Beam SubGroup Tasks

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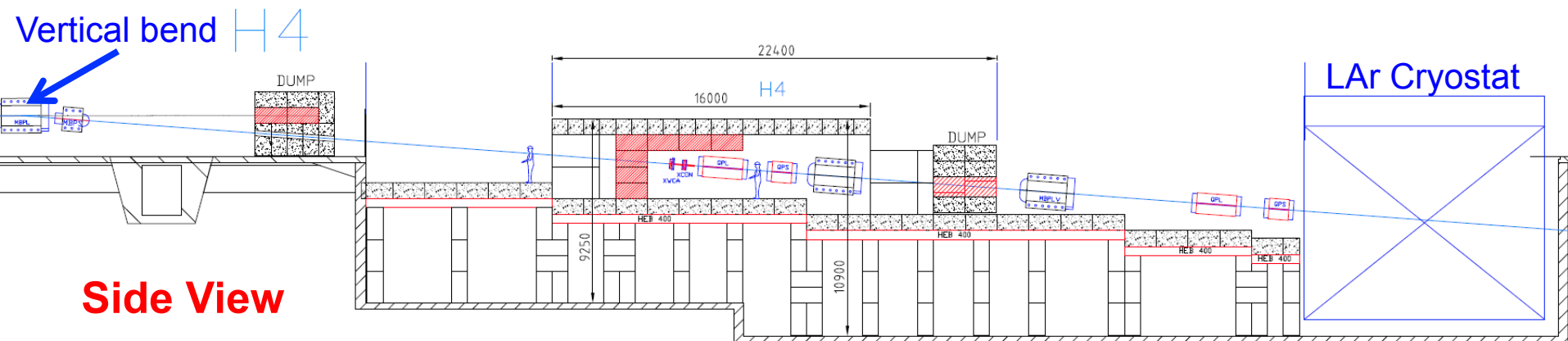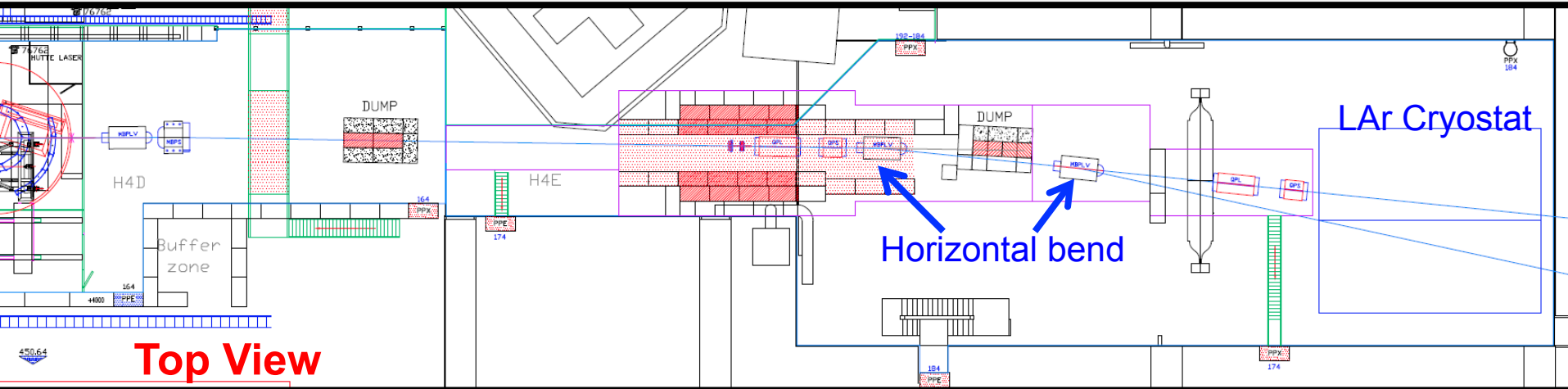
June 12, I2015

Current Efforts

H4 Beamline:
- Ilias Efthymiopoulos. et al., Cheng-Ju, Kam-Biu Luk
- Beamline layout
- Simulation studies
- Mostly driven by CERN

Beam Window:
- Tim Loew, C.-J. L., David M., Kam-Biu Luk, and Herb Steiner
- Conceptual design
- Define requirements

Preliminary H4ext Beam Line Layout

Top View

Horizontal bend

LAr Cryostat

Vertical bend

Side View

LAr Cryostat

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Beam Window Status

- Multiple modular windows (~20cm in diameter) instead of a single monolithic window. Unused windows will be capped for safety

- Tim has one round of email exchanges with the membrane cryostat vendor (GTT) on his conceptual design

  "This looks nice and your idea smart. As discussed we don't see any issue on wall crossing. The final design will be made during the project. Your concept seems acceptable as first review."

- Baseline design includes three windows

- Collecting design/safety requirements (needs input from CERN)

Beam Windows Locations
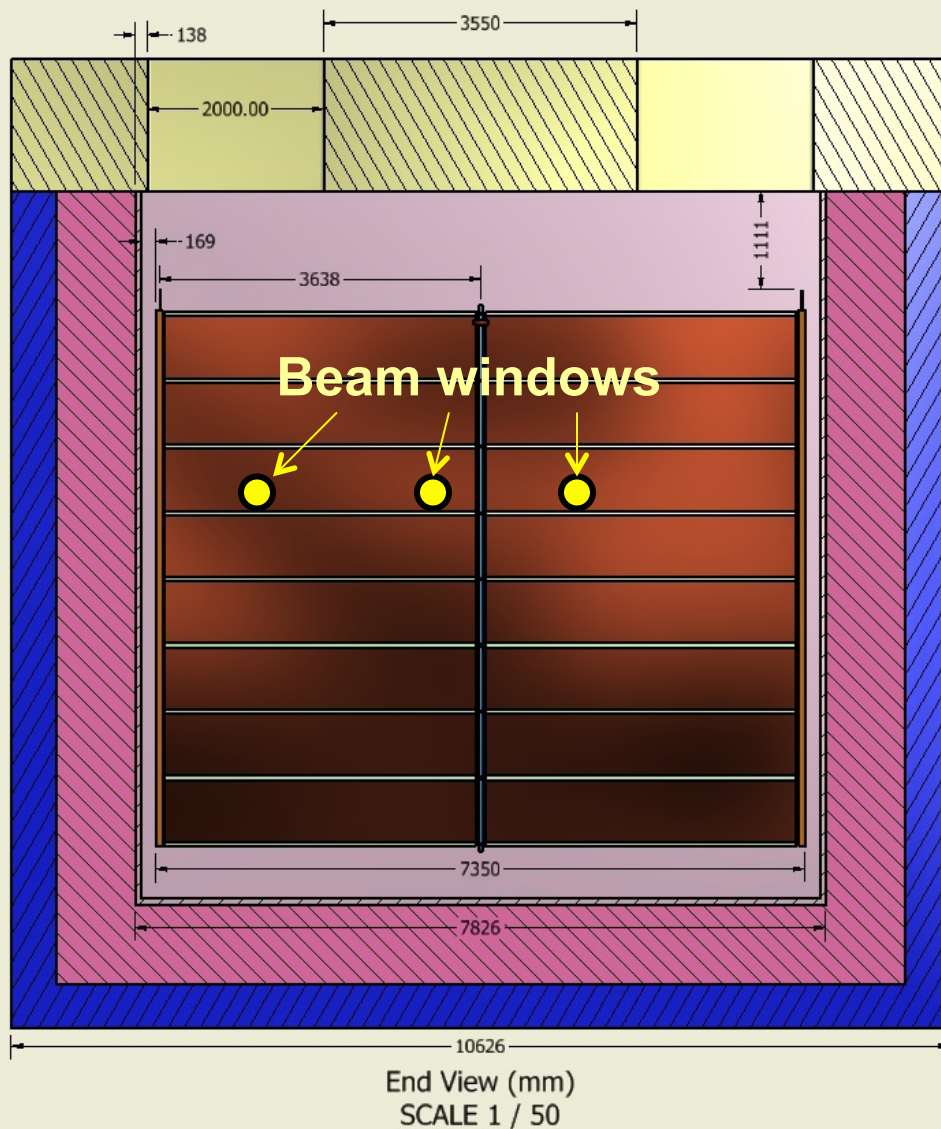
Need to finalize the location of the windows

Do we need more than three windows?

End View (mm)
SCALE 1 / 50

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Milestones for the next 6-9 Months

H4 Beamline:

- Preliminary end-to-end beam line layout (by end of Aug)

- Full simulation to quantify rates and backgrounds (by end of Oct)

- Integrate with cryostat group

- Schedule driven by the CERN group

- Need an additional DUNE physicist based at CERN/Europe to coordinate some of the efforts with CERN

Note: Milestone dates are target dates

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Milestones for the next 6-9 Months

Beam Window:

- Oct 2015 - Preliminary design (Tim Loew)
- Dec 2015 - Final design (Tim Loew)
- Finalize the # of windows to install and locations (Cheng-Ju et al.)
- GEANT4 model of the beam window and beam instrumentations (need a student or postdoc)

Beam Instrumentations (not much activities, could benefit from additional FTEs):

- Oct 2015: Define requirements for position detectors and threshold Cherenkov counters
- Work with CERN instrumentation group on the design
- Beam halo detector (subset of muon detector?)
- Integrate beam monitor data in DAQ