




# LHC Layout P4 Vs P6, Conceptual Designs

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- BGC FUTURE STEPS
- POSSIBLE INTEGRATION IN LSS4
- POSSIBLE INTEGRATION IN LSS6

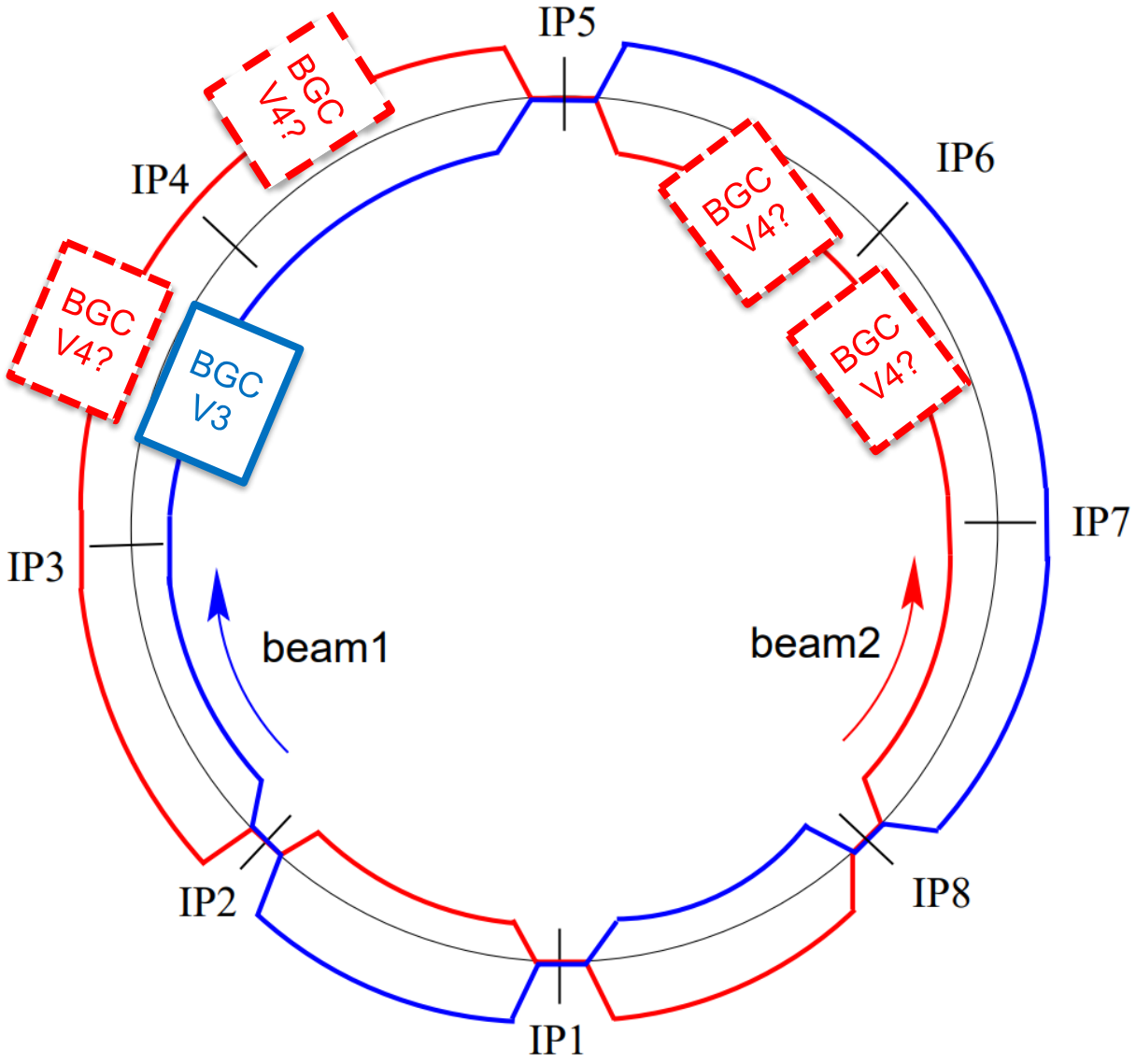
# BGC FUTURE STEPS

Goal:

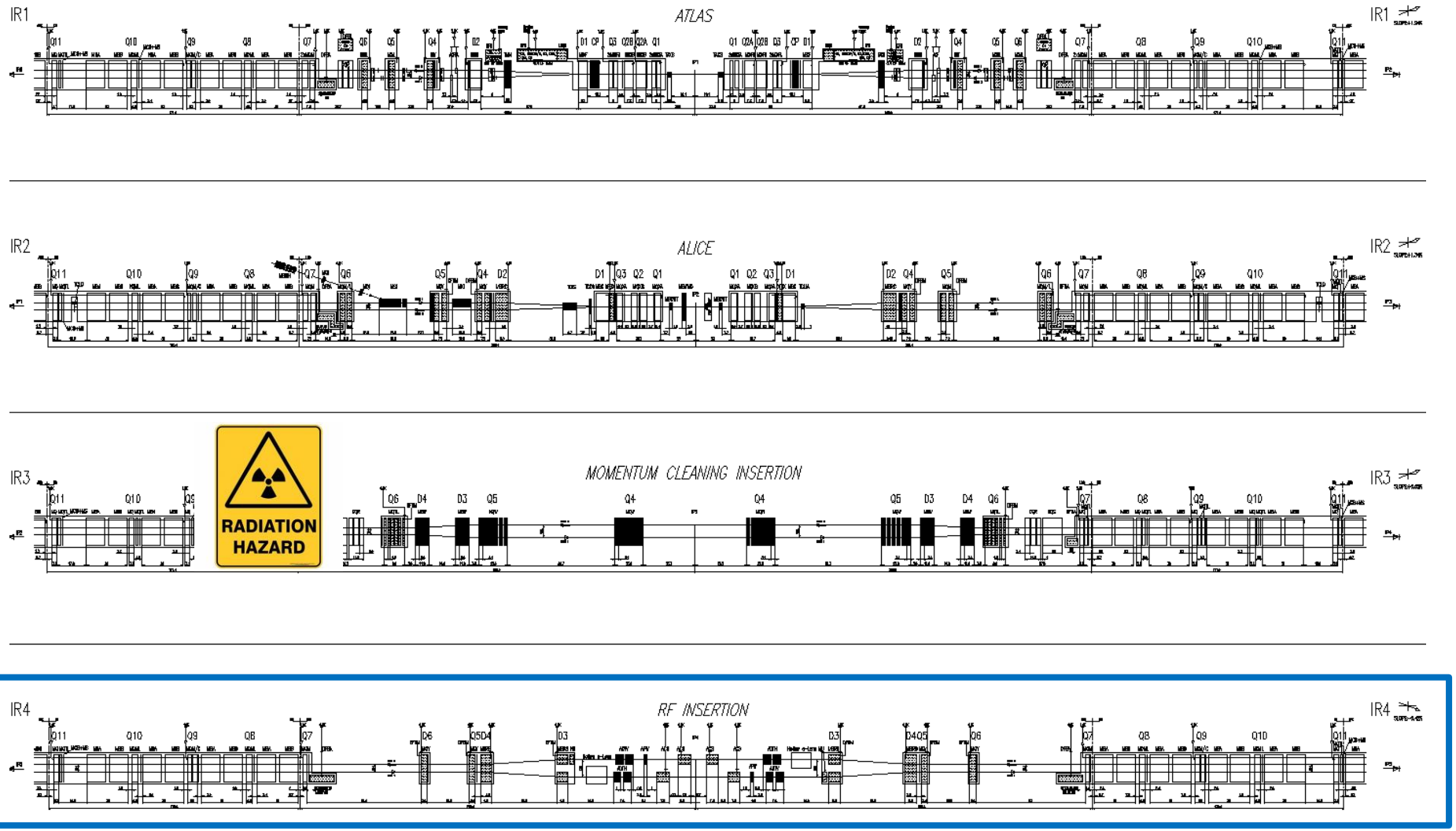
Find a possible location for a second BGC to measure beam2.

Out of all LSSs in LHC only LSS4 & LSS6 are eligible for the feasibility studies.

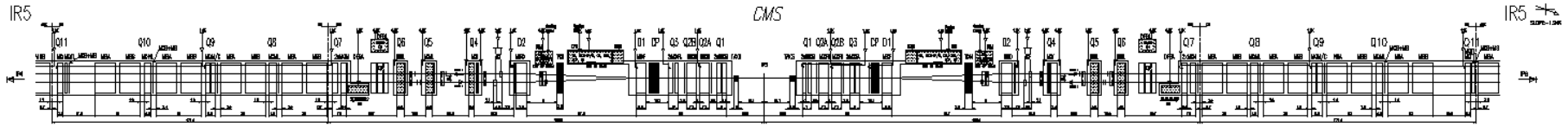
# LHC Long Straight Sections: Beam1 & Beam2

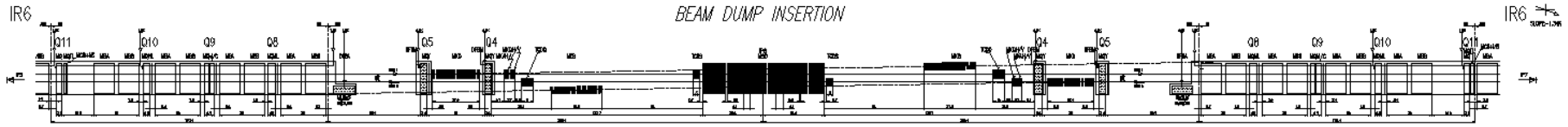


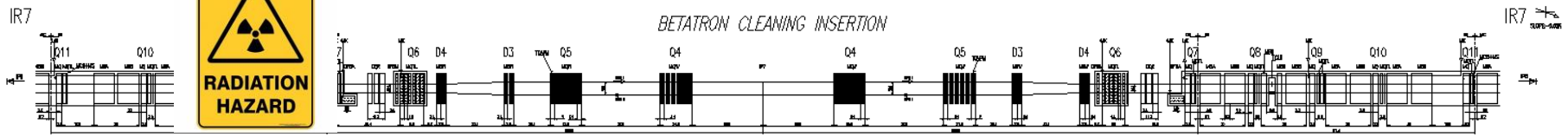
# LHC Long Straight Sections

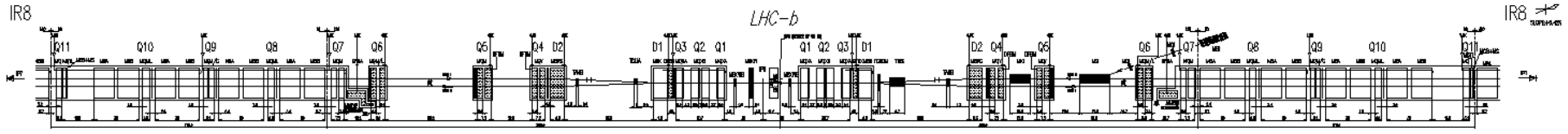


# LHC Long Straight Sections

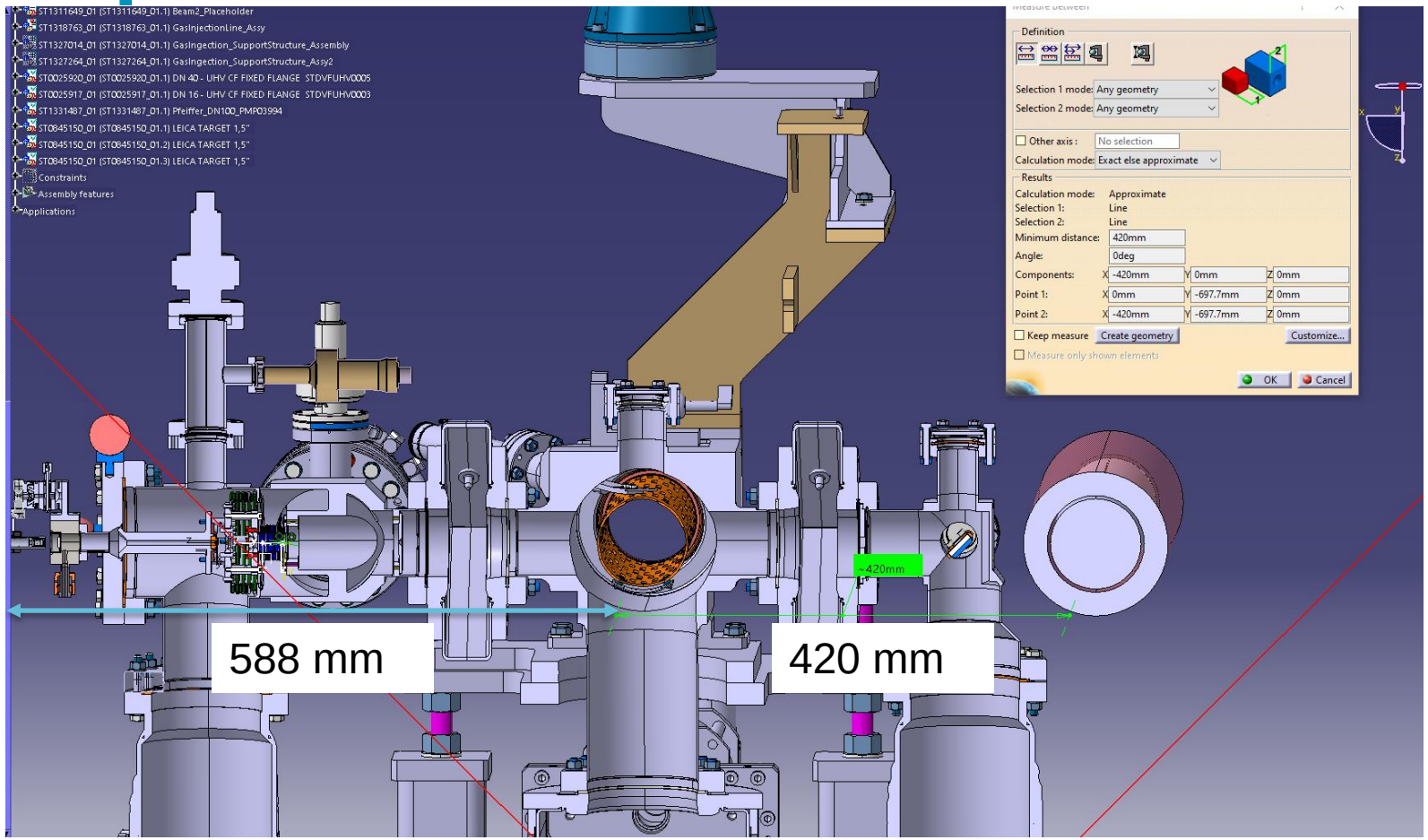


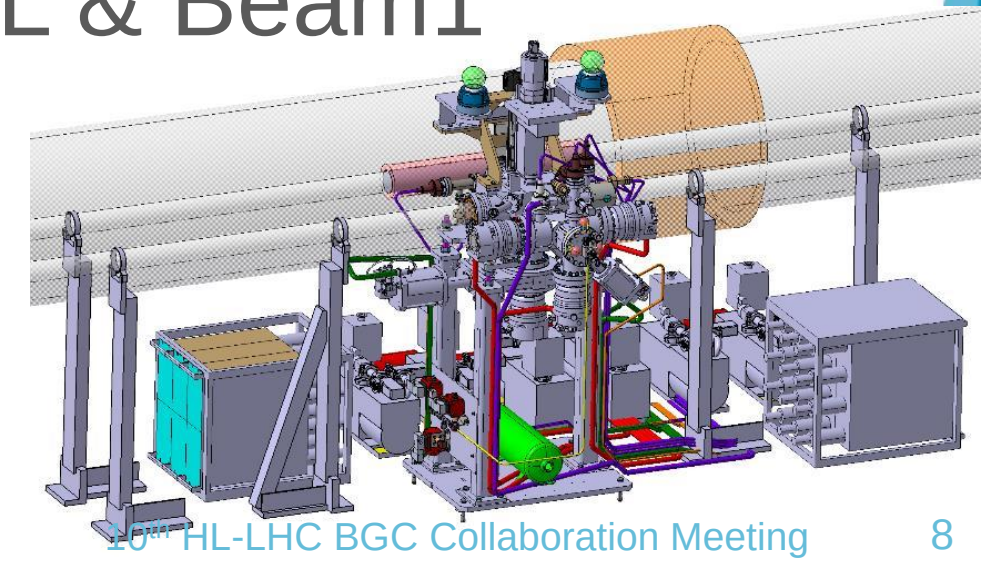
# Space Constraints with BGC V3




| PARAMETER | VALUE |
|---|---|
| Beam height | 1.1m |
| Beam axes inter-distance | 420 mm |
| Transport side envelop | ≈600 mm |

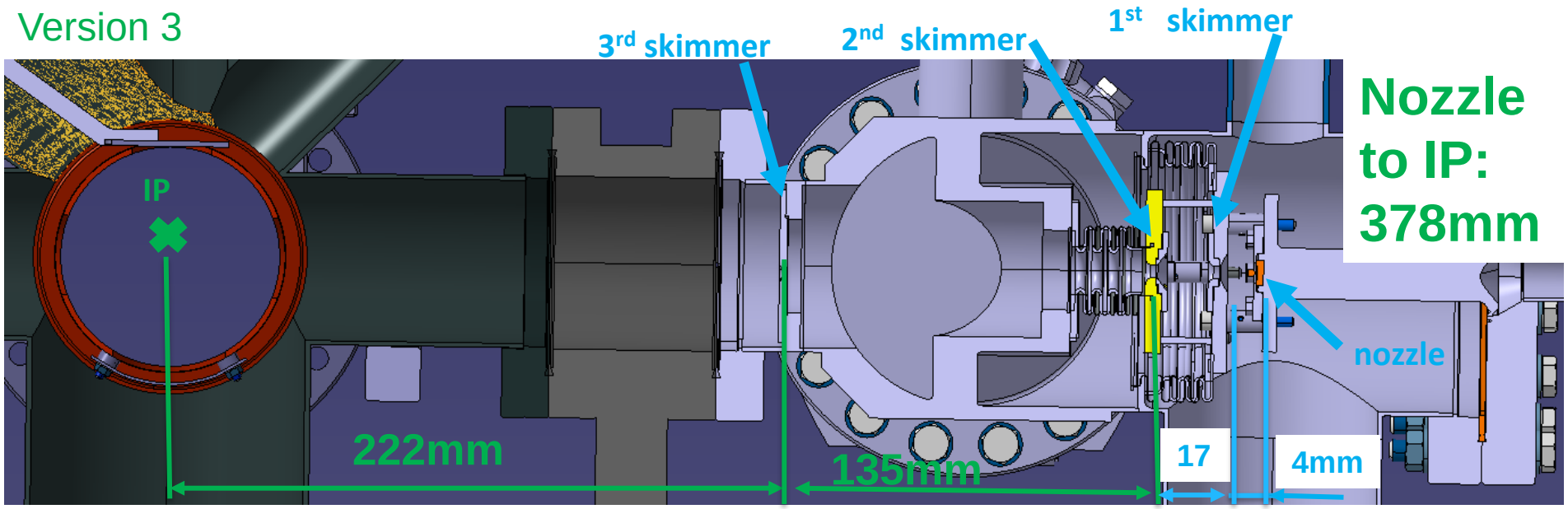
# Space Constraints in LSS4 – beam 2

- Squeeze the nozzle part to fit within 420mm (from the actual ≈600 mm)
- Squeeze the dump part to fit in between Beam2 and the QRL (420mm to 410mm max)
- Difficult access due to the QRL & Beam1



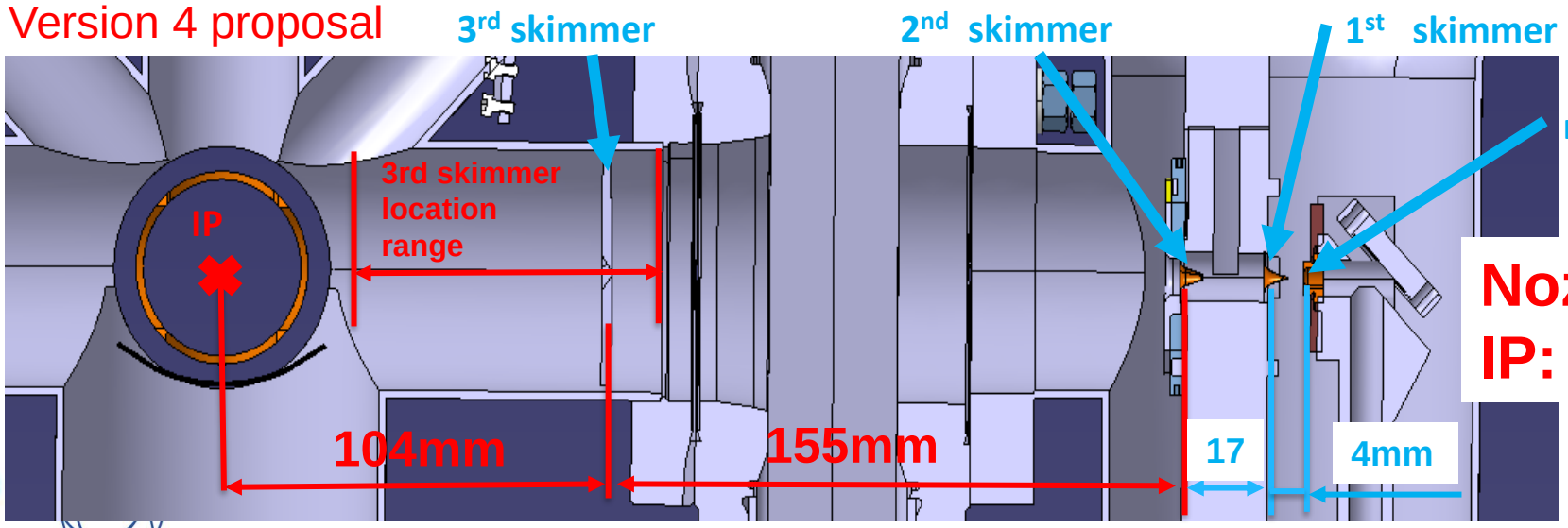
# BGC V3/V4 Space comparison

Version 3




Nozzle to IP: 378mm

Version 4 proposal

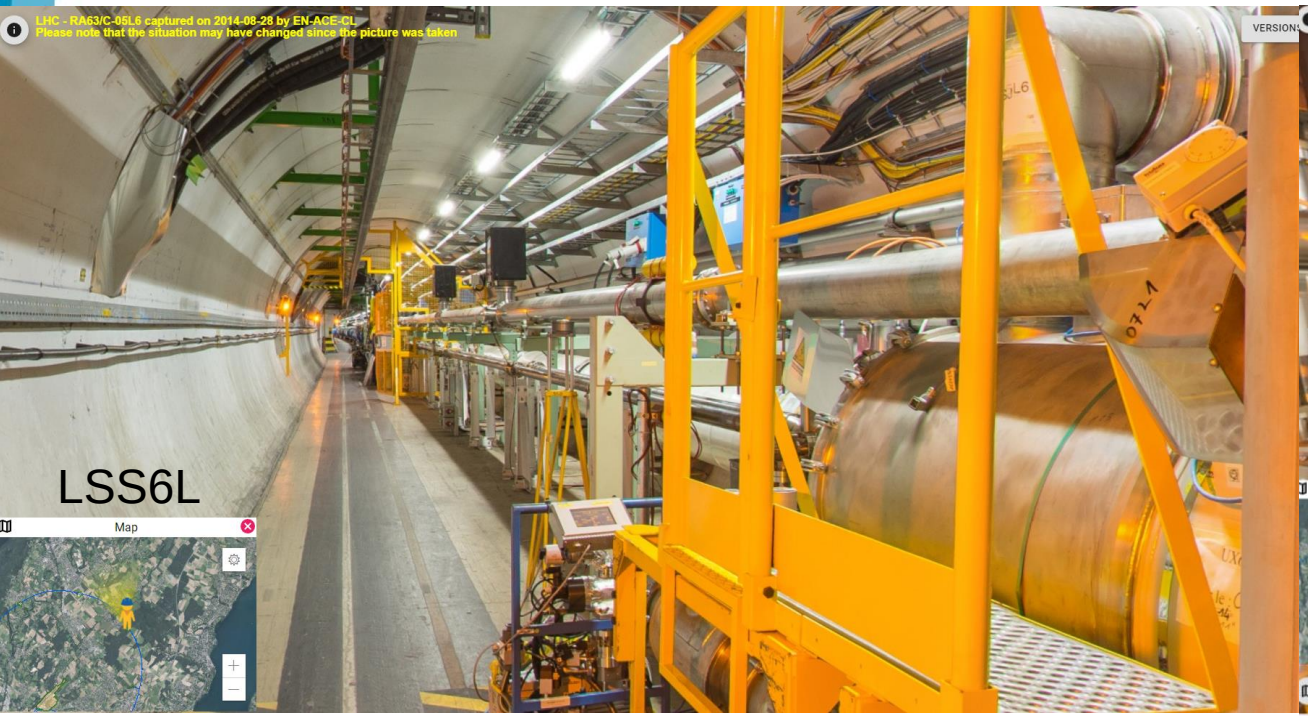


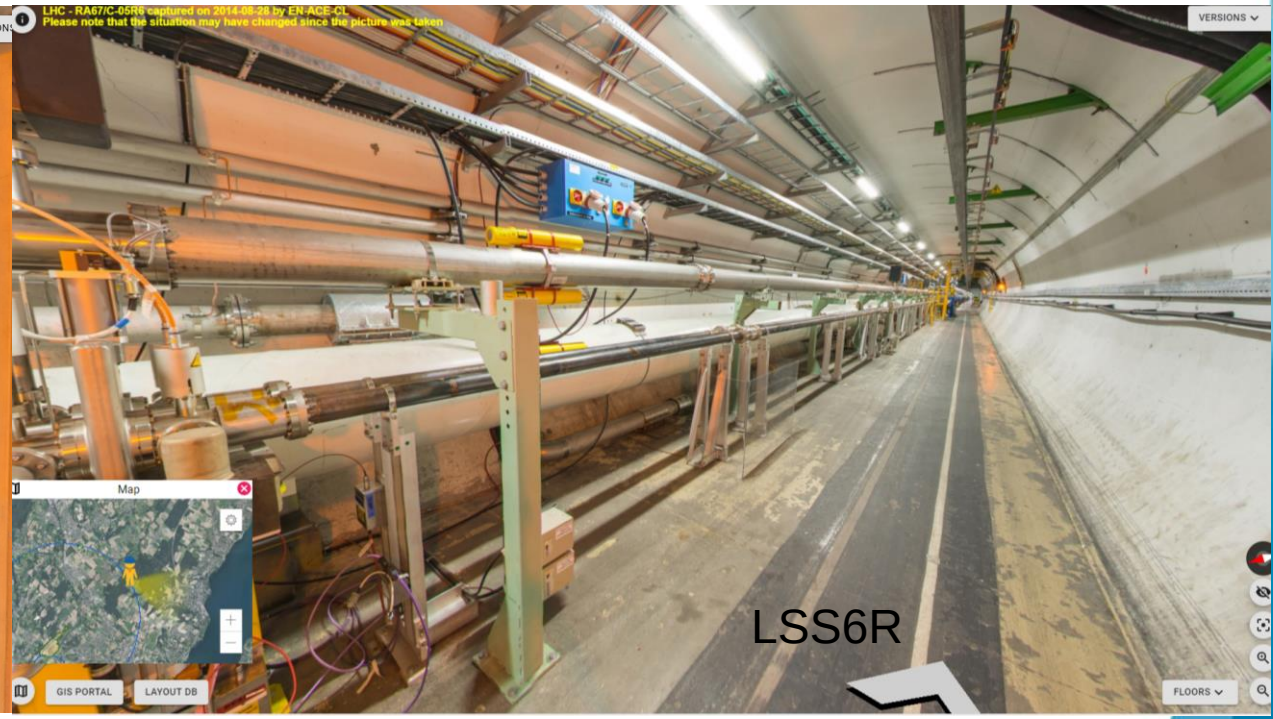

Nozzle to IP: 280mm

Disclaimer : early concept, complete mechanical and vacuum design needed!

# Space Constraints in LSS6

- Let’s a walk down to LSS6…



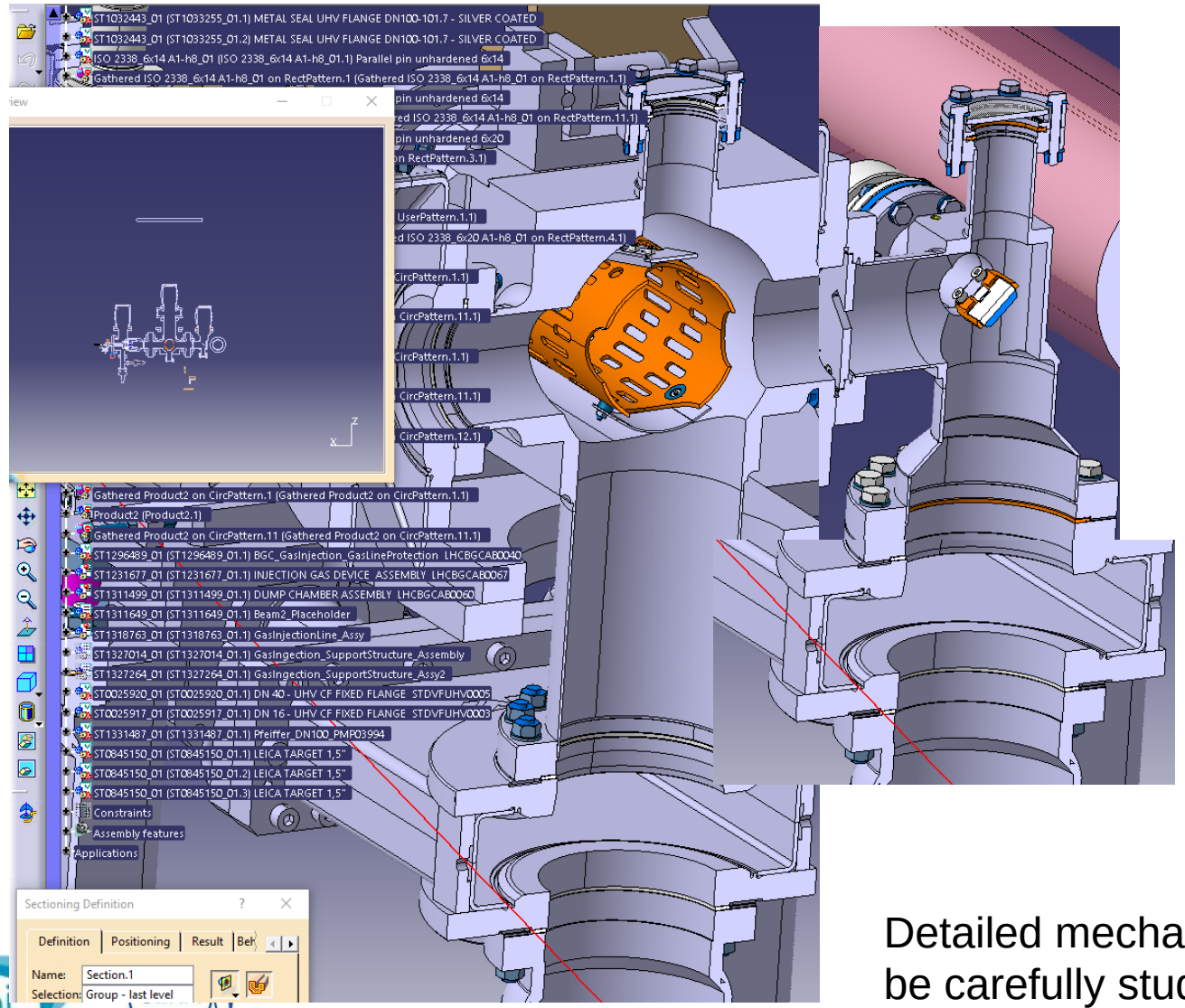



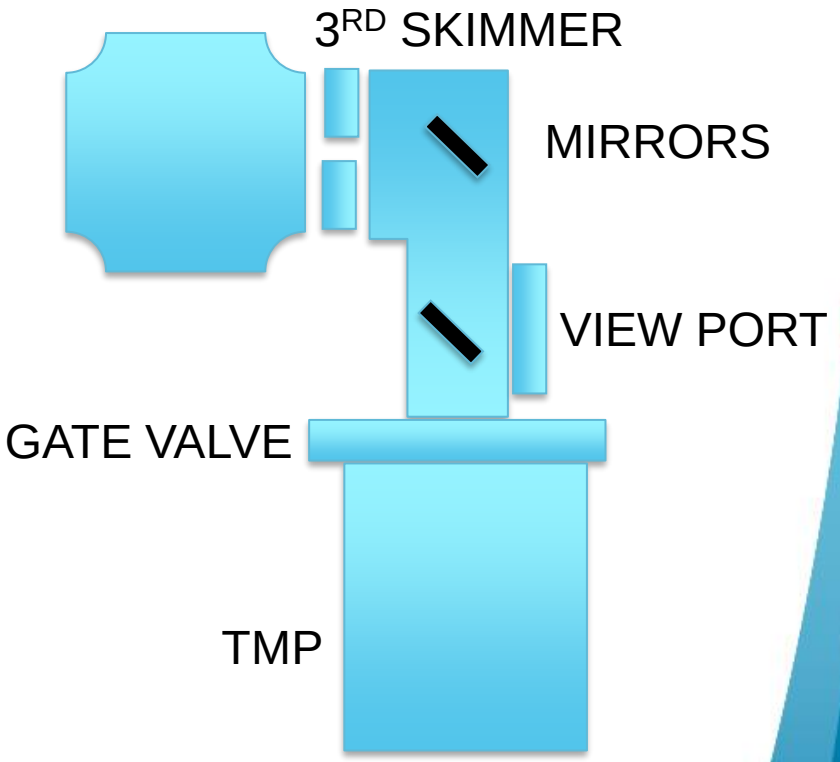

GIS Portal - Machine (cern.ch)

# Space Constraints in LSS6

- Same beam height than LSS4
- Distance Beam1 – Beam2 axes is only 194mm
  → squeeze the dump side from 420 to 194mm.
- No need to work on the injection part (TBC)
- Longitudinal position to be thoughtfully chosen as vertically the dump line will be a constraint

# Space Constraints in LSS6




Detailed mechanical and vacuum engineering to be carefully studied!

# Summary v4

- Integration studies to be performed to find the best solution between LSS4 and LSS6;
- Optimization of the dump part seems more achievable  than optimizing the injection part of the instrument;
- Detailed mechanical and vacuum analysis to be performed.