Some issues for discussion

Mechanics Workshop Oct. 2014

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- Layout of auxiliary platform
- Support of the big upstream beam pipe
- Provisions for surveying
- EDMS updates
- Position of upstream pumping port

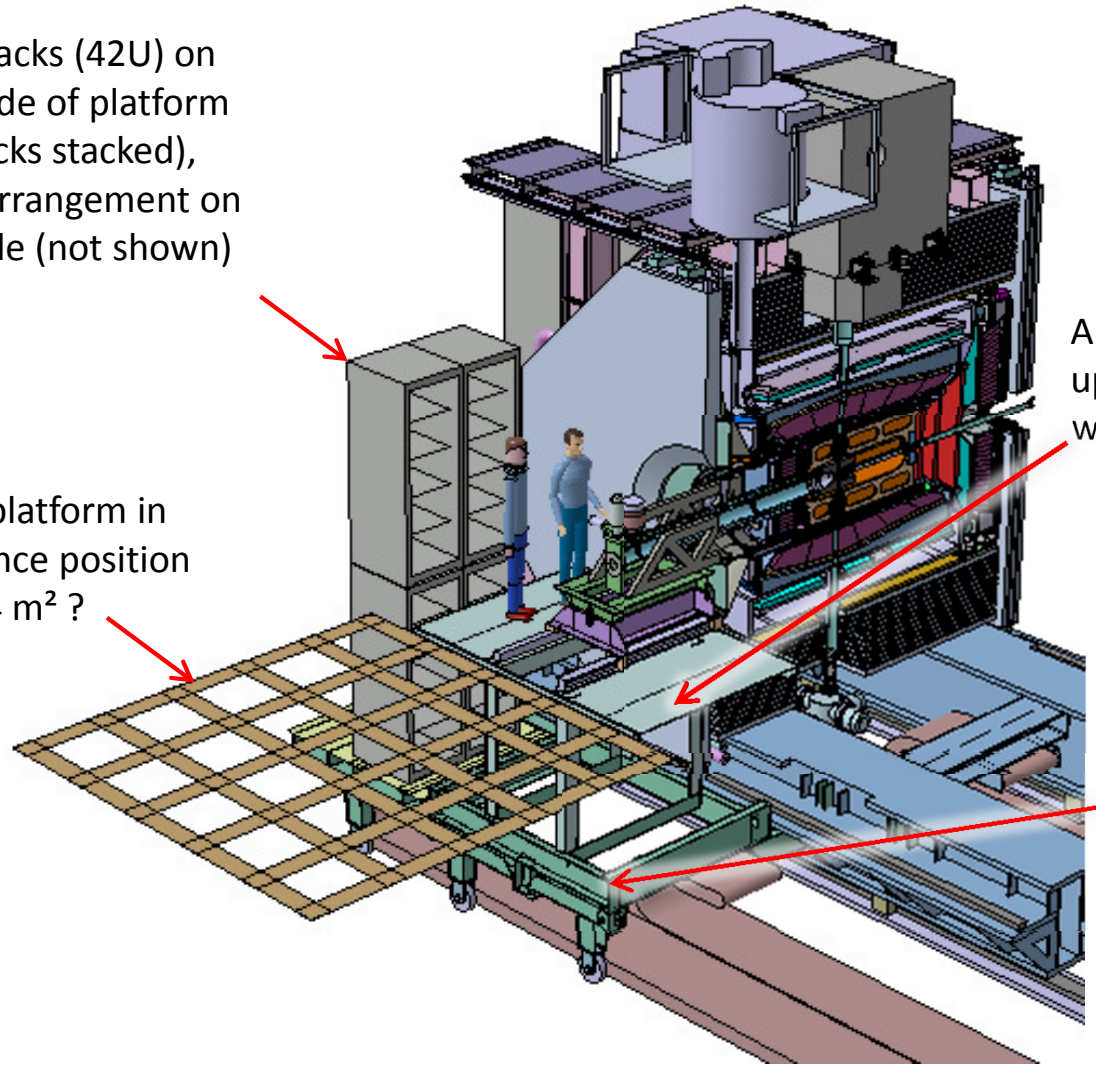
Layout of auxiliary platform

Functional specifications for auxiliary platform:

- Estimated total weight of structure, Bw-EMC, and instrumented racks: 8 tons
- Support by wheels (castors), and by hinges at the big TS-upstream platform beam
  (consultation with Evgeny Koshurnikov: hinges can provide statically determinate system)
- Space for cable chain underneath: width 1.5 m (z-direction), height 80cm
- Upper level of auxiliary platform 75cm (±5cm) below beam height, according to proposal by STT group on CM-TB June 2014, page 8 of
  https://indico.gsi.de/getFile.py/access?contribId=3&sessionId=0&resId=1&materialId=slides&confId=2860

Layout of auxiliary platform

Four racks (42U) on west side of platform (2 racks stacked), same arrangement on east side (not shown)



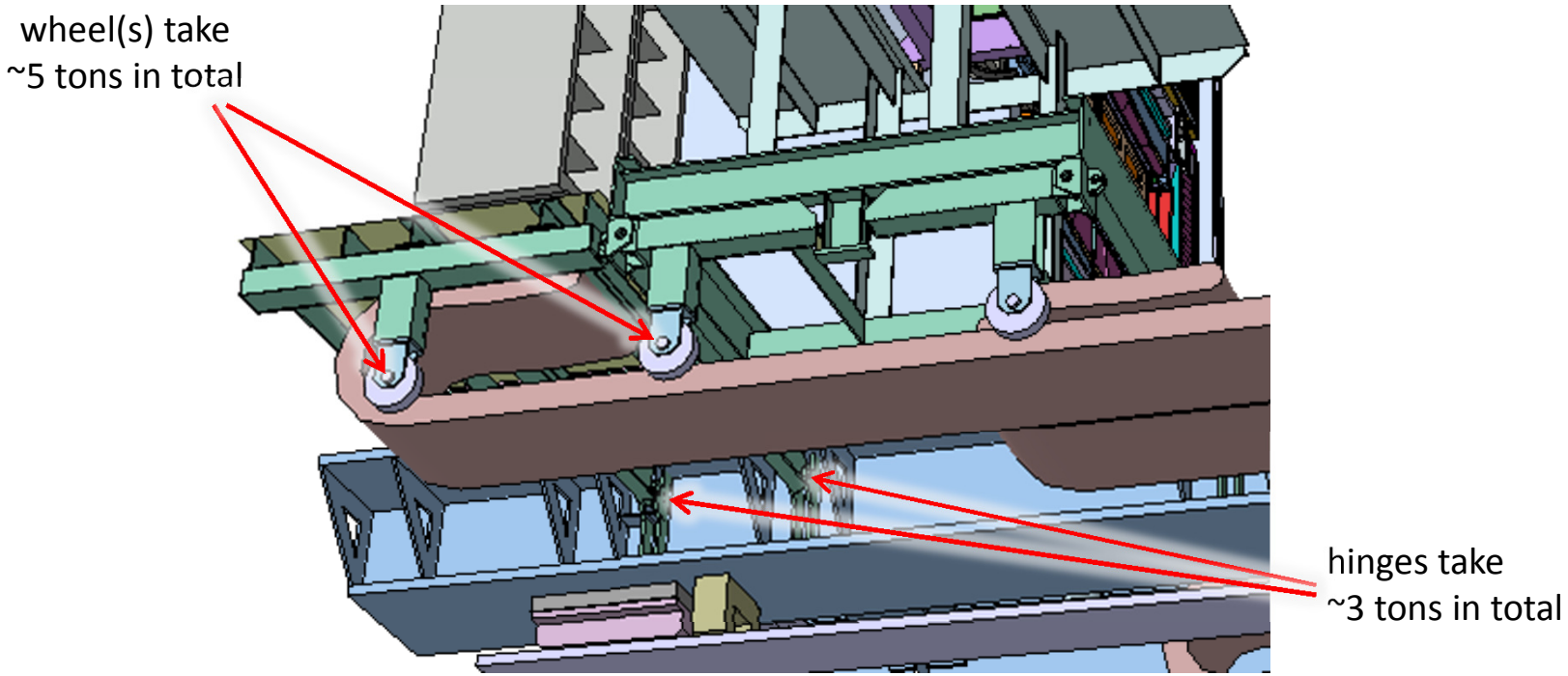
Auxiliary platform :
upper level at y = -80cm?
width: x = ±150cm?

Service platform in maintenance position
4×4 m² ?

platform ends at z = -420cm,

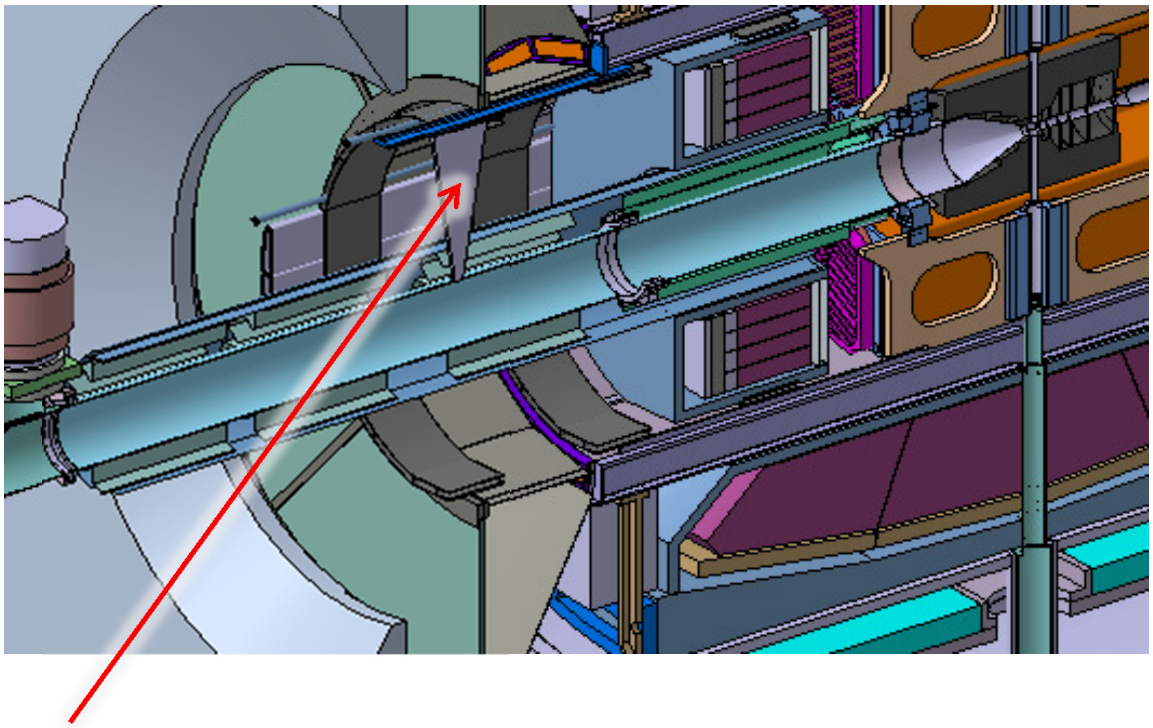
smallest distance to cave wall when passing the door: 70cm

Layout of auxiliary platform



During travelling of the TS between beam area and maintenance area the position of the Bw-EMC has to be monitored and adjusted if the unevenness of the wheel track becomes too big.

Support of the big upstream beam pipe



Support of the big upstream beam pipe needs to be defined

Provisions for surveying

- How will the positions of the inner detectors be determined?
- Please post requests for keep-out volumes which are needed for survey instruments!

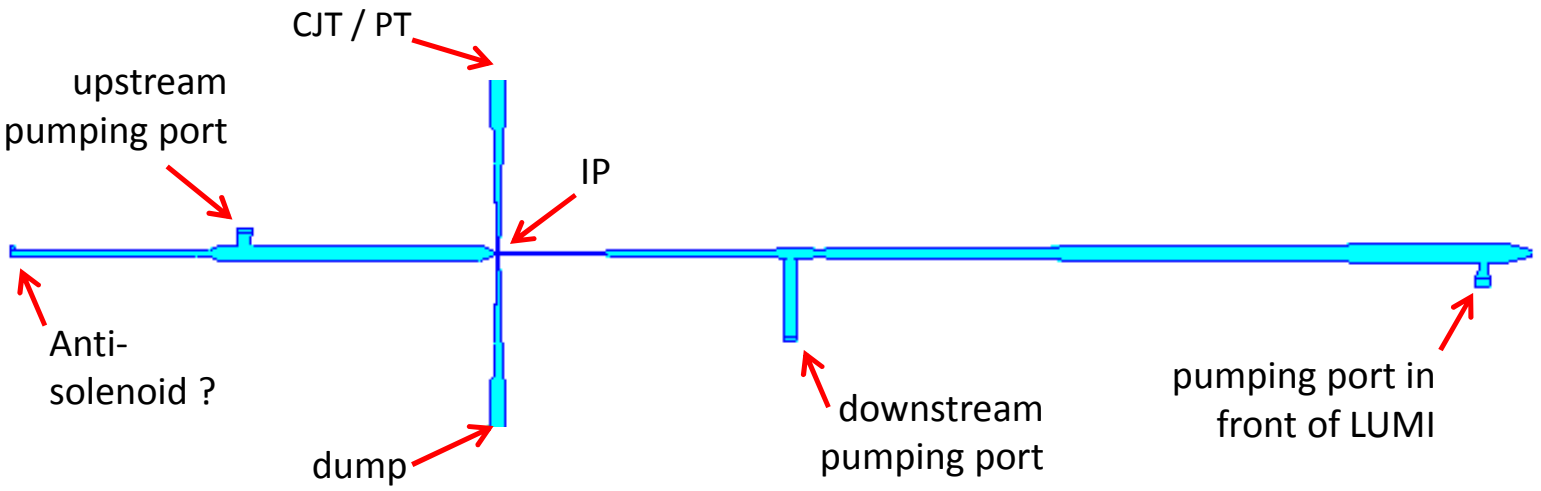
EDMS updates

Updates of components (STP format) found on EDMS for 2014, from March to October:

- Forward Endcap EMC
- Backward Endcap EMC
- Barrel EMC

Updated models of all components ready end of November?

Position of upstream pumping port

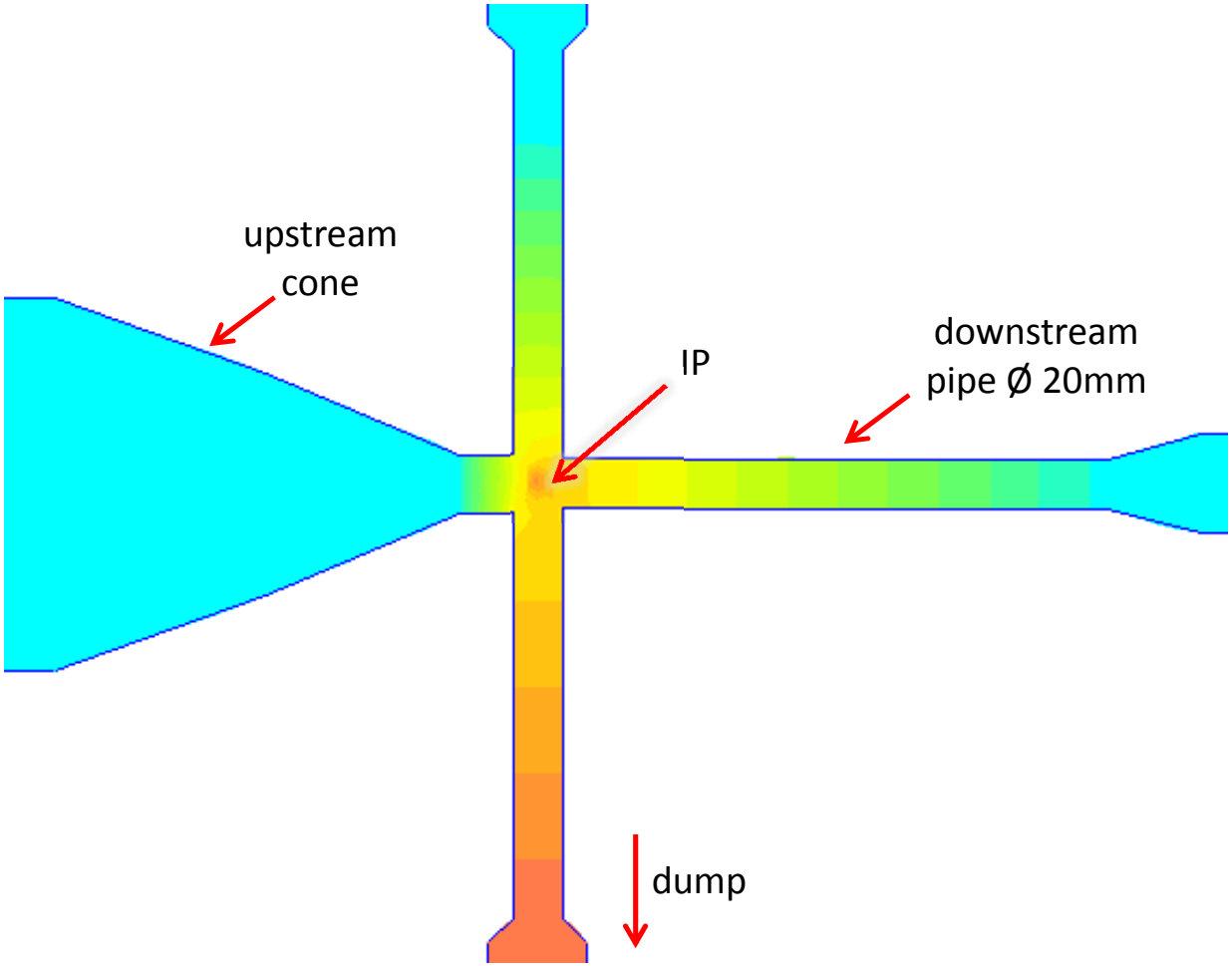


Model of the PANDA vacuum set-up used for calculating pressure distribution.

2-dimensional FEM used although problem is essentially 1-dimensional (approach by VAKTRAK and VAKLOOP, which Alexander Gruber had used).

	z-position	effective pumping speed (hydrogen)
US pumping	-2.77 m	1.2 m³/s
DS pumping	3.2 m	0.54 m³/s
LUMI pumping	10.6 m	0.43 m³/s
Anti-solenoid	?	?

Position of upstream pumping port

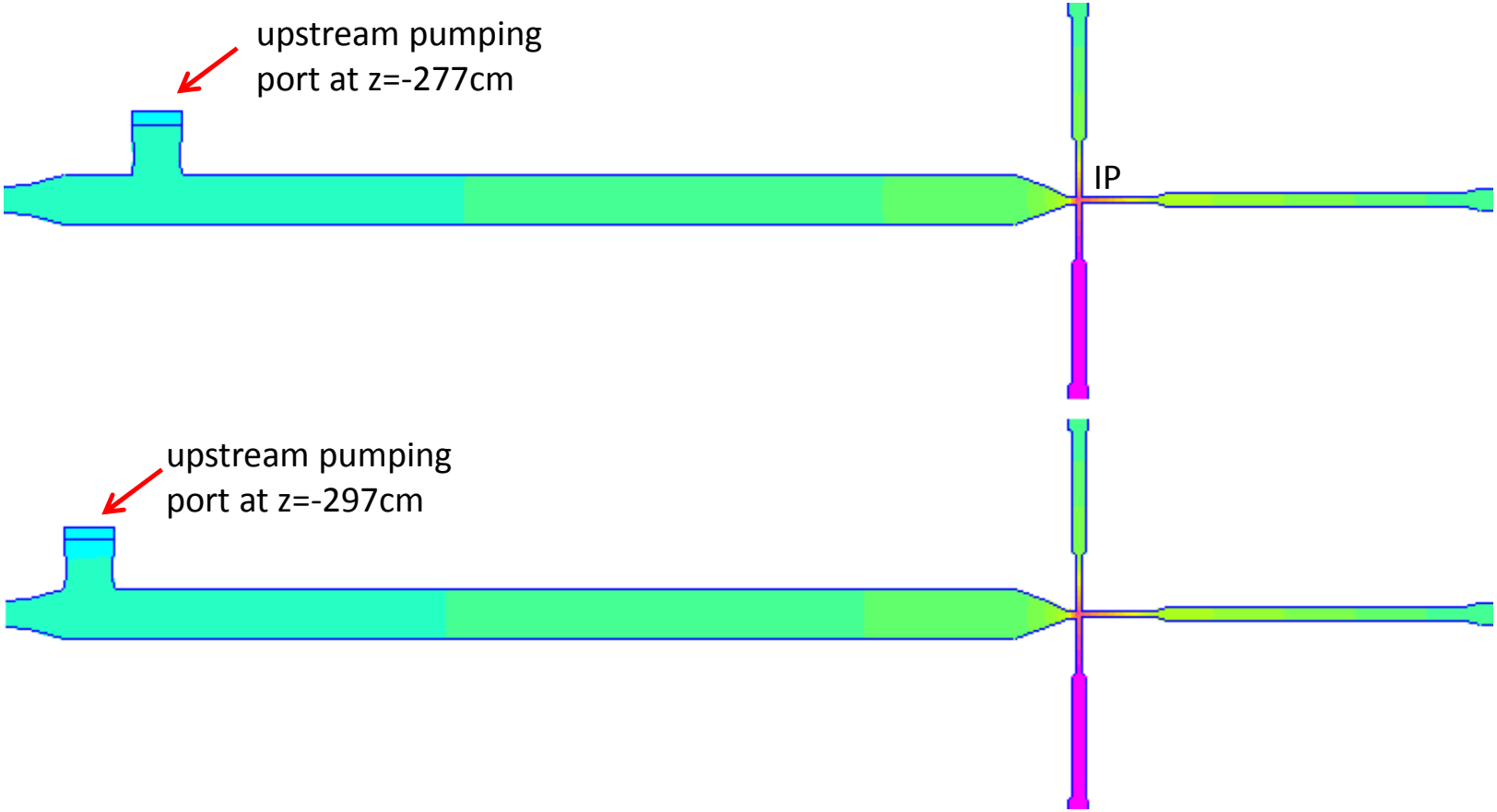


Close view on vacuum at target cross

Example: with 16nbar·ltr/s backflow reaching from dump and 5 times as much load generated by beam-target interaction the pressure around the IP is about 1nbar (1.0E-6 mbar).

The pressure integral over 16 meters is about 1.2nbar·m (6E12 atoms/cm²)

Position of upstream pumping port



If the upstream pumping port would be placed 20cm further upstream the pressure integral over 16 meters would be 3% higher. In order to compensate this increase the effective pumping speed at the port needs to be 9% higher.