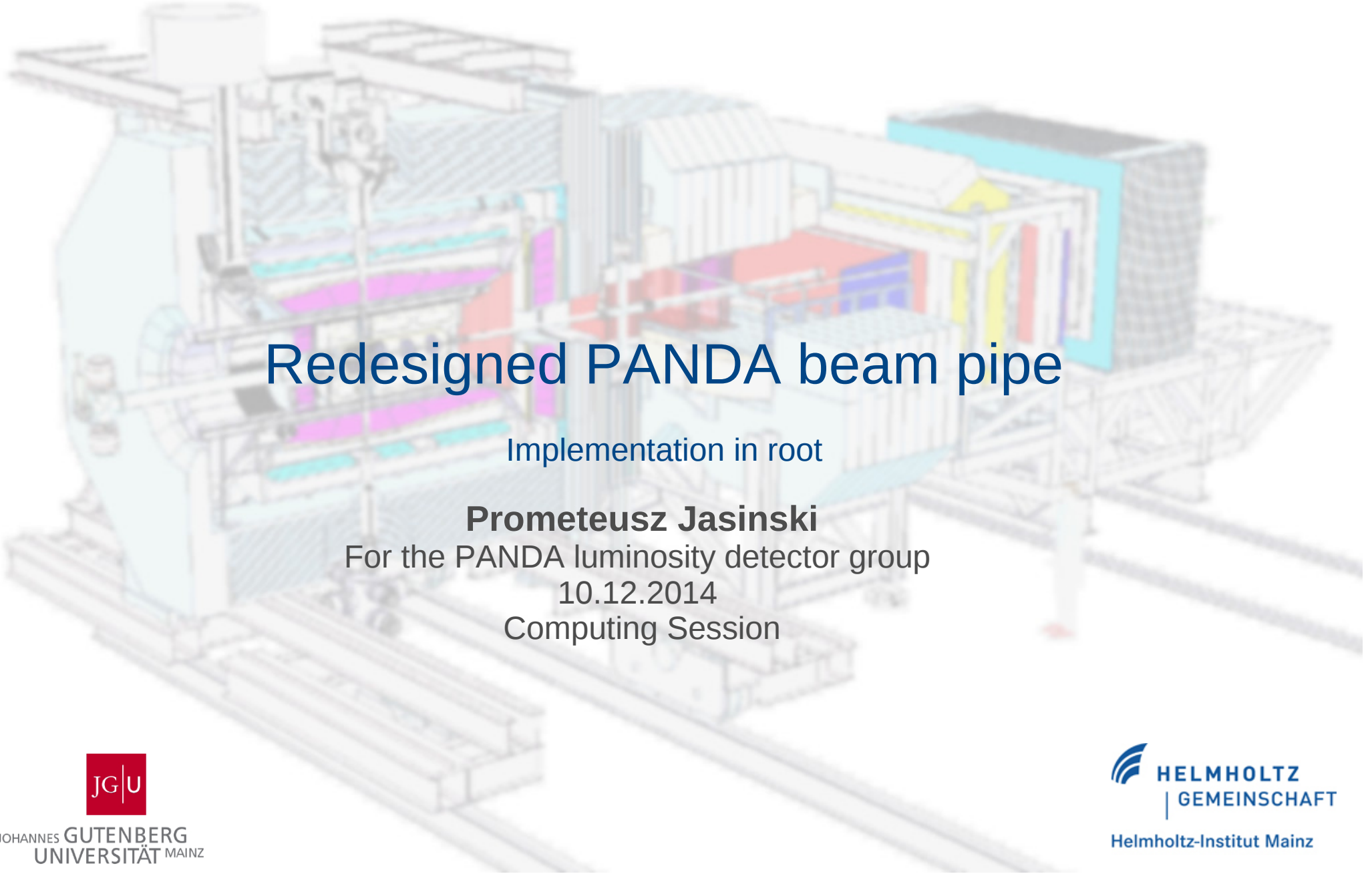


Redesigned PANDA beam pipe

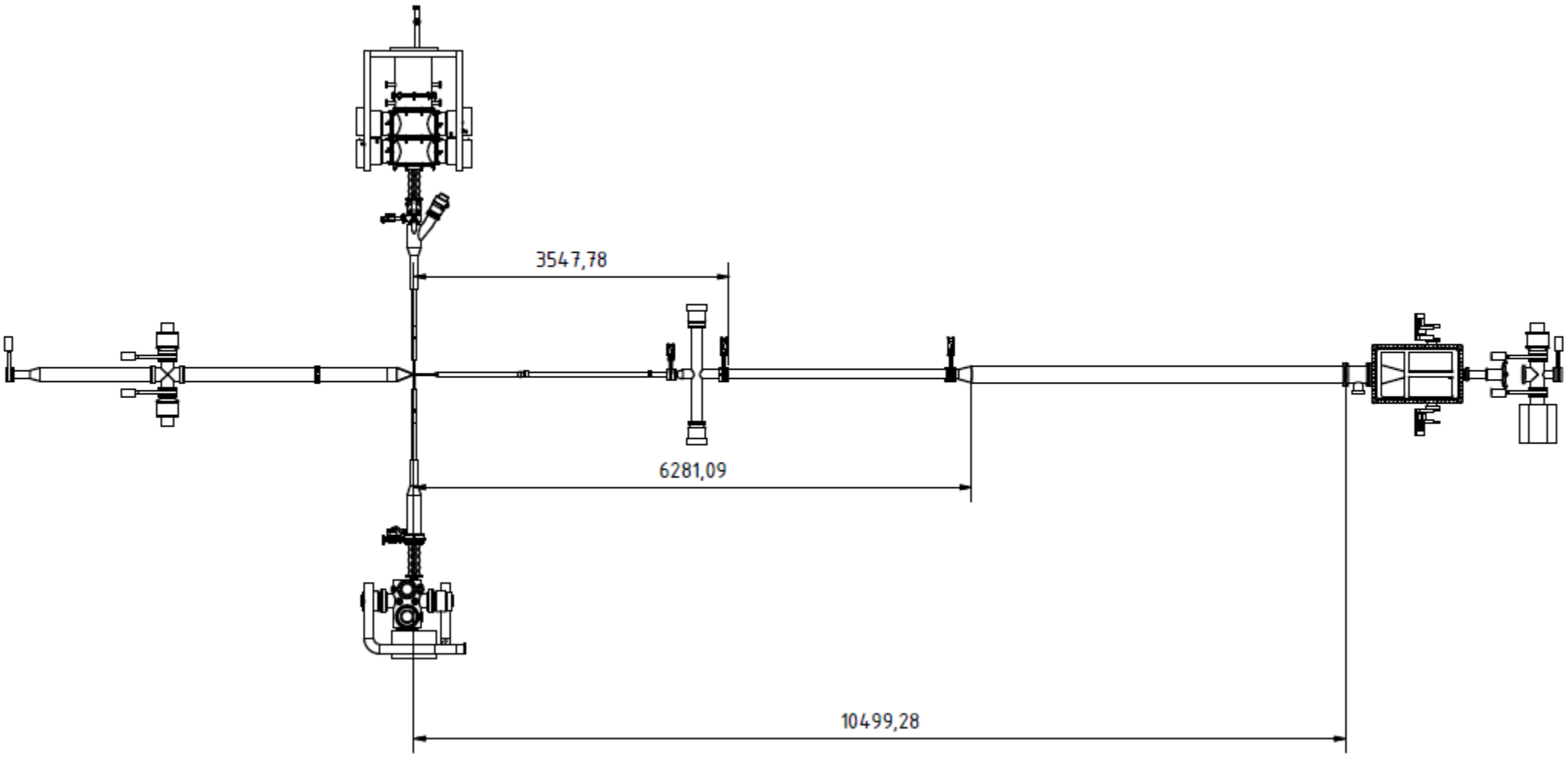
Implementation in root

Prometeusz Jasinski
For the PANDA luminosity detector group
10.12.2014
Computing Session

JOHANNES GUTENBERG UNIVERSITÄT MAINZ

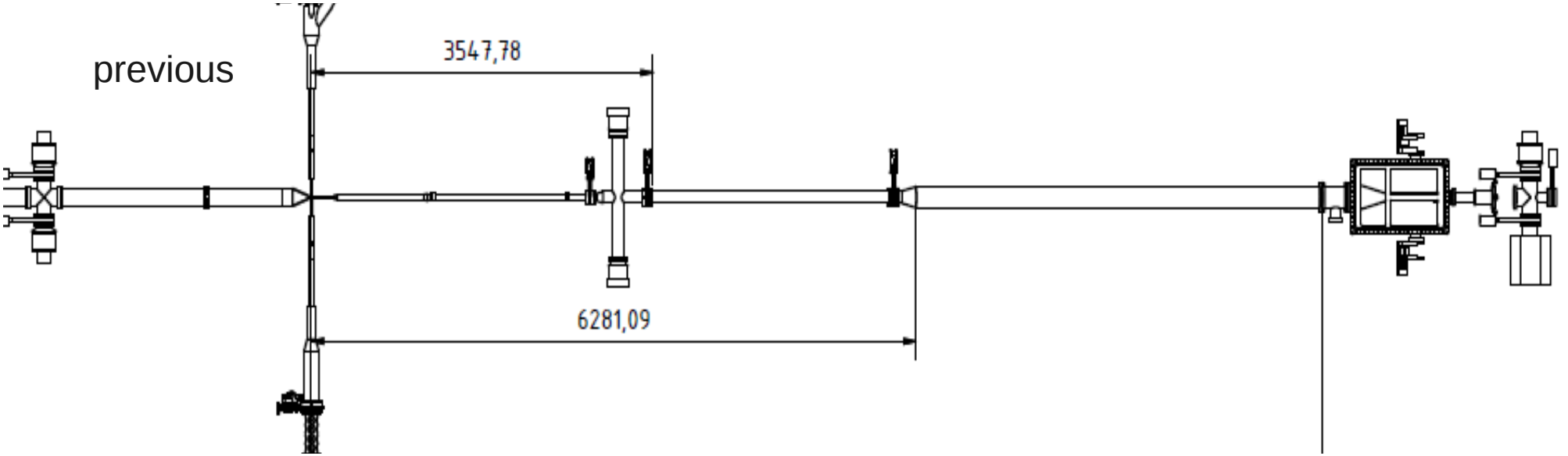
HELMHOLTZ GEMEINSCHAFT
Helmholtz-Institut Mainz

The PANDA beam pipe until now

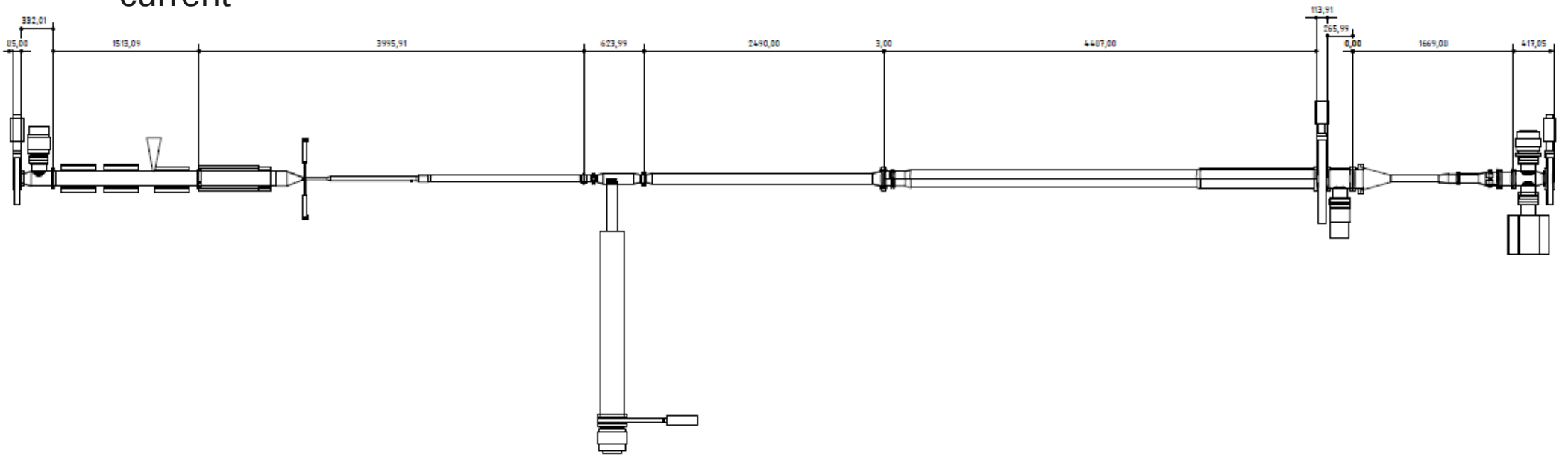


The PANDA beam pipe v1403 by Jost Lühning

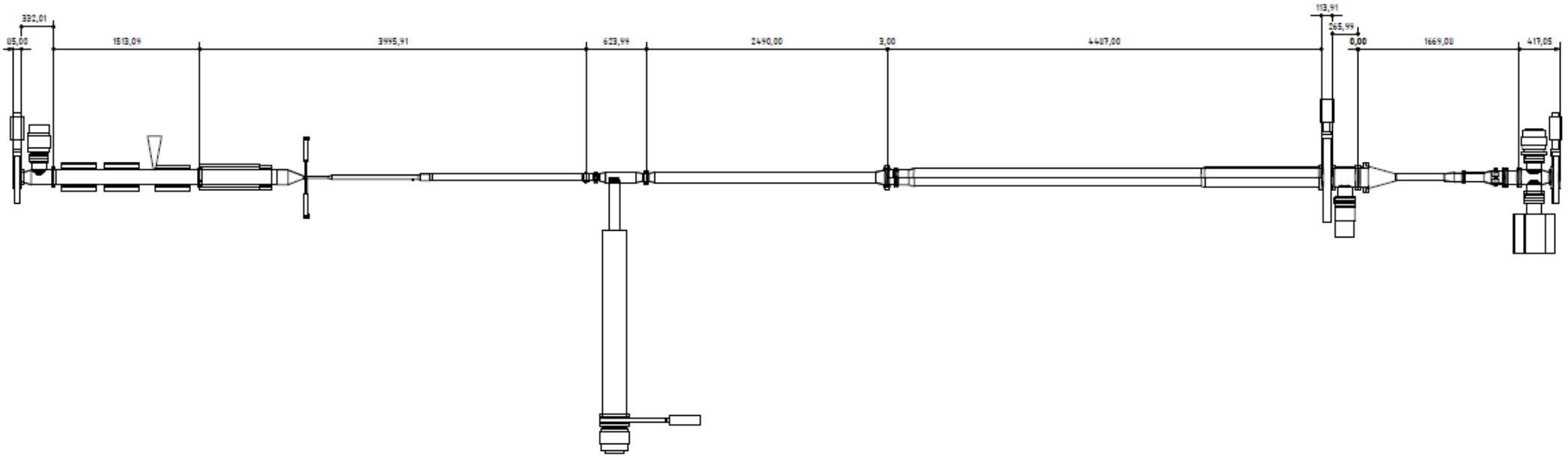
previous



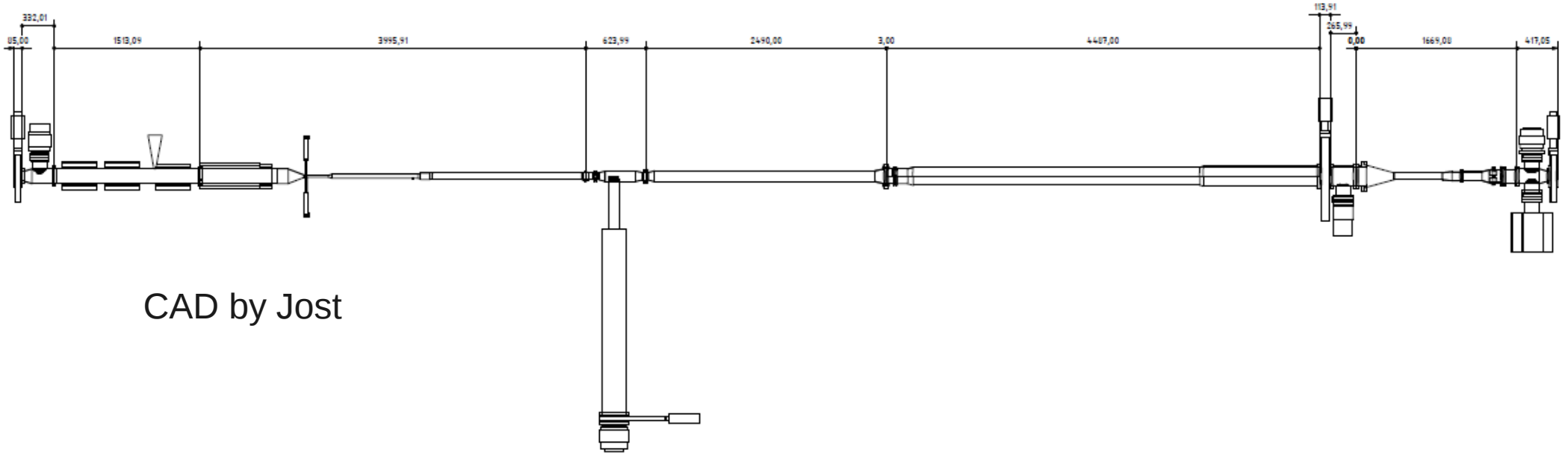
current



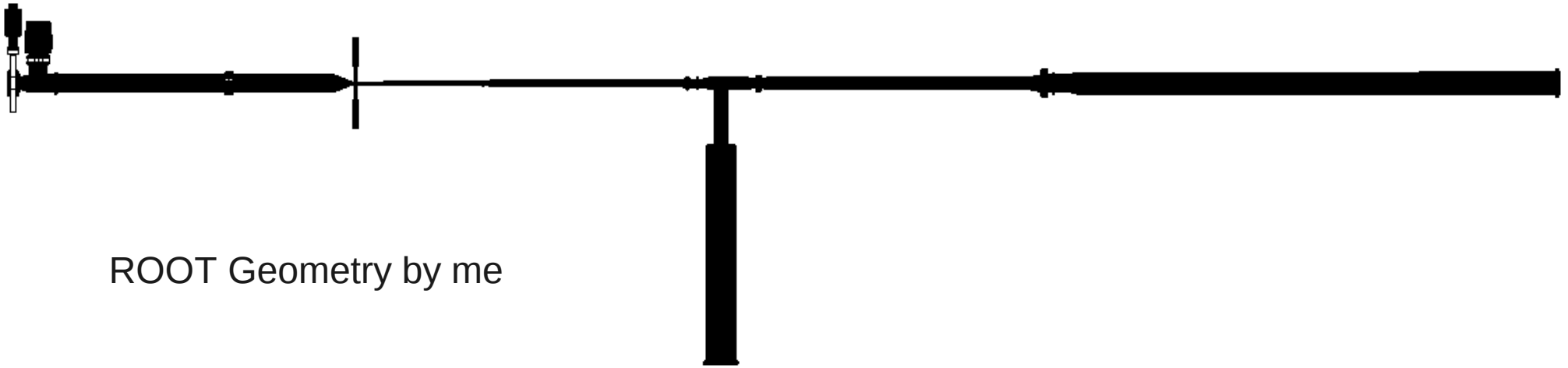
The PANDA beam pipe v1403 by Jost Lühning



The PANDA beam pipe in panda root (by me)



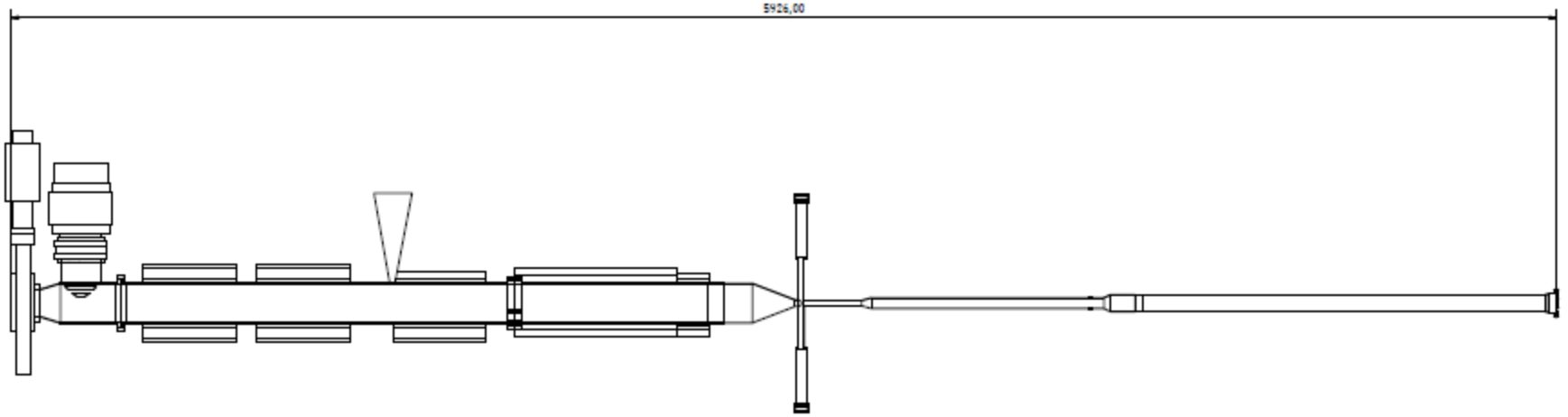
CAD by Jost

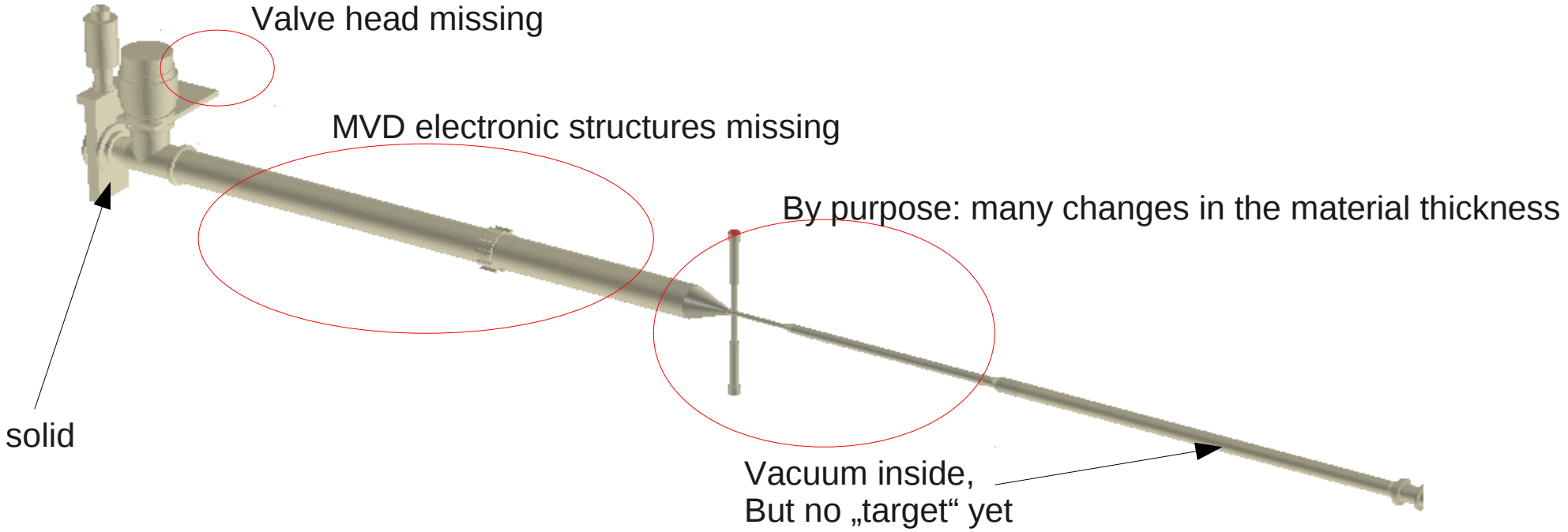


ROOT Geometry by me

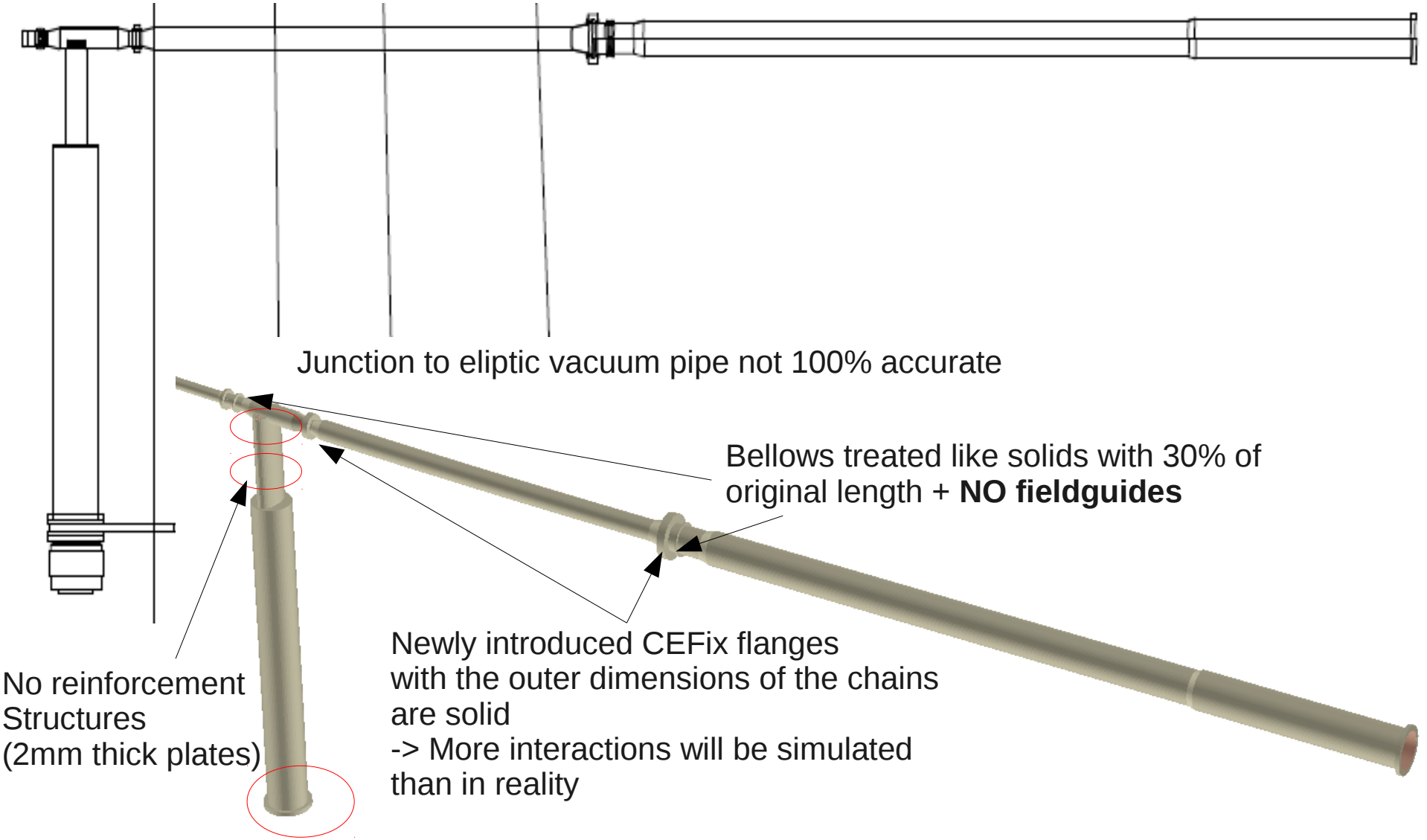
Some details

Solenoid section





Dipole section



Junction to eliptic vacuum pipe not 100% accurate

Bellows treated like solids with 30% of original length + **NO fieldguides**

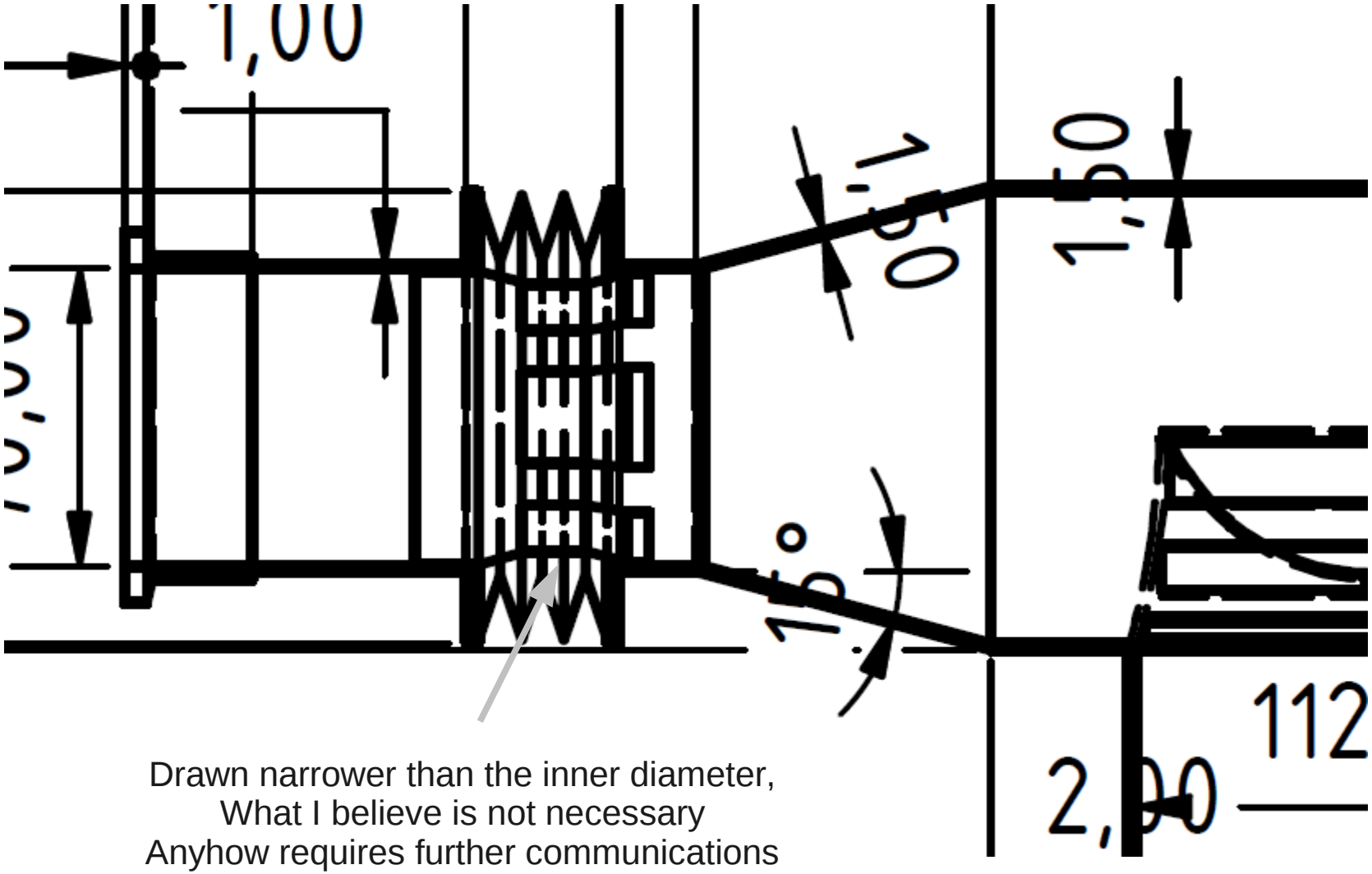
No reinforcement Structures (2mm thick plates)

Newly introduced CEFix flanges with the outer dimensions of the chains are solid
-> More interactions will be simulated than in reality

No pump yet

In general I know of 2 or 3 outer dimensions which are not fully correct

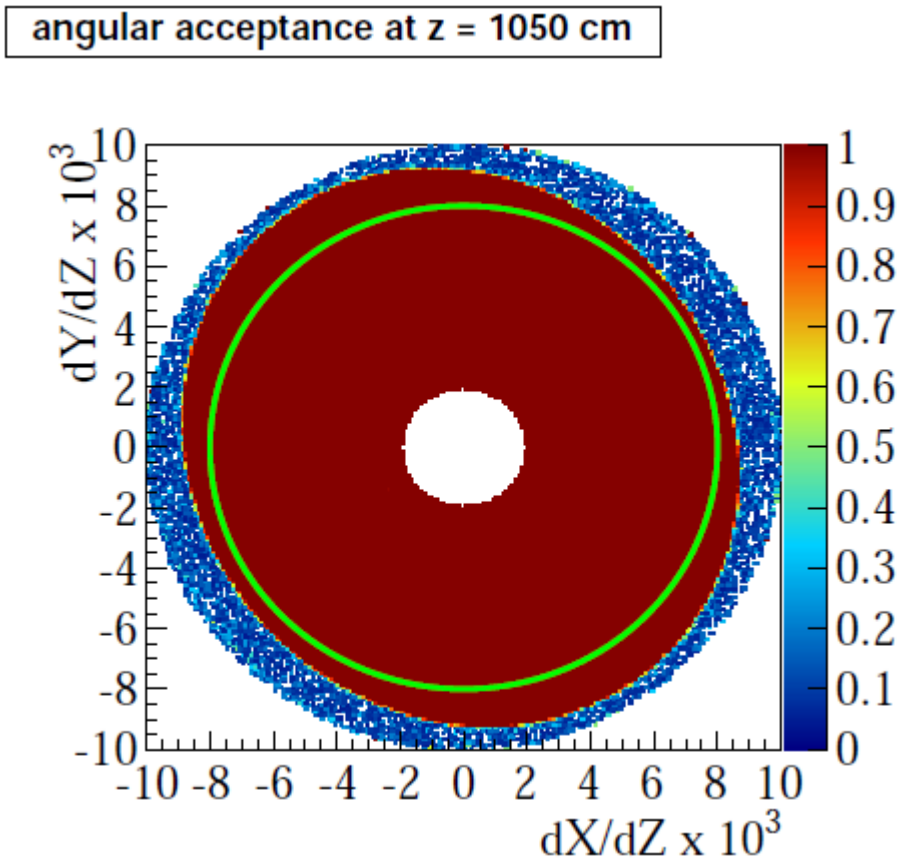
Fieldguides



Drawn narrower than the inner diameter,
What I believe is not necessary
Anyhow requires further communications

The beam pipe acceptance

- 1.5 GeV/c beam momentum at 1T solenoid field strength
- 2-10 mrad antiprotons at z = -35.3 cm -> r ~ 2.8 mm at z = 0
- vacuum in cave

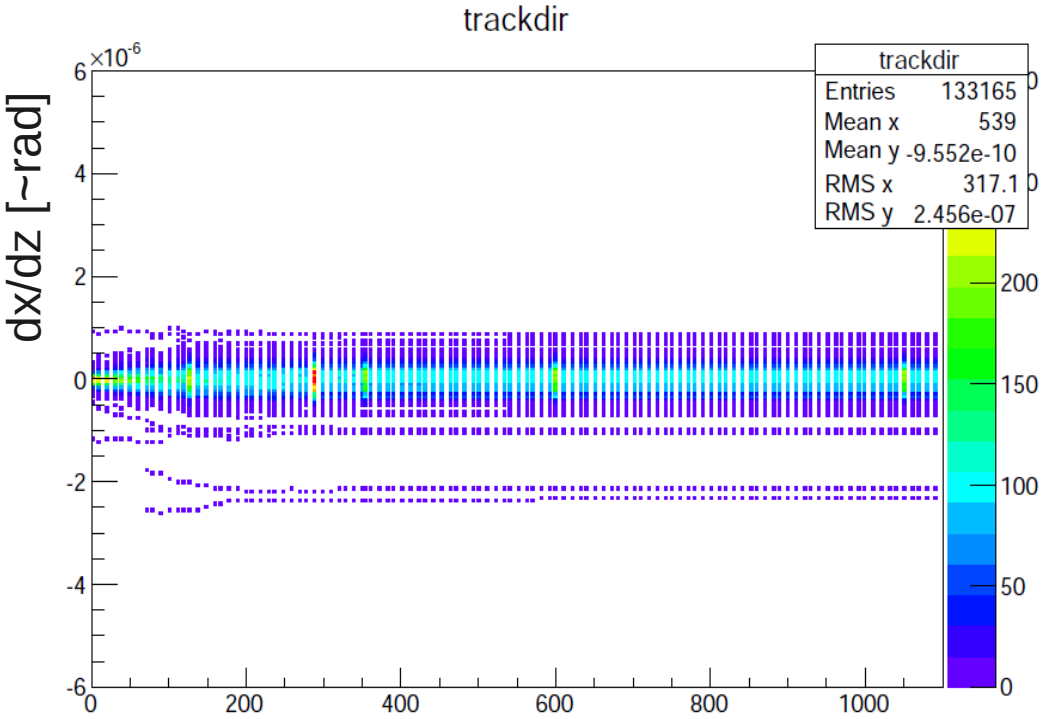


Acceptance loss again in the region of the dipole between 5m and 6 m behind the Interaction point
-> design seems to be ok

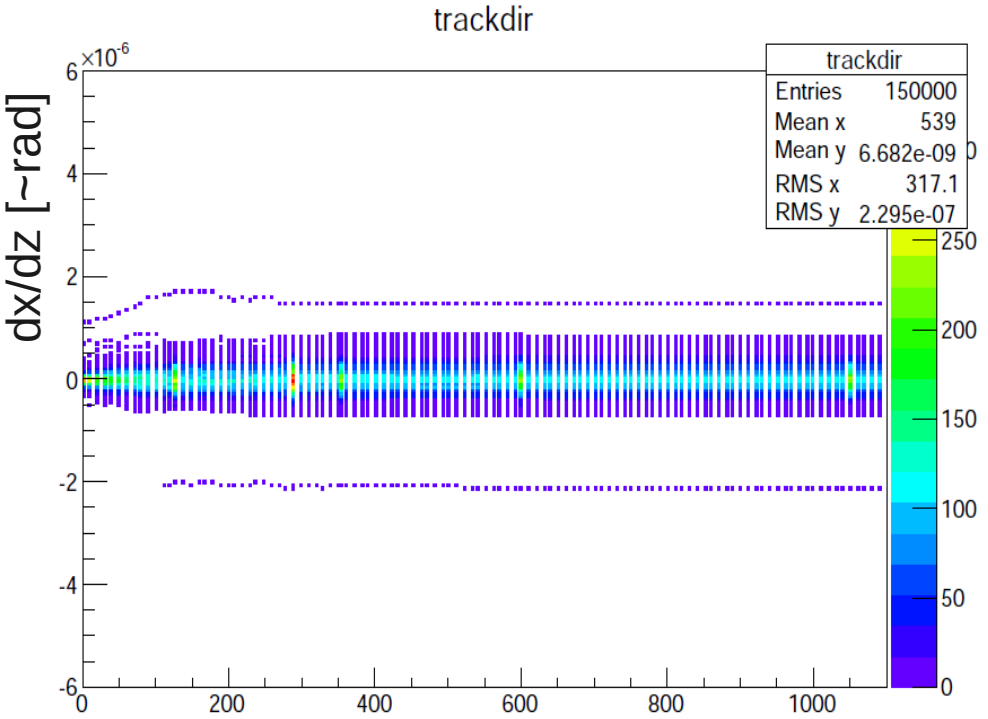
I committed the file
beampipe_201407.root
in pandaroot already

Beam tightness checks

Track direction with air cave



Track direction with vacuum cave



Z [cm]

To do

Check the influence of field guides