



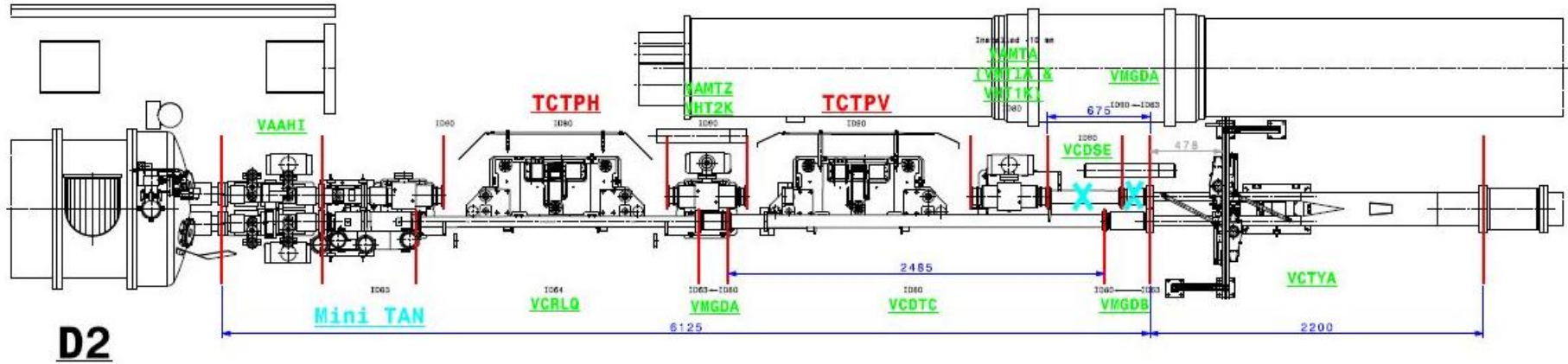
Mask integration at Point 8

HL-LHC integration meeting n50, 29 July 2016

F. Sanchez Galan on behalf of WP8

**Special thanks to P. Santos Diaz, C. Boccard, V. Baglin,
F. Cerutti & C. Adorisio**

ACTUAL LAYOUT



P. Santos Diaz

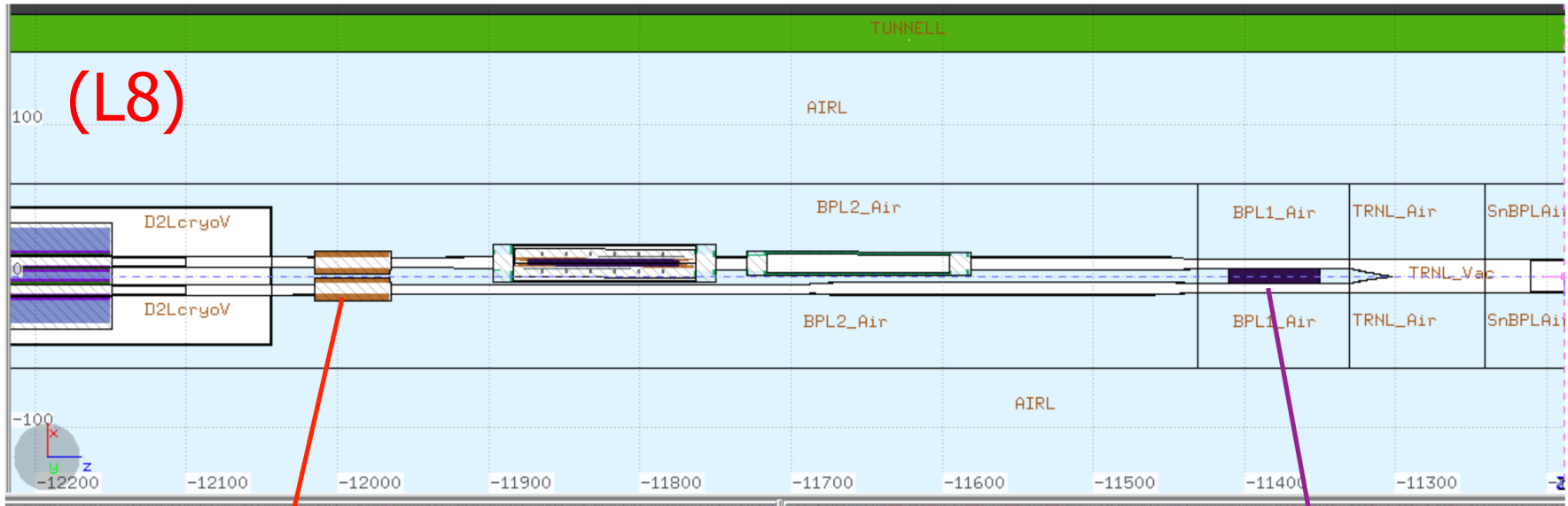
Evaluation of alternative options to protect D2 in P8

(<https://indico.cern.ch/event/502066/contributions/2185148/attachments/1284345/1909478/alternativesWP15.pdf>)



Mini-TAN to be placed in front of D2

TWO PROTECTION ELEMENTS FOR LS2

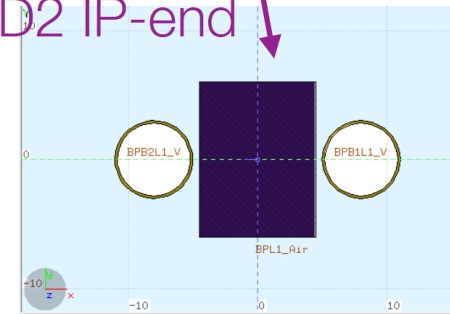
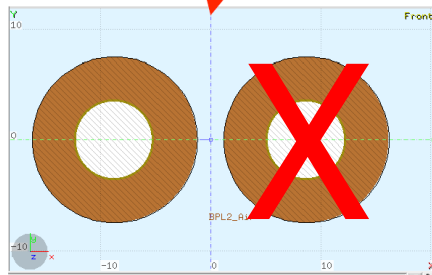


(L8)

69mm ID aperture

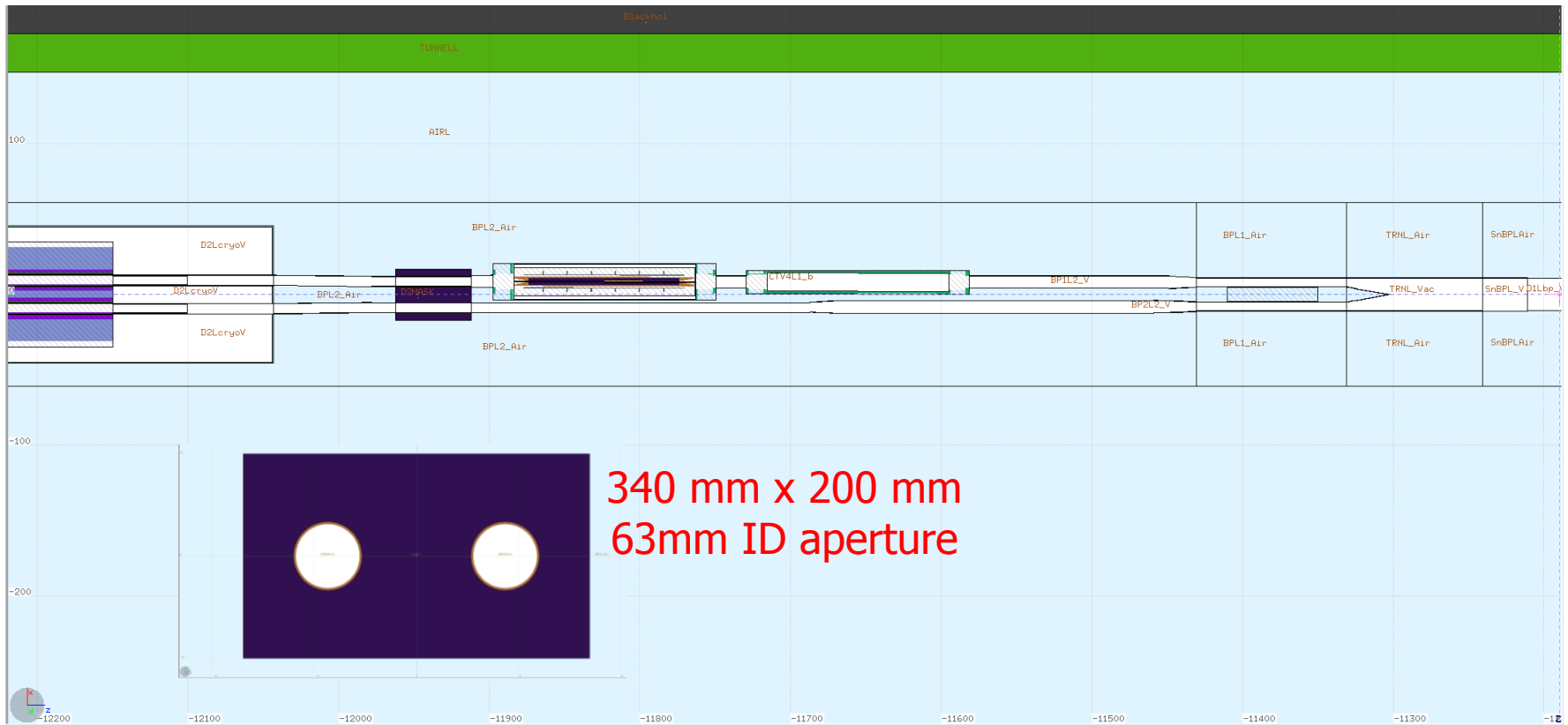
50 cm Cu masks at ~1.35 m from D2 IP-end

9 × 12 × 60 cm³ Inermet180 absorber at ~ 7.5 m from D2 IP-end



i.e. mini-TAN

OPTION 2: A DISPLACED mini-TAN ALONE



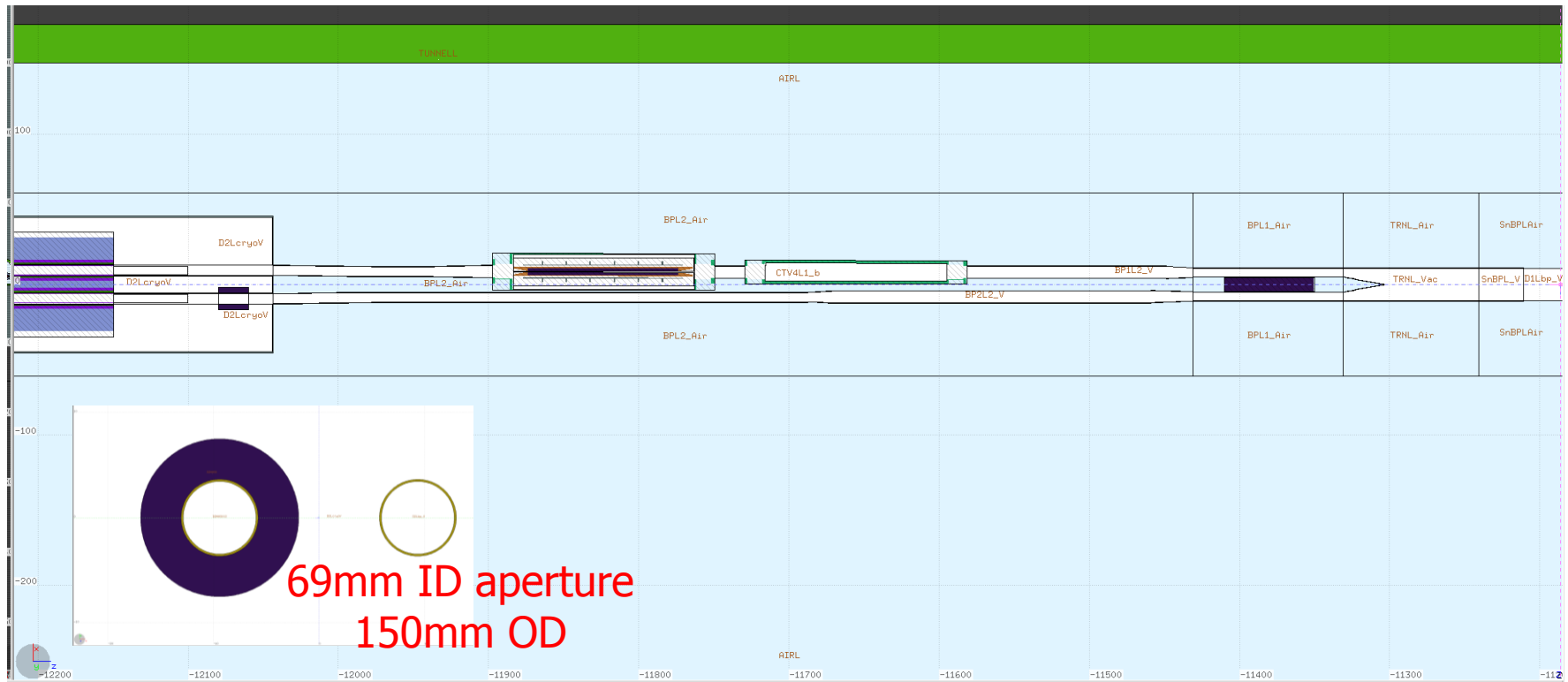
50 cm long Inermet mini-TAN
at ~1.9 m from the D2 IP-face

absorbing 16 W

2.5 W in the TCTH

1.5 W in the TCTV

OPTION 3: COLD MASK (+ FORMER mini-TAN)



20 cm long Inermet mask
at ~0.7 m from the D2 IP-face

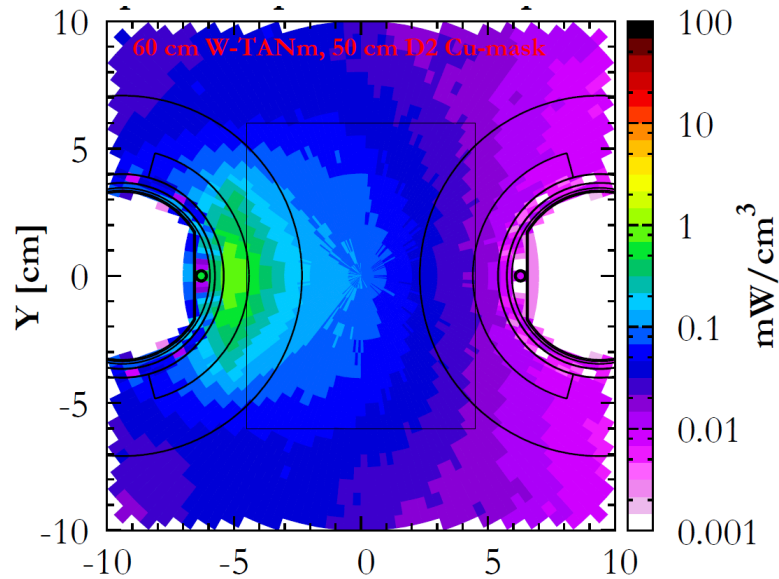
absorbing 2 W

0.4 W in the TCTH

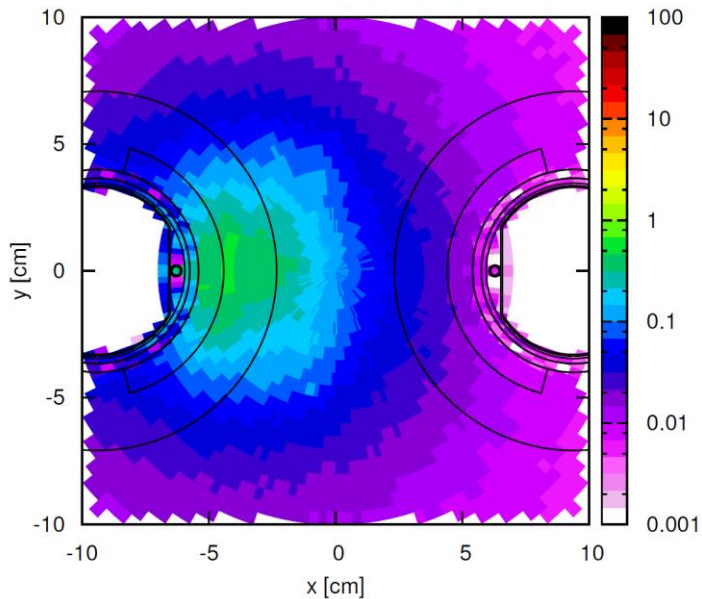
0.4 W in the TCTV

18 W in the mini-TAN

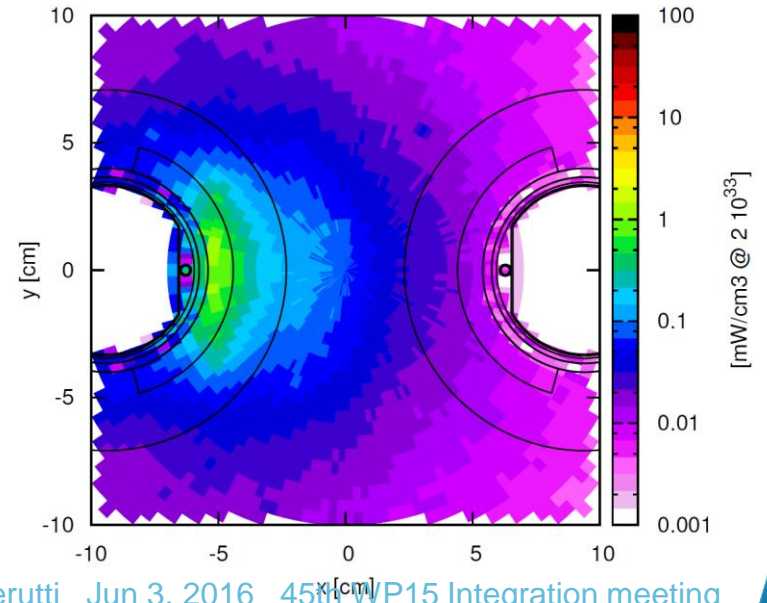
AND THE WINNER IS [II]



option 2 D2 at peak [WARM option]



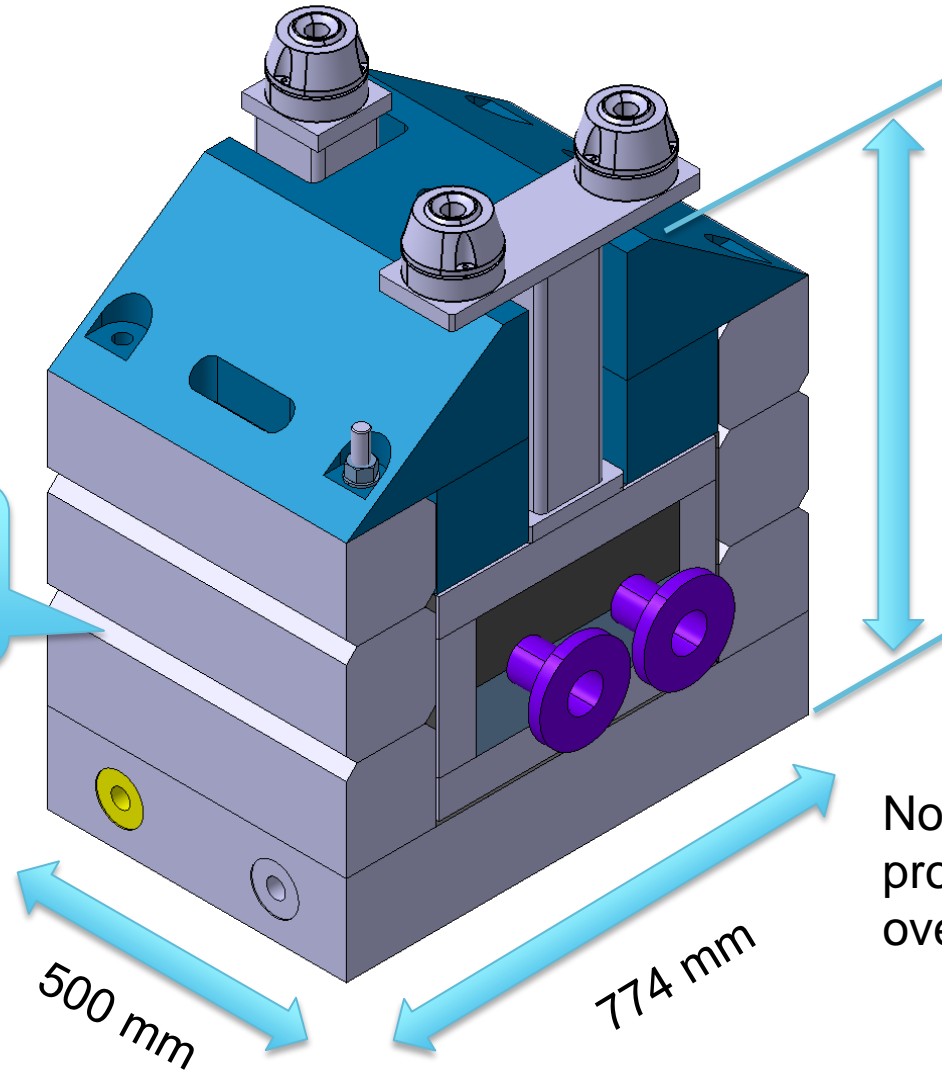
D2 at peak [COLD option] **option 3**



General presentation of mini TAXN (ref. Smarteam: ST0762174_01)

MASS = +/- 2450 kg

Thickness of
shielding (steel) :
150 mm



818 mm

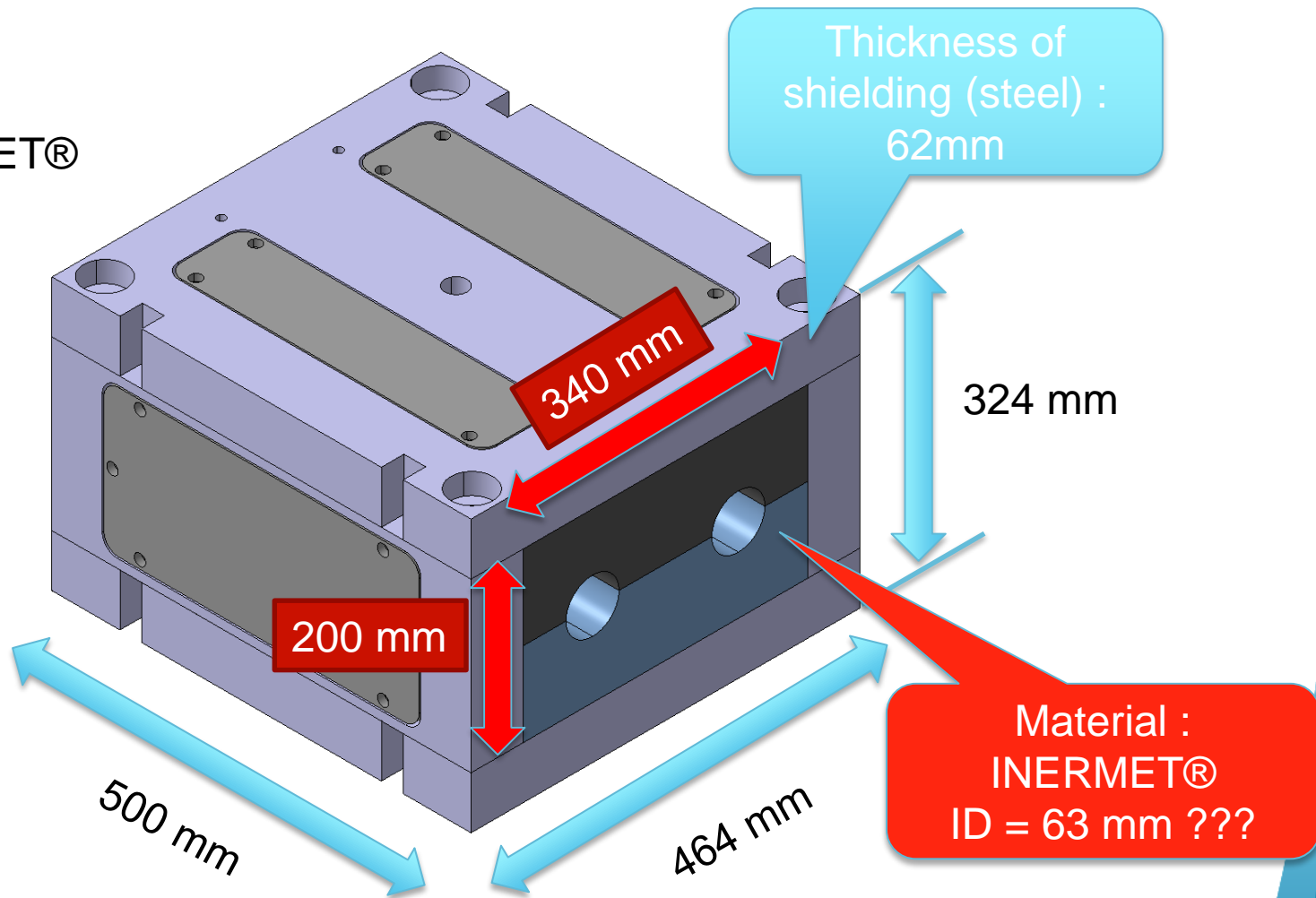
500 mm

774 mm

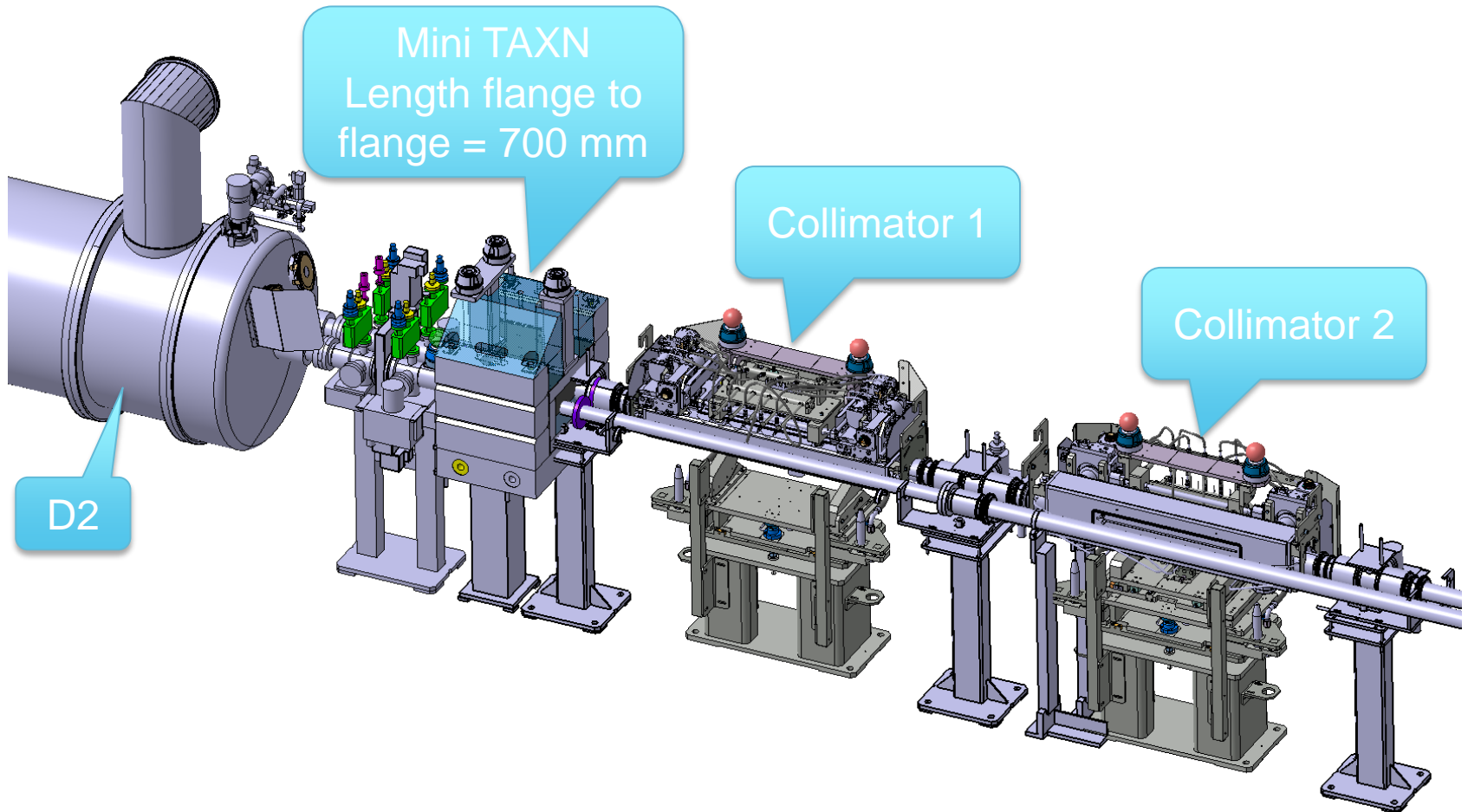
Note: design
proposal,
overshielded.

Details of inner part of mini TAXN

MASS of INERMET®
= +/- 615 kg

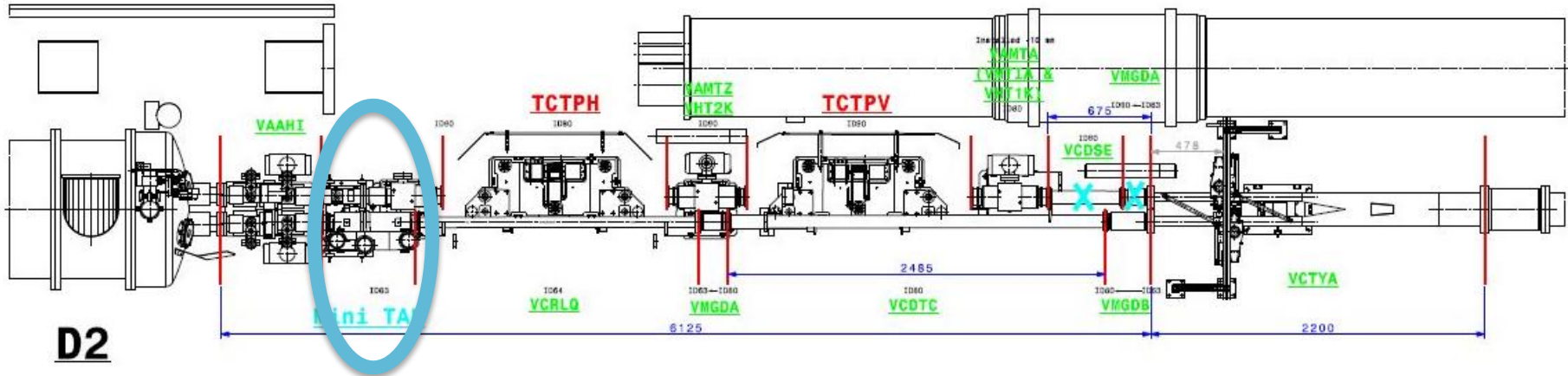


Proposition of mini TAXN integration



- Is the shielding enough ? (Needed alignment)
- Is the access to BPM ok from a RP view? (Needed alignment between collimator and mini-TAN)
- Do BPM and collimators require additional protection against debris?
- Are quick connectors required?
- Is it possible to displace the collimators & equipment up to Y-chamber flange?
- Would fit in the available space or would imply cutting the Y chamber sector? Any concern about ?

ACTUAL LAYOUT



P. Santos Diaz

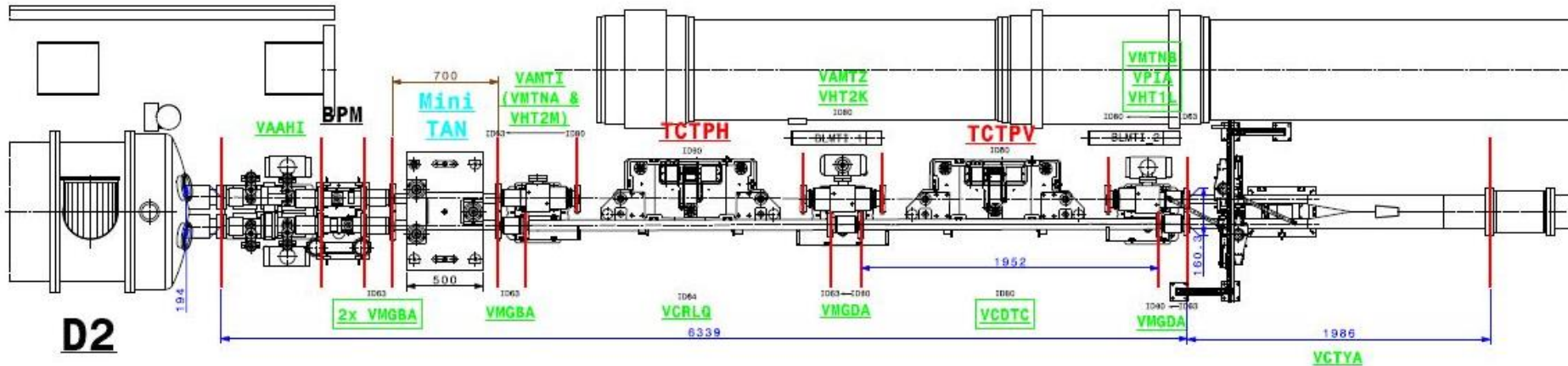
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Mini-TAN to be placed in front of D2

NEW layout (option 1)



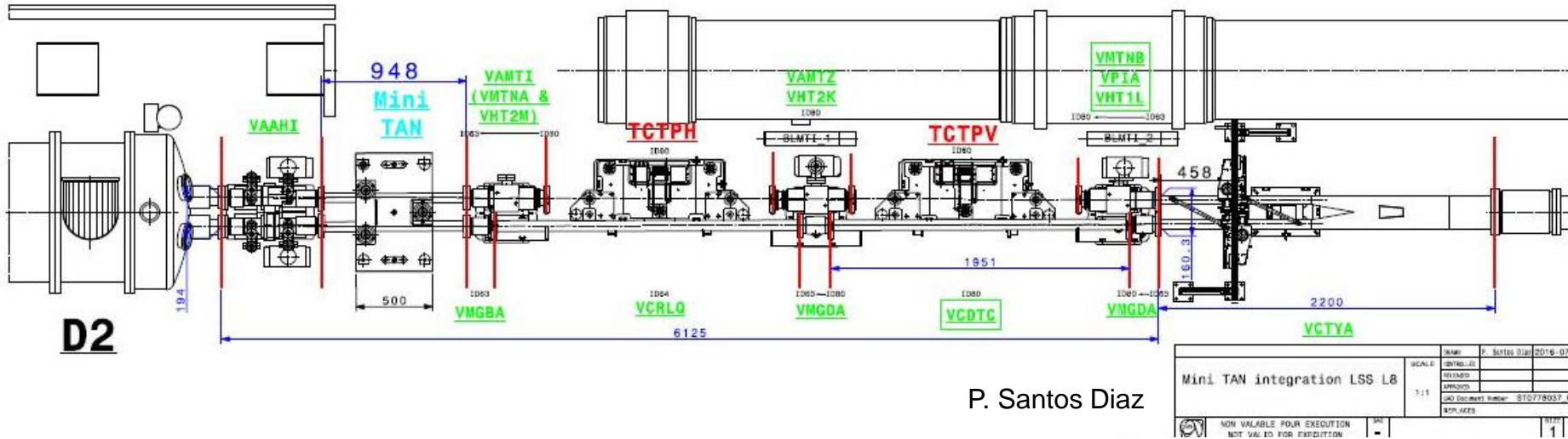
P. Santos Diaz

- Keep BPM's on its actual position
- Keep position of the Y-chamber

Actions required:

- Move collimators (TCTPH and TCTPV) ~700 mm
- Remove Vacuum module and Vacuum chamber → space gained: ≈ 675 mm.
- Cut Y-chamber.
- Rotate 180° vacuum support and update it.

NEW layout (option 2)



- Use BPM's inside collimators
- Keep integrity of Y-chamber
- Where to put BPM

To do list

- Is the shielding enough ? (Needed alignment) →YES
- Is the access to BPM ok from a RP view? (Needed alignment between collimator and mini-TAN -->Dominated by D2
- Do BPM and collimators require additional protection against debris?→ No
- Are quick connectors required?
- Is it possible to displace the collimators & equipment up to Y-chamber flange?→ Yes
- Would fit in the available space or would imply cutting the Y chamber sector? Any concern about ?
- Radiation Interventions on BRAN
- LHCb scintillators
- Mini-TAN handling, quick connectors difficult.