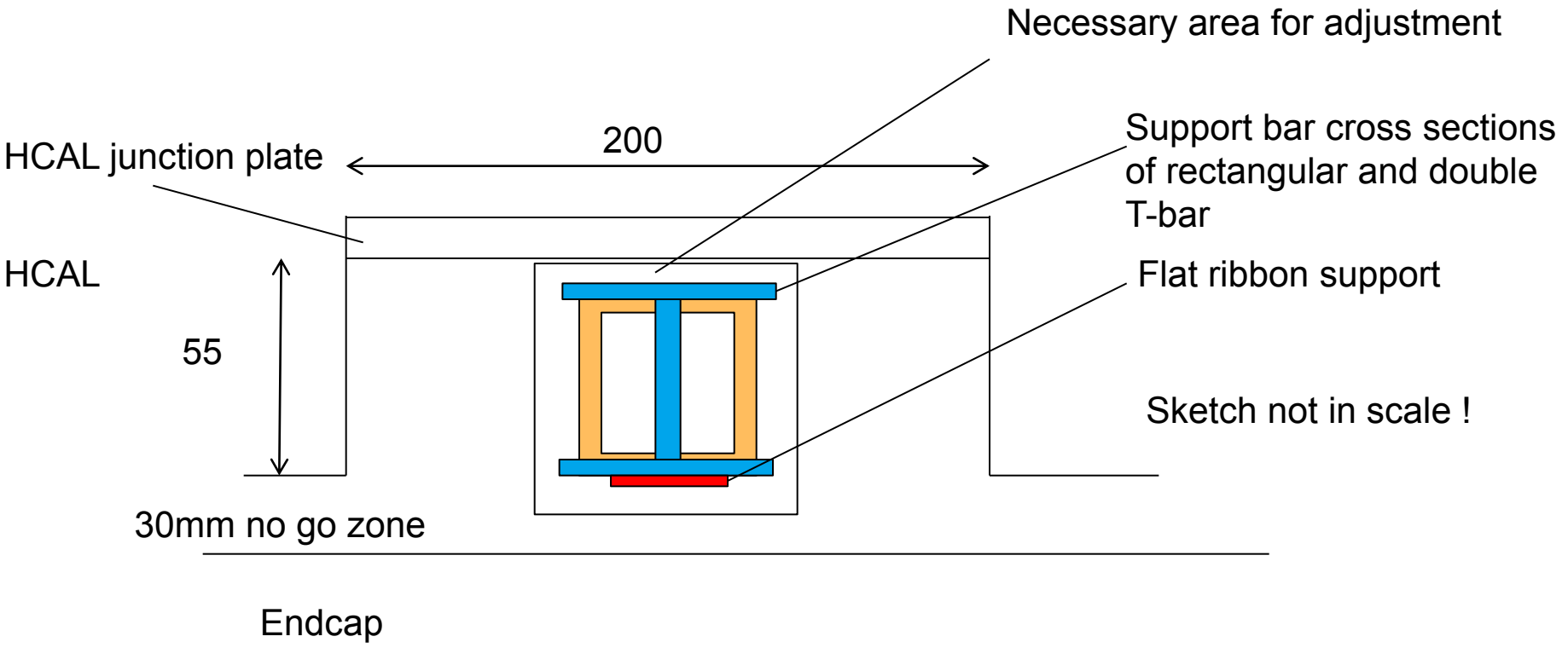
WP-meeting 151

ILD TPC

DESY Hamburg, Volker Prahl 07.06.2012

Dimensions of support structure



An cantilever design is only possible if minimum of 4 gaps can be used

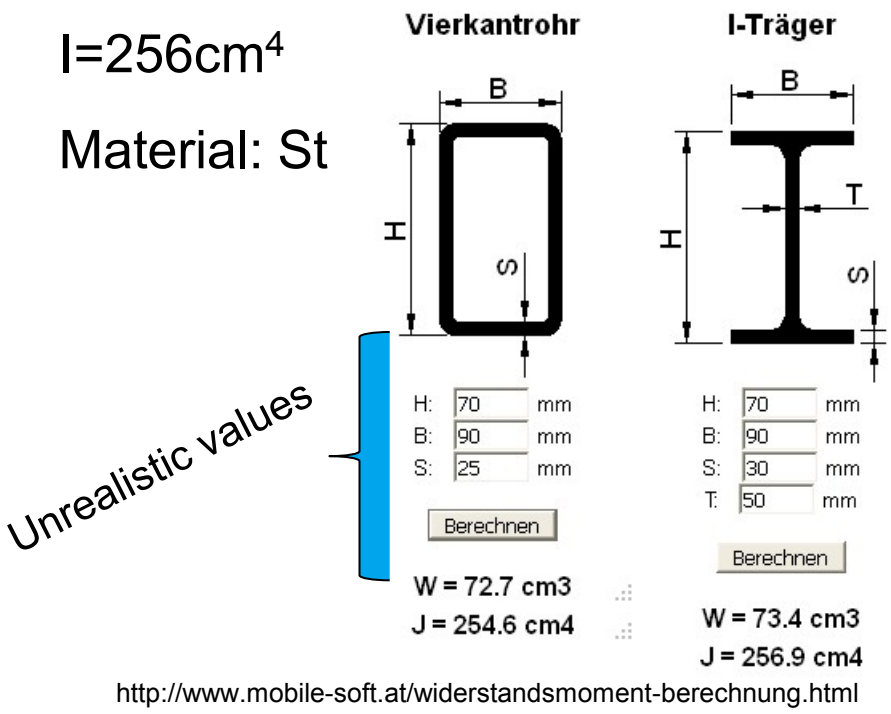
Design of the support structure (rectangular or T-bar)

Possible dimensions for an support beam with a deflection of 1mm during load force of 375N in Z-direction

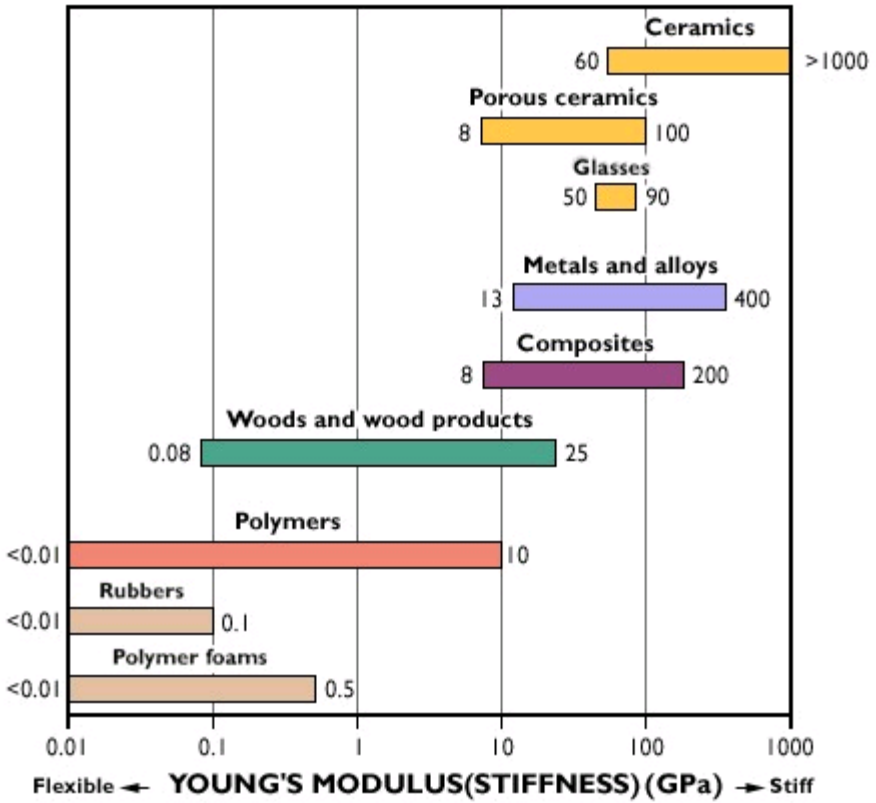
Profile double T-beam

I=256cm^4

Material: St



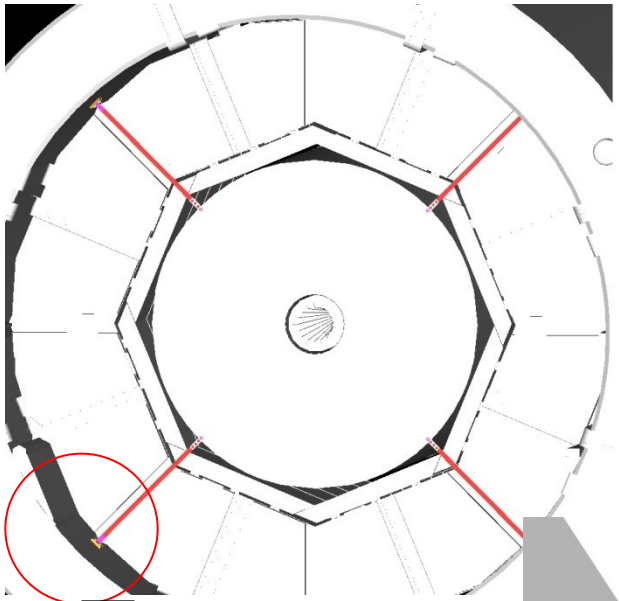
http://www.mobile-soft.at/widerstandsmoment-berechnung.html

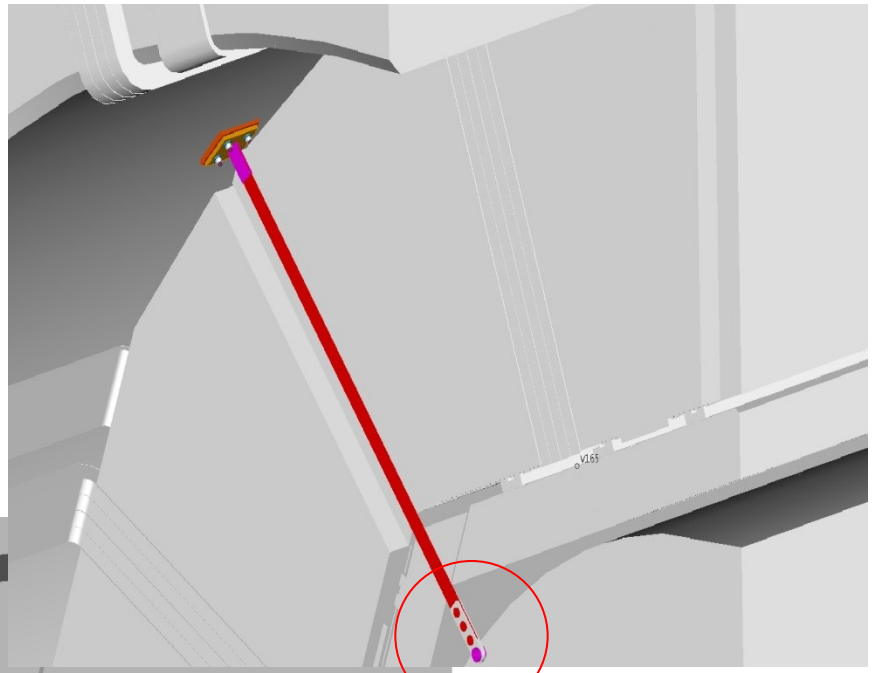


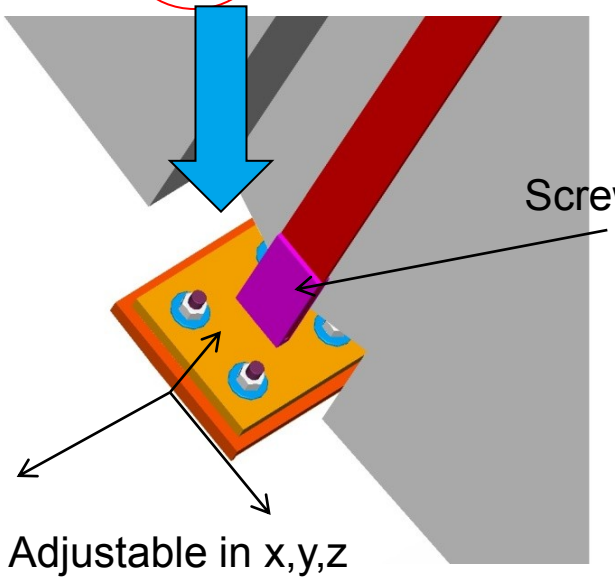
How this issue can be solved?

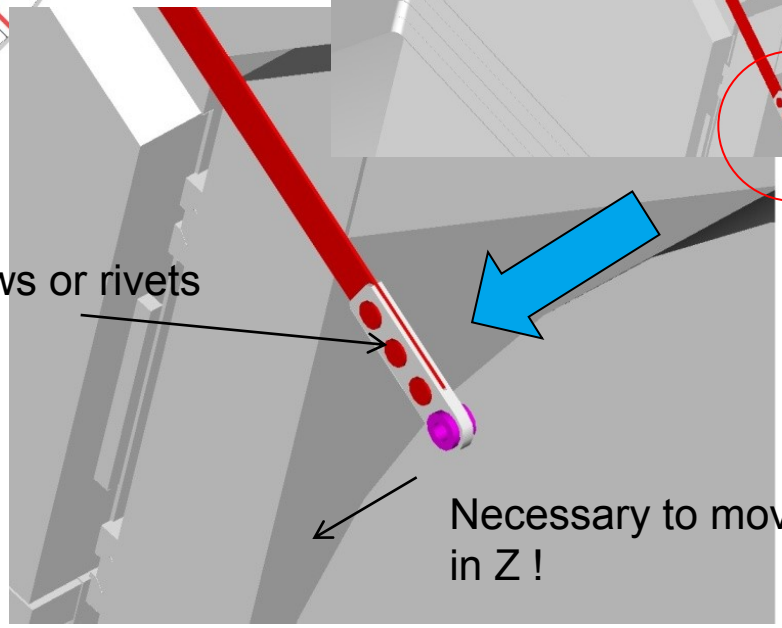
- Different material
- More than 4 bars
- Accept higher value of deflection
- Alternative support

Flat ribbon support









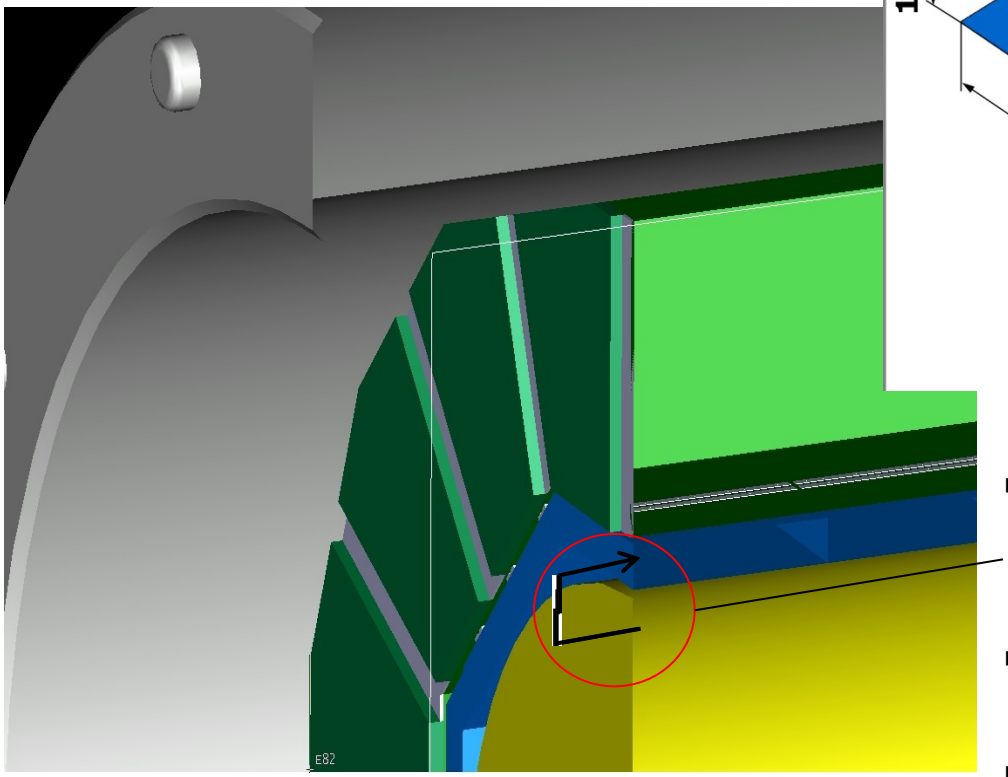
Screws or rivets

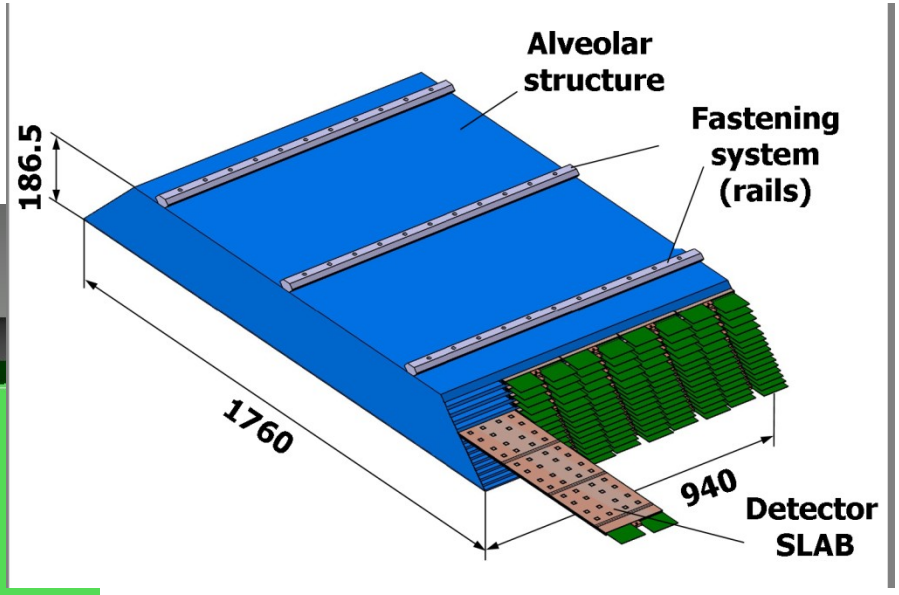
Adjustable in x,y,z

Necessary to move 55mm in Z !

Flat ribbon support

Support in Z- direction

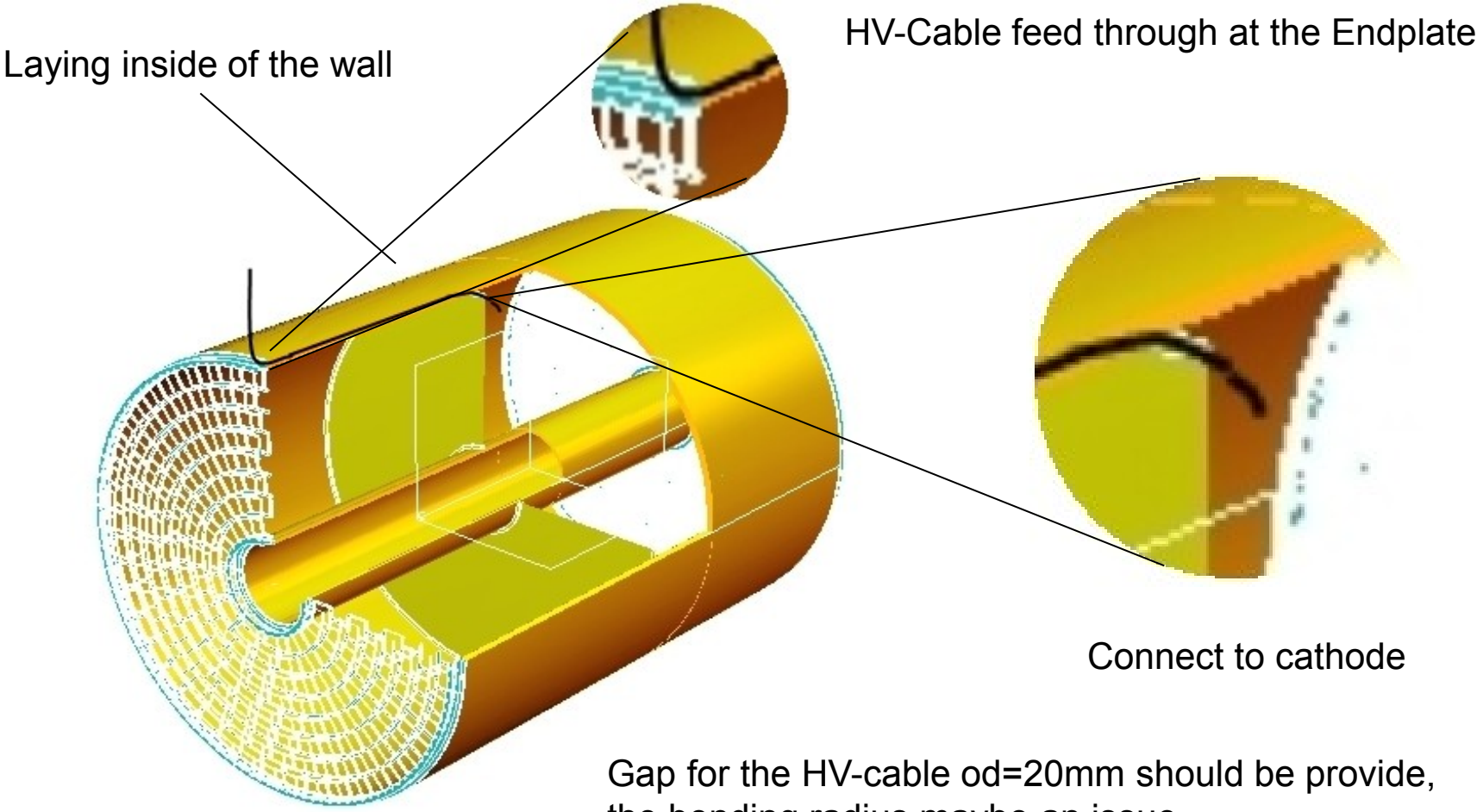




- Stiff U-bracket mounted on the TPC-Endplate
- Incl. a spring to damping the TPC in Z
- Ballpoint connection will push on an plate mounted on the ECAL surface

HV Cable and routing

Overview of an first idea of the HV-cable routing



Gap for the HV-cable od=20mm should be provide, the bending radius maybe an issue

Summary and Outlook

Summary

- Bar support system in progress, preferred solution
- Flat ribbon support should be possible to create
- TPC assembly and installation scheme running

Outlook

- HV- cable feed through
- Cathode design and support structure
- Design and FEA calculations of the field cage wall structure
  - HV isolation
- Support structure of the inner detector