

ELBEX news

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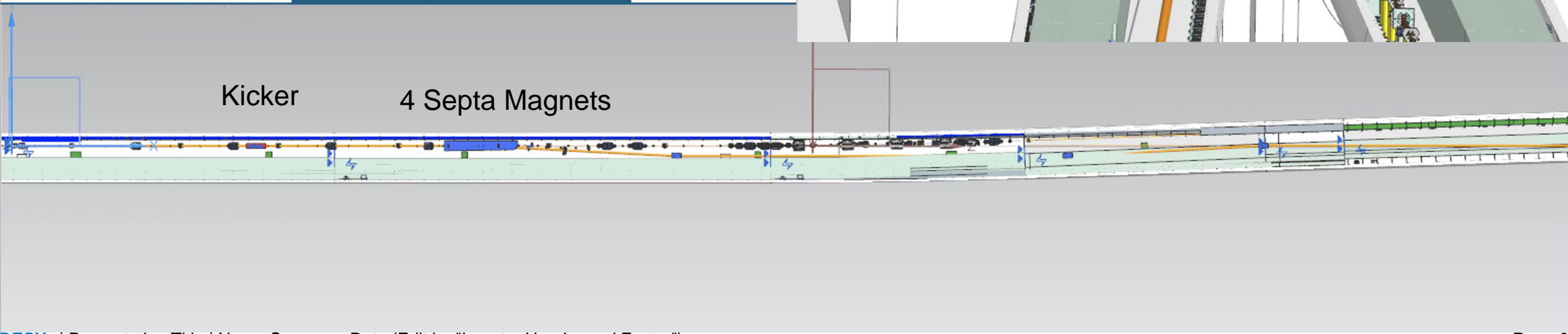
LUXE steering board meeting
30.04.2025

General news

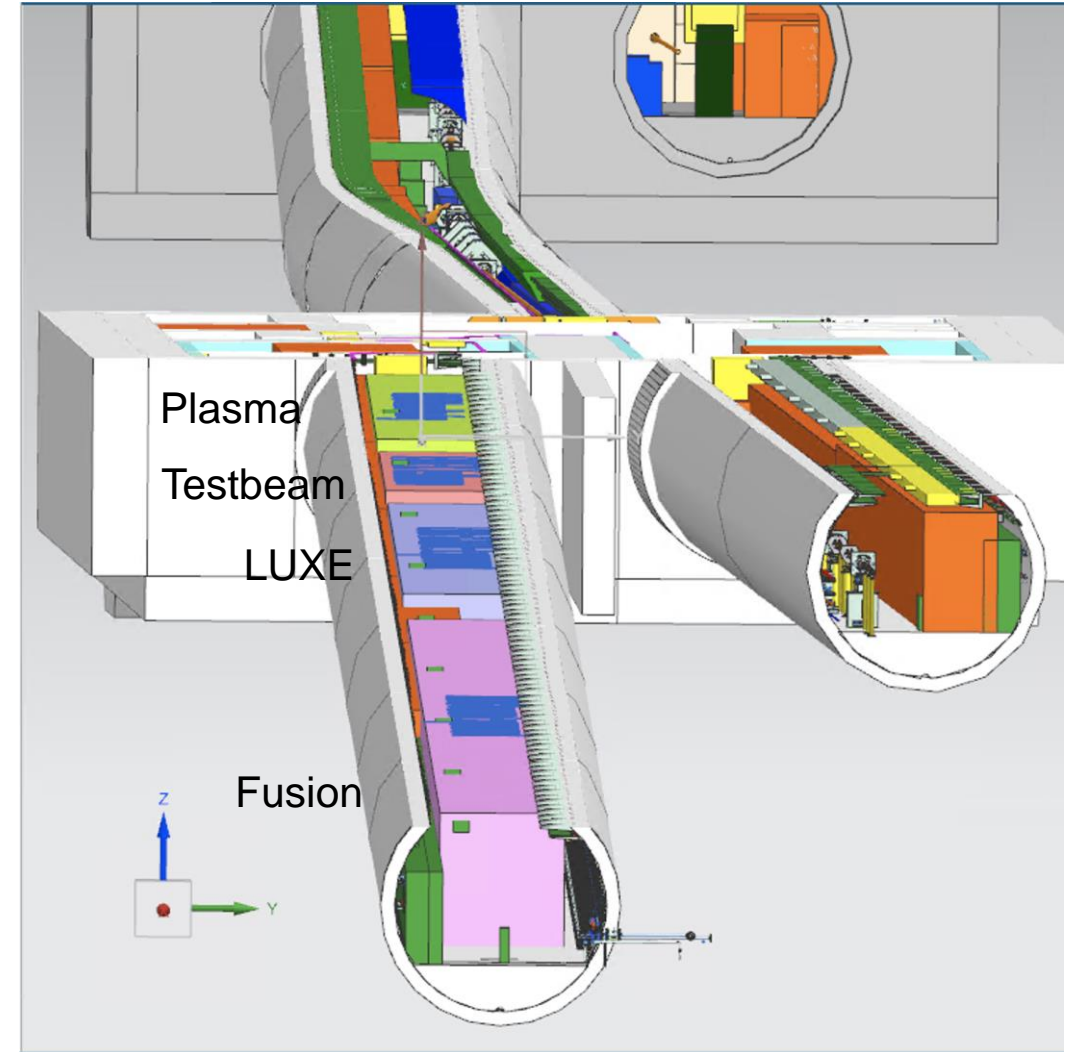
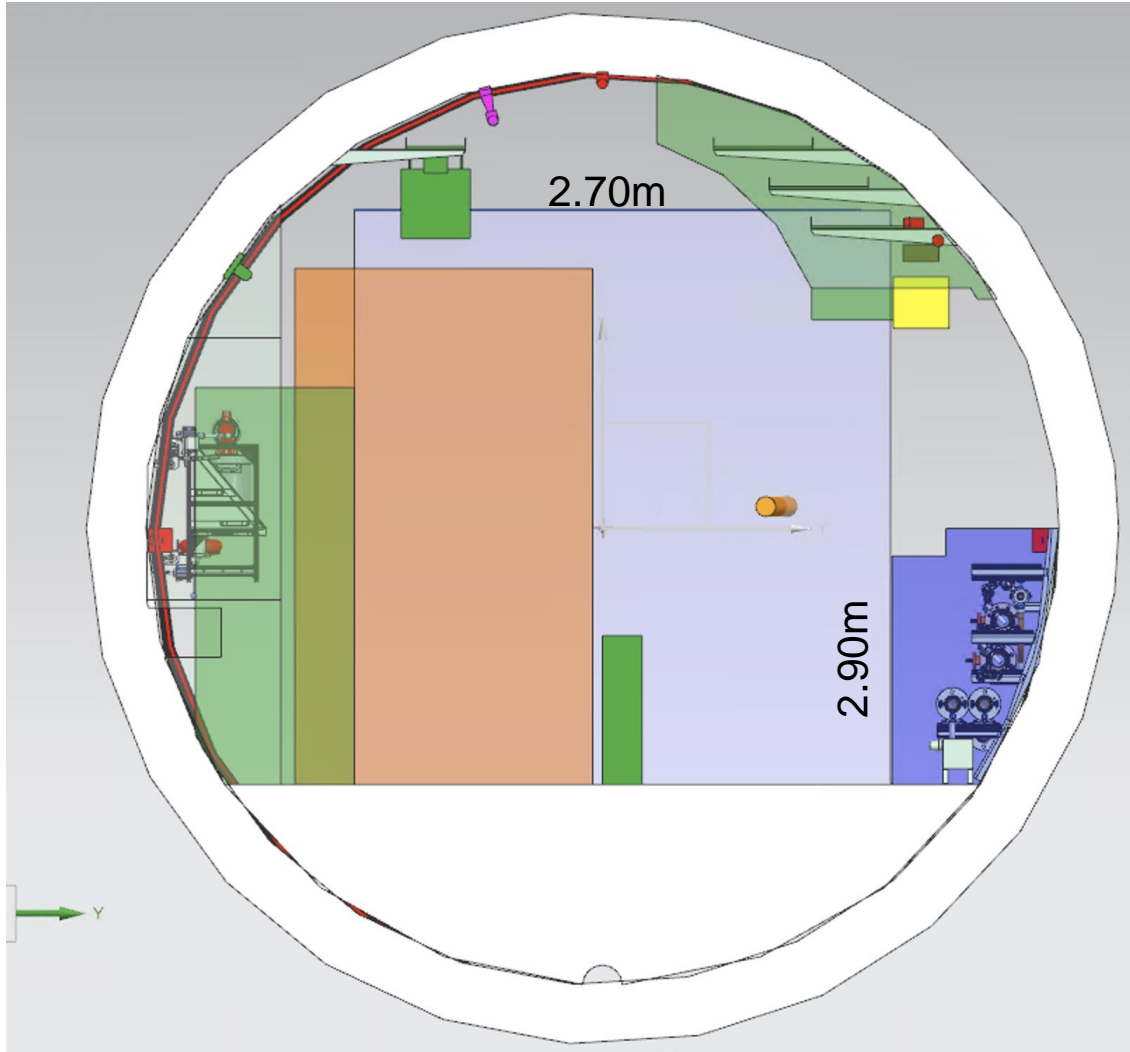
- Work ongoing on first concept of XTD8 usage (next meeting with EuXFEL: May 12th)
- Plasma discussion M. Wing, A. Maier, J. Wood: Scientific interest particularly in beam driven plasma acceleration („From photon science to particle physics“, staging, high-energy effects)
→ start work on space usage concept
- CAD model of tunnel complex XTD3-XS4-XTD8 available (B. List) and first placeholders for ELBEX users added
- First very rough concept of ELBEX extraction to be added
- Idea is step-by-step refinement of concept

Possible Extraction Chicane

Benno List

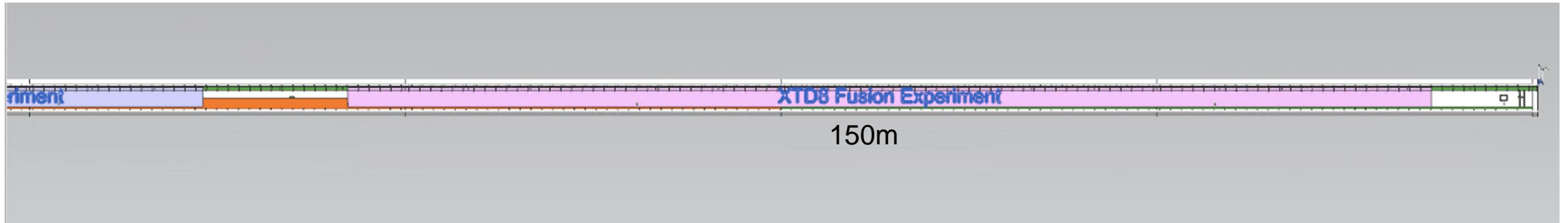
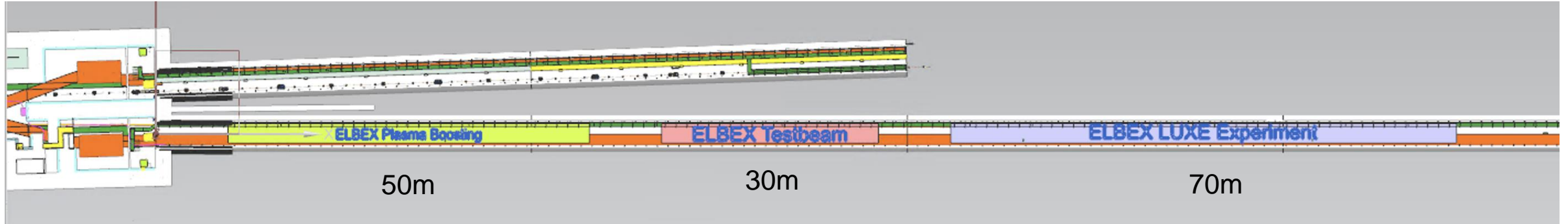


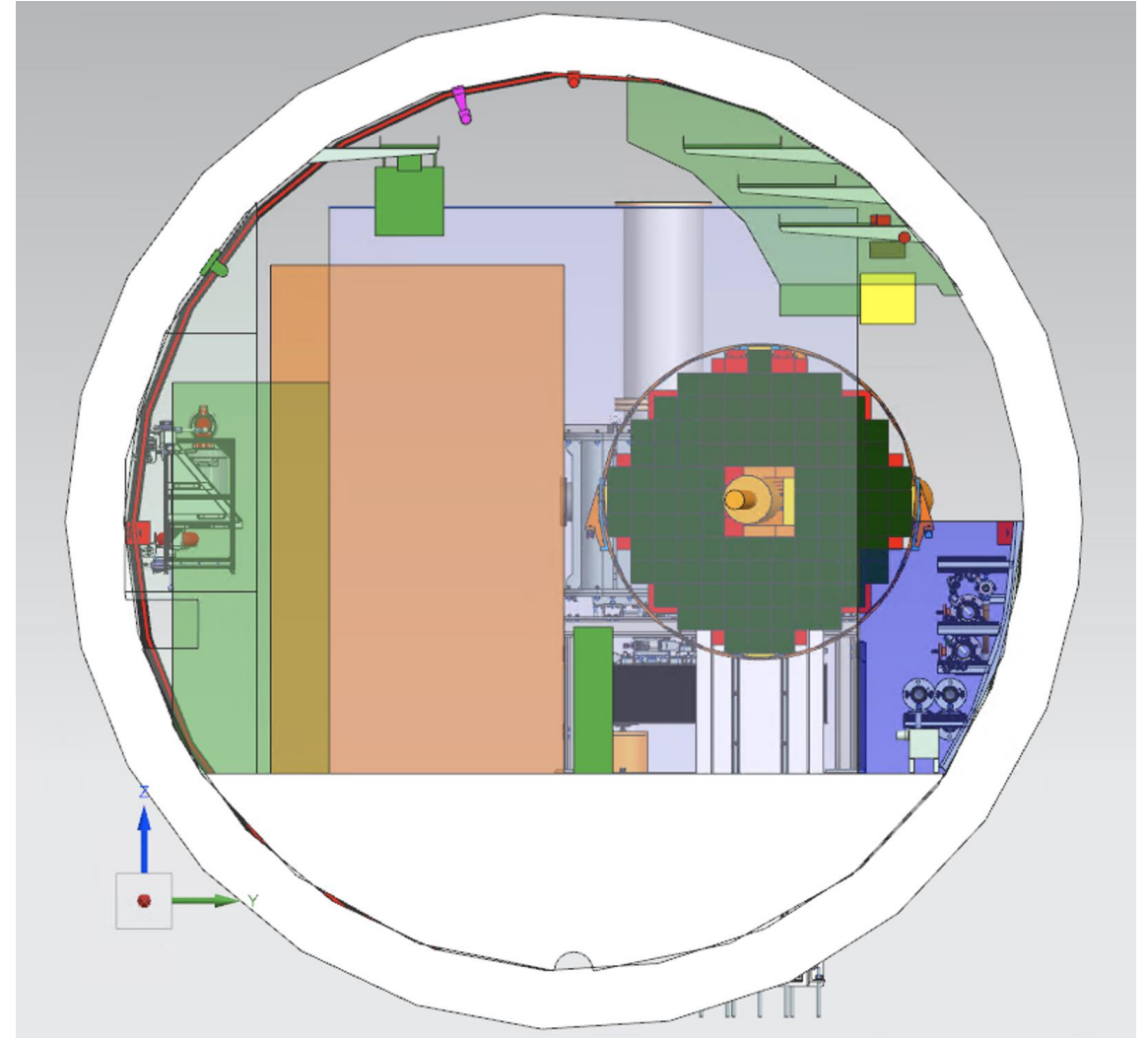
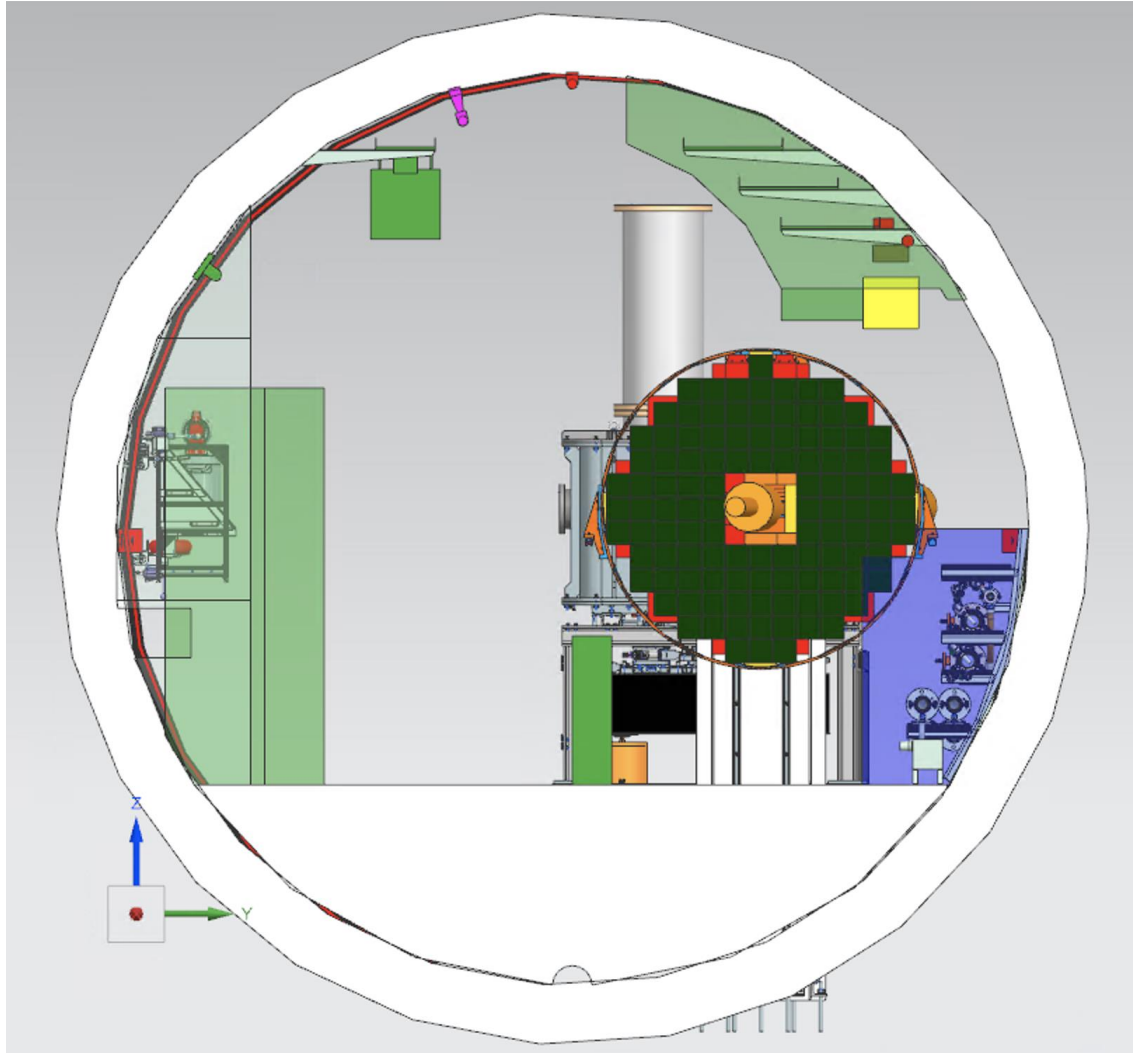
LUXE installation volume in XTD8



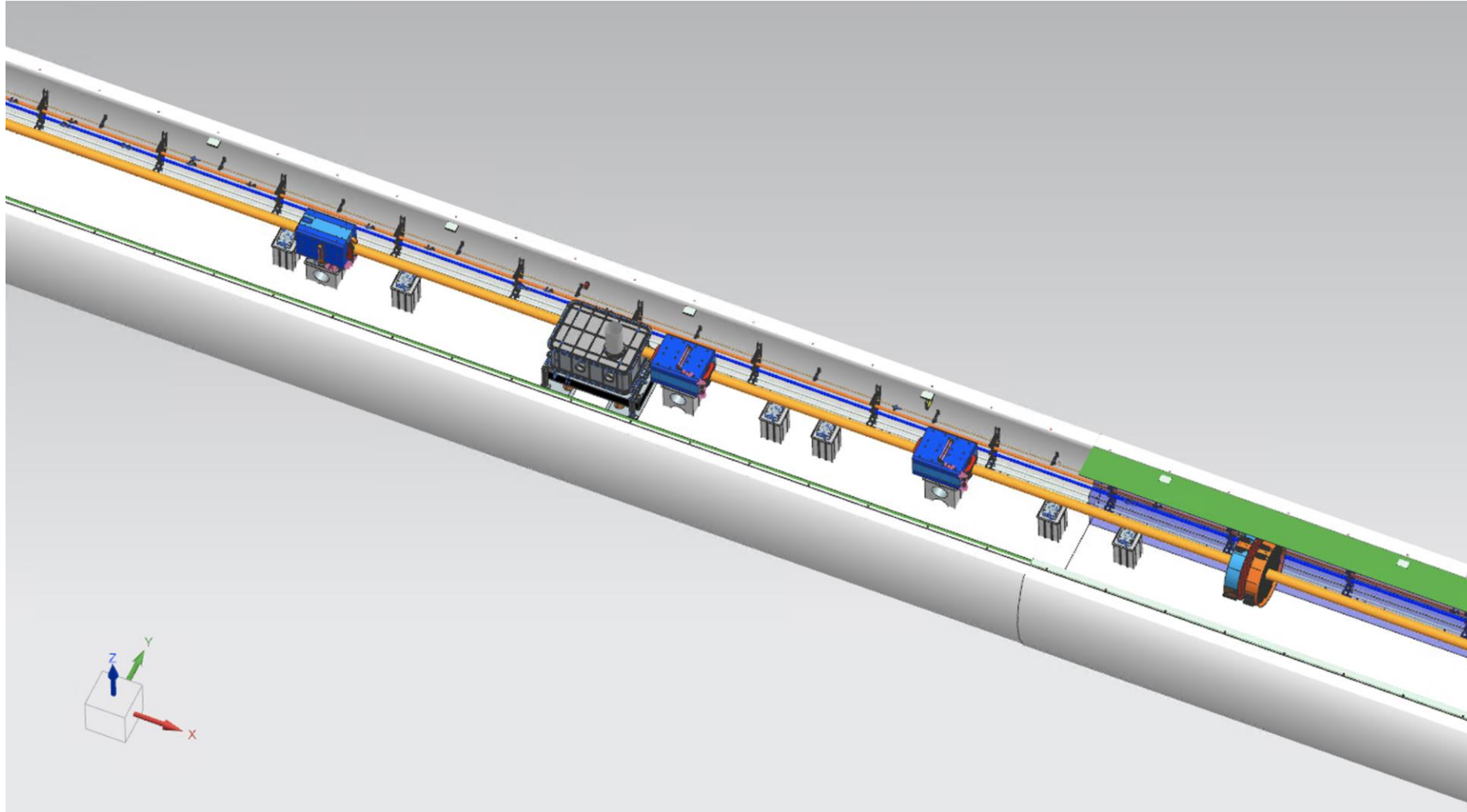
XTD 8 Layout

Benno List





LUXE in XTD8



Things to consider for LUXE

- Adapt LUXE to tunnel geometry:
 - Spectrometers: Could we use weaker dipoles and longer lever arm?
 - Optimize space usage: Make LUXE „long and narrow“ to keep transport paths clear, consider cabling and electronics rack placement
 - Optimize NPOD with more longitudinal space?
- Potential use of (up to) 3PW Laser:
 - Which phase space is interesting to explore?
 - What size of optics would we need, and can we fit a beampipe into the tunnel?
- Dumps:
 - electrons and x-ray photons in common beam pipe: need to (re-)move the final photon dump for x-ray running
 - other ELBEX users could require $O(10)$ bunch at 10Hz
 - additional „facility electron dump“ (before final photon dump, bend e-beam towards tunnel floor), keep LUXE-type initial electron and photon dump
- Keep in mind geometry constraints from existing detectors

Simulation study needed to guide the LUXE adaptation to new geometry