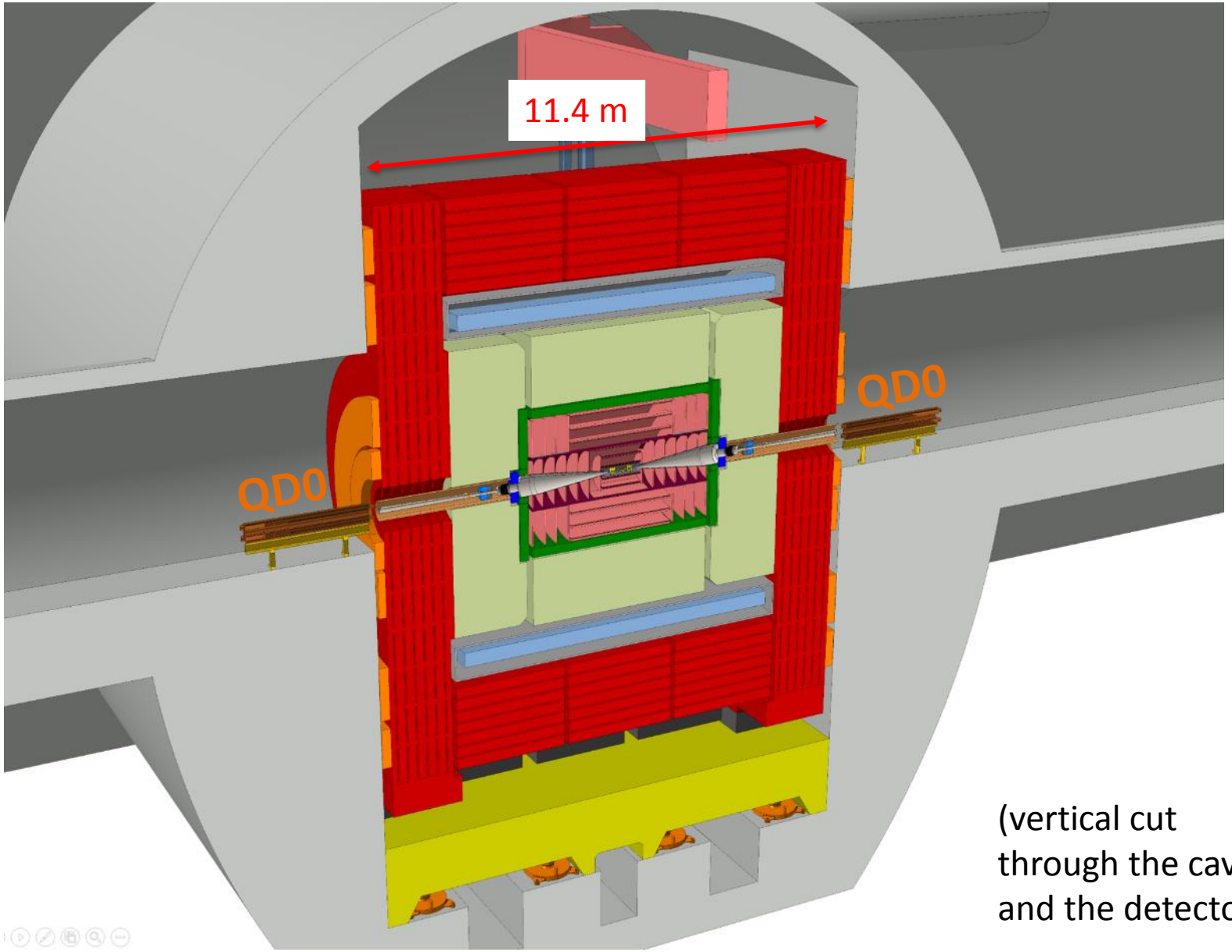
Reminder: the “old” layout – for the CDR



(vertical cut
through the cavern
and the detector on IP)

(CDR Volume 2, Fig. 11.9)

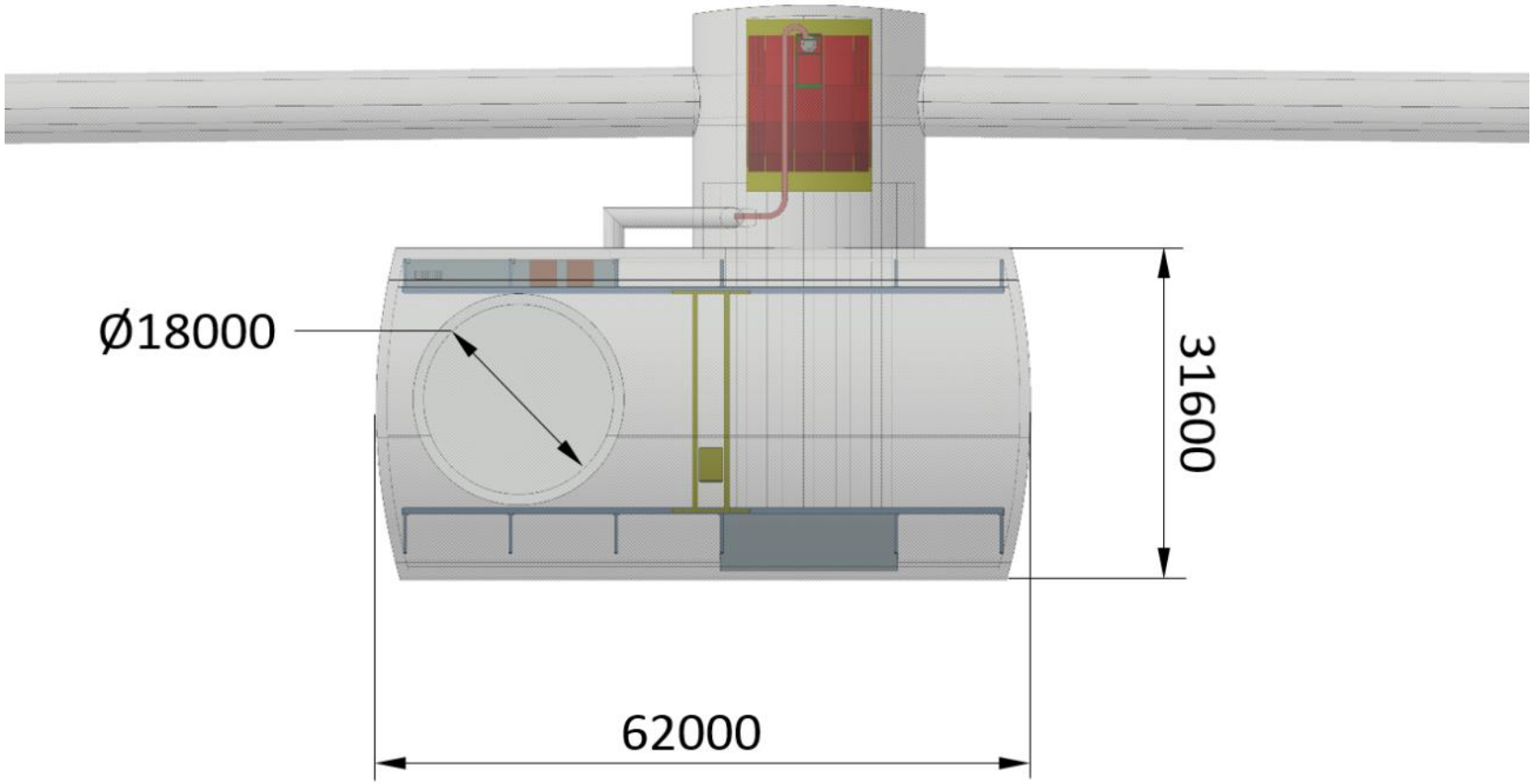
“Working Hypothesis”: QD0 outside of detector



(vertical cut
through the cavern
and the detector on IP)

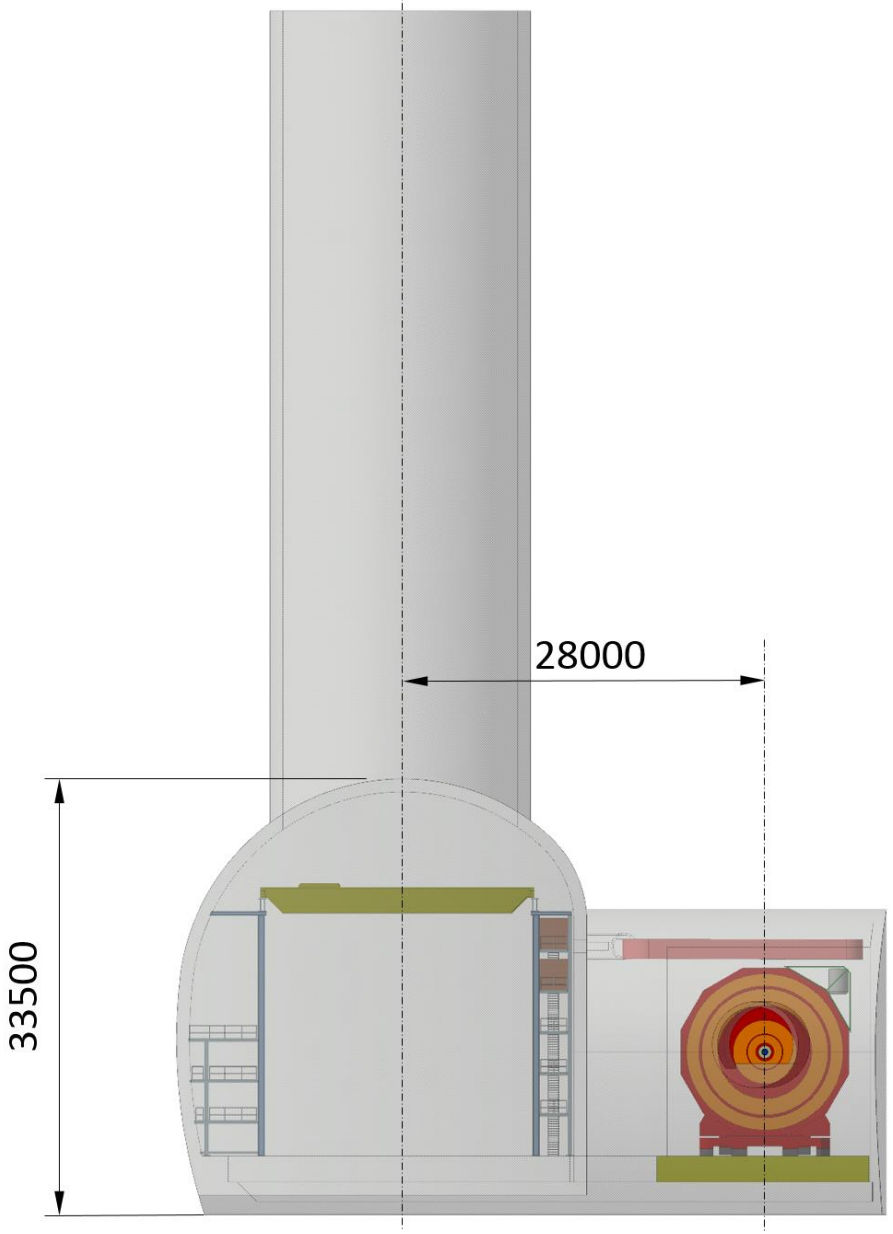
New (simplified) CE layout

(Top View of Expt. Area – dimensions in [mm] – CLICdet 2017)

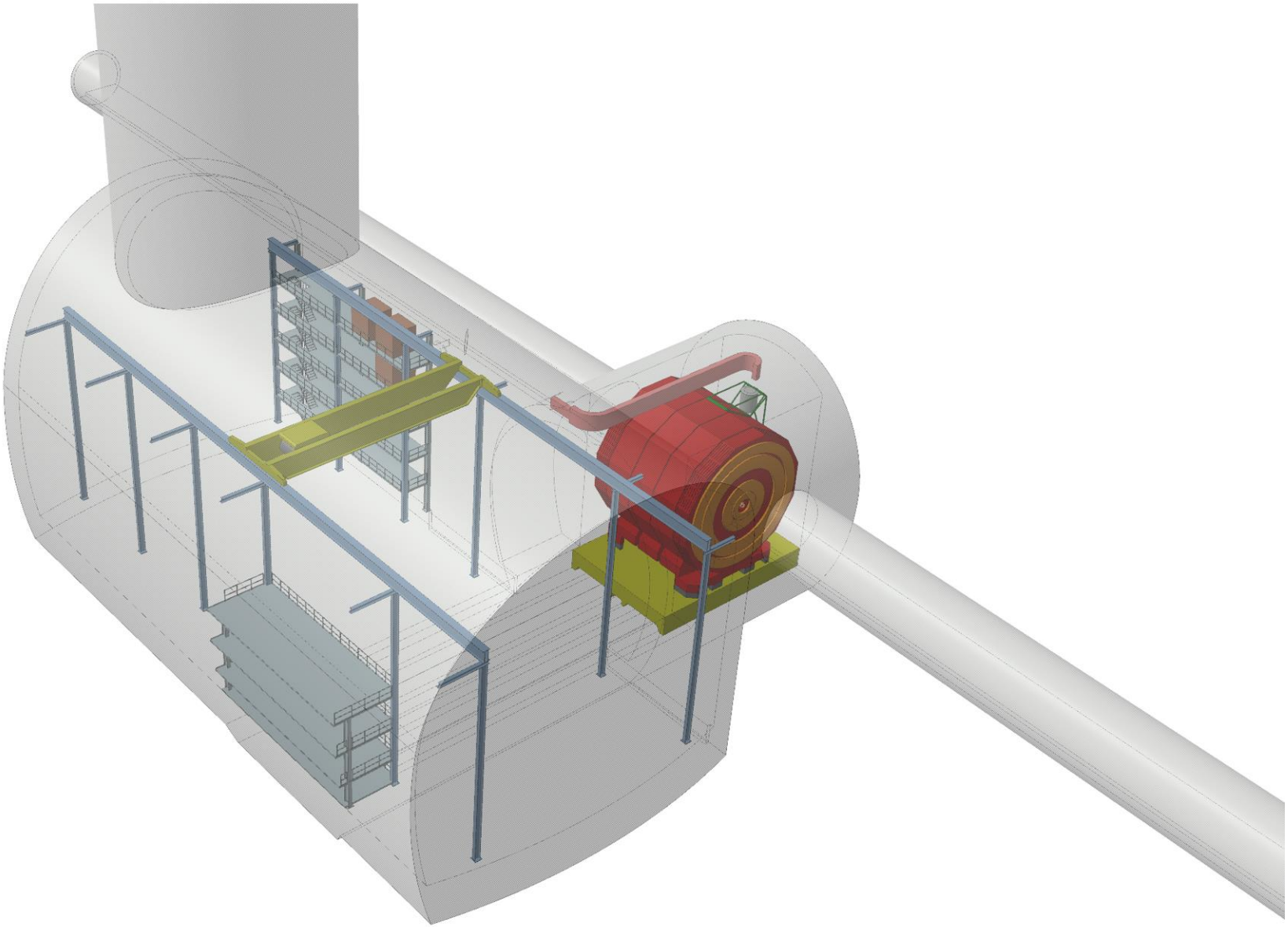


New (simplified) CE layout

(Beam View of Expt. Area – dimensions in [mm] – CLICdet 2017)



New (simplified) CE layout



Summary

- Simplified layout (w.r.t. CDR) – still using the “CMS principles”
- One detector -> one service cavern, one shaft; space needs “as in CDR” (1/2)
- QD0 outside of the detector -> layout as compact as possible
  (to avoid luminosity loss to the extent possible)
- Detector on platform (to move onto / away from IP – maintenance !)
- Platform moves above large trenches (for cables) – as in the CDR
- Combination of fixed + flexible cryo-lines (as in the CDR)

N. Alipour-Tehrani et al., CLICdet: the post-CDR CLIC detector model, http://cds.cern.ch/record/2254048/files/CLICdp-Note-2017-001.pdf

A. Gaddi and D. Dannheim, CLIC detector power requirements, https://cds.cern.ch/record/1602917/files/LCD-Note-2013-011.pdf

THANK YOU

back-up

Quarter view of the two CDR detectors

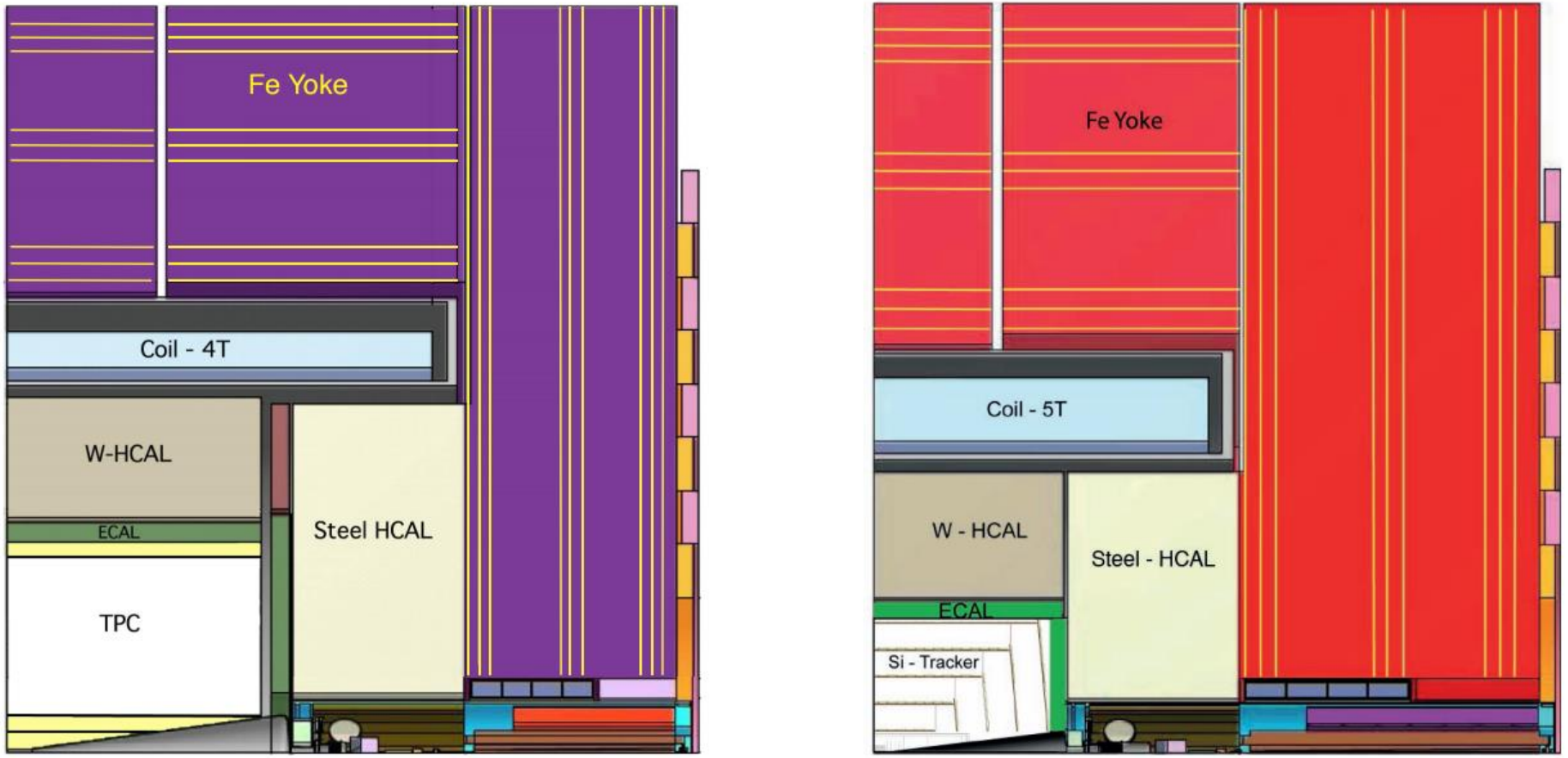
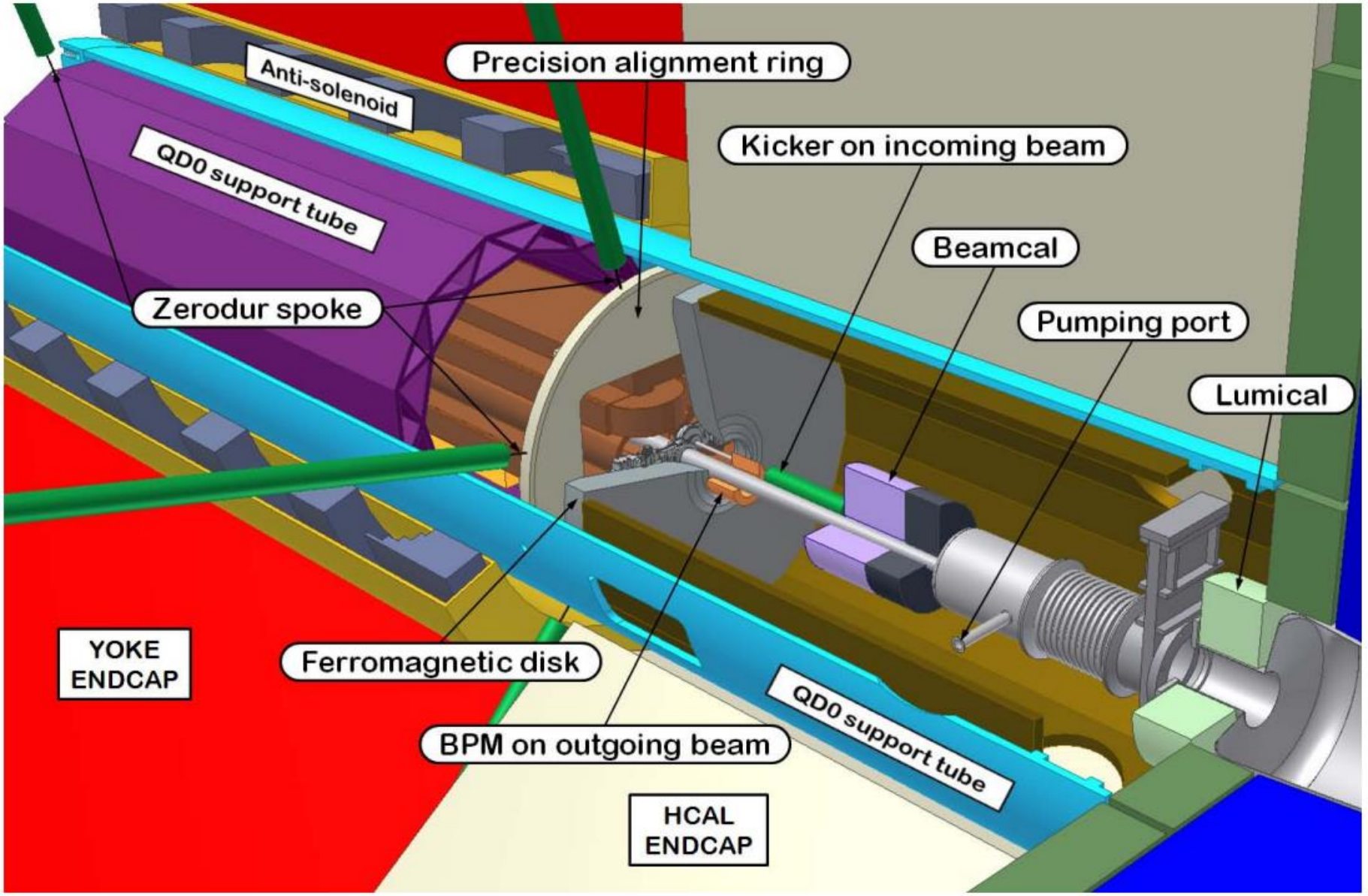
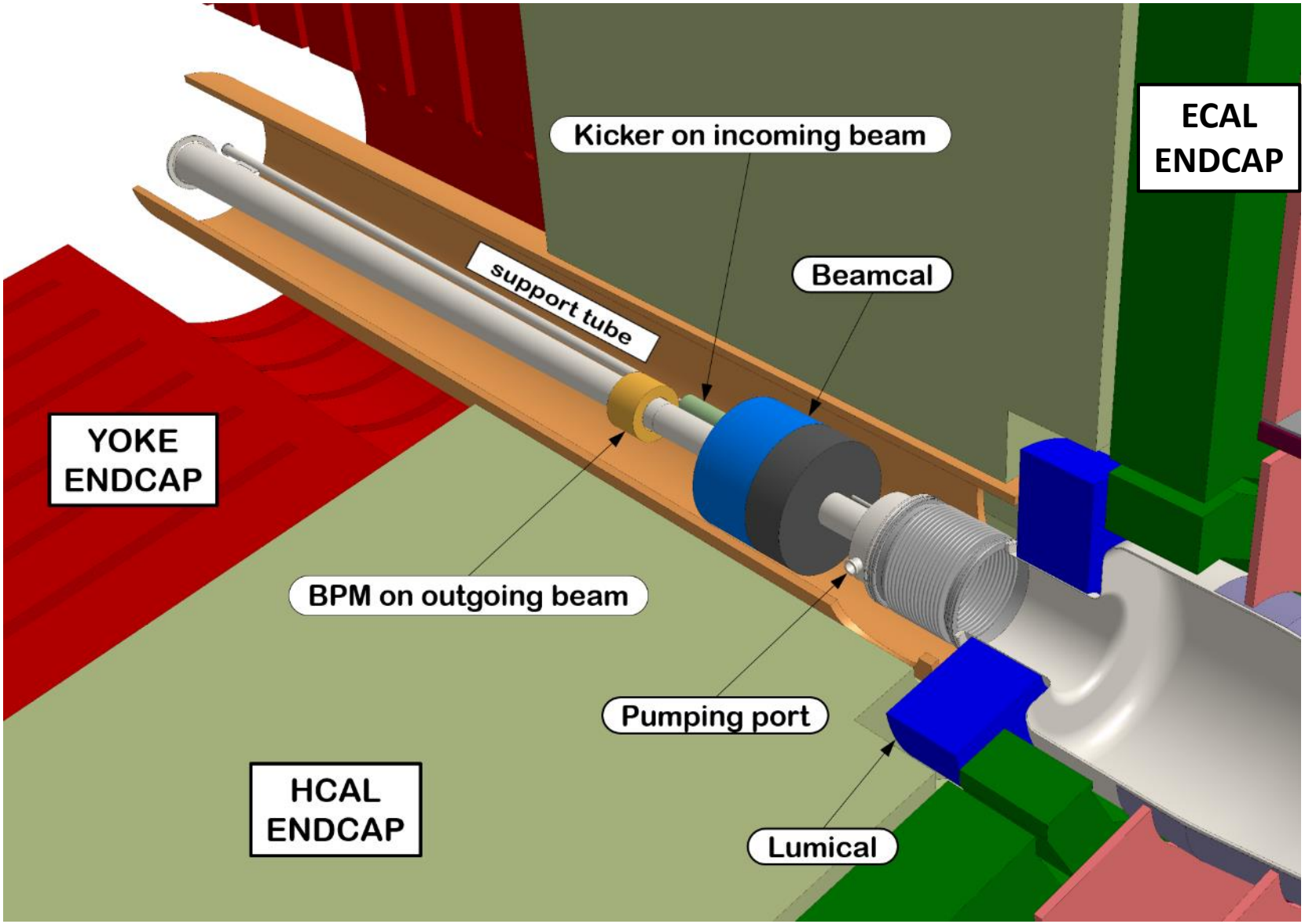


Fig. 3.1: Longitudinal cross section of the top quadrant of CLIC_ILD (left) and CLIC_SiD (right).

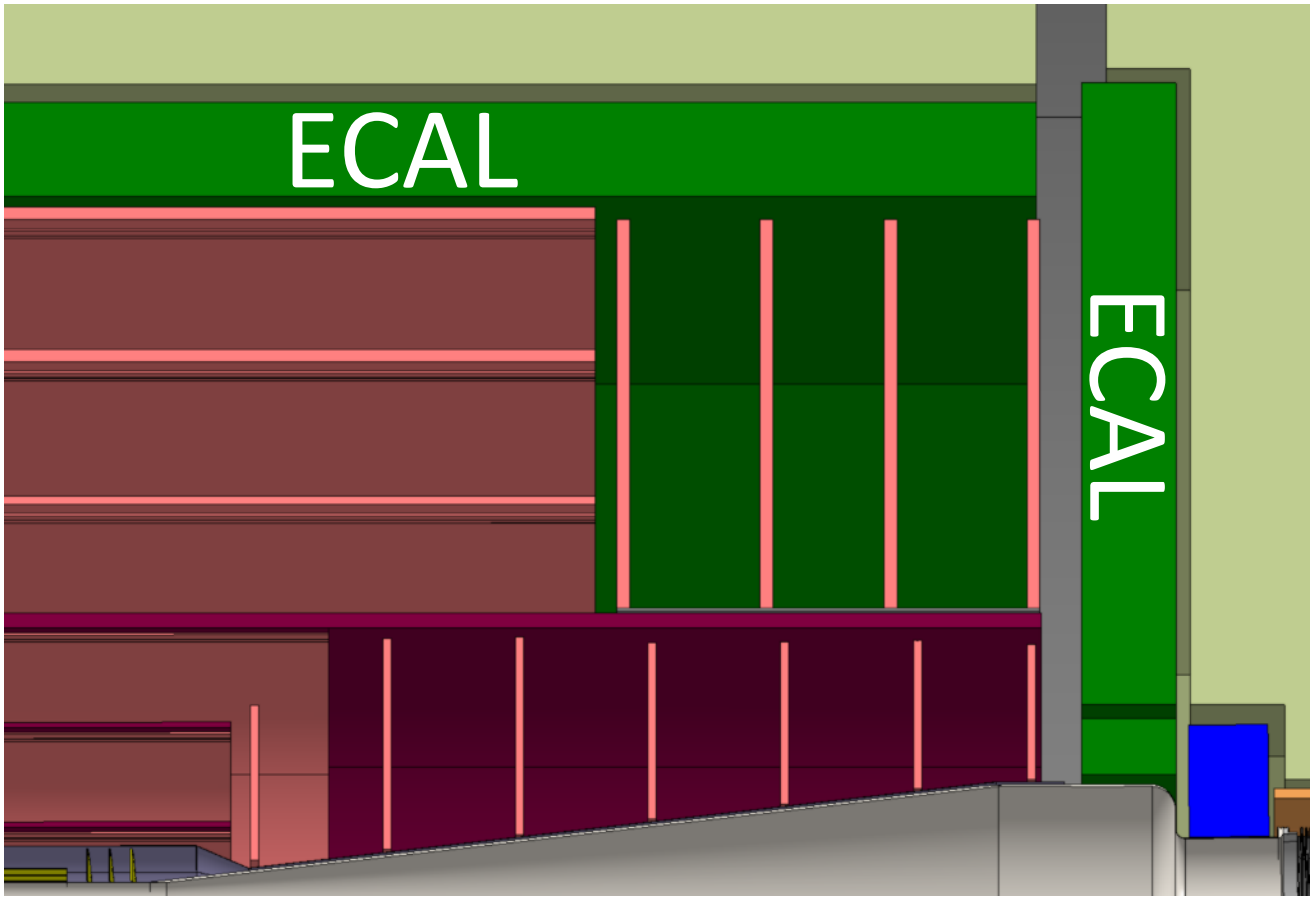
OLD layout of the forward region (CDR)



layout of the forward region in CLICdet - 2017



latest developments: ECAL layout



CLICdet ECAL:

Silicon-Tungsten

40 layers

22 X_o

N.B.: maybe this is not the ECAL we would build