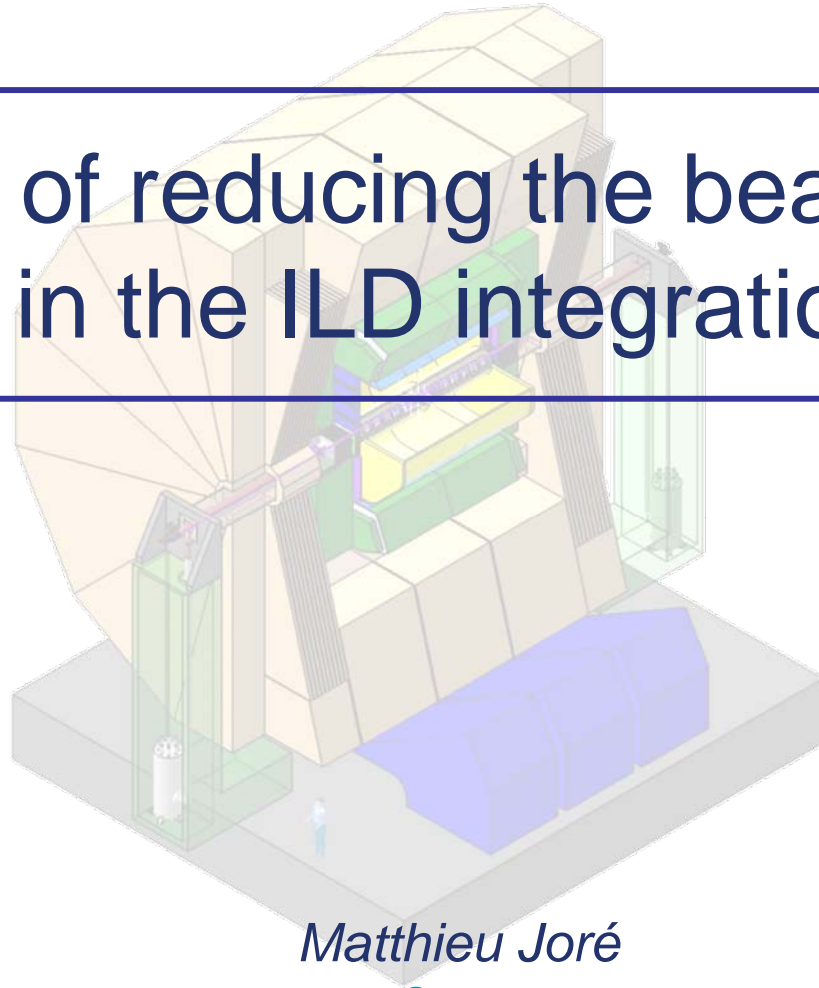




Impact of reducing the beam height in the ILD integration



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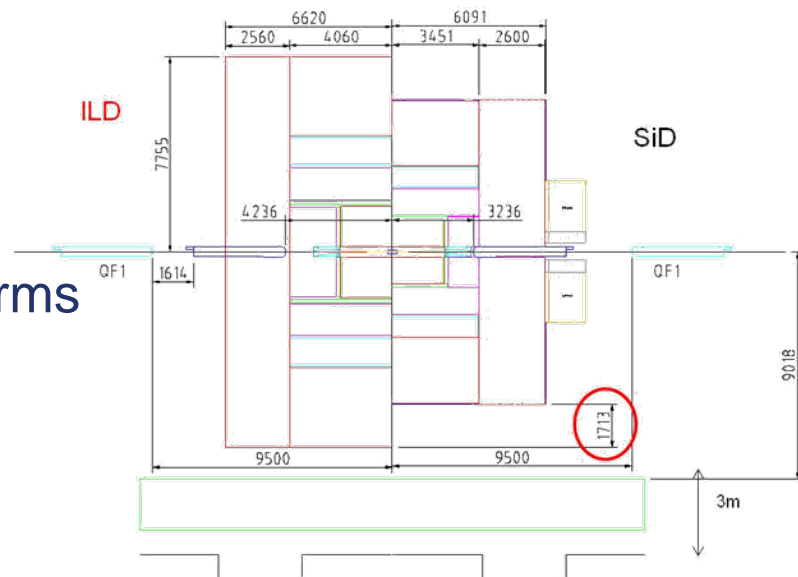
Outline

- Motivations for these studies
- Present design
 - **Reminder of last design (pillar and double support tube)**
 - **Opening scenario**
 - **Supporting feet design proposal:**
 - Barrel
 - Endcap
- Toward a 8m beam height
 - **Modifications for the barrel**
 - **Modification for the Endcaps**
- Conclusions and comments



Introduction

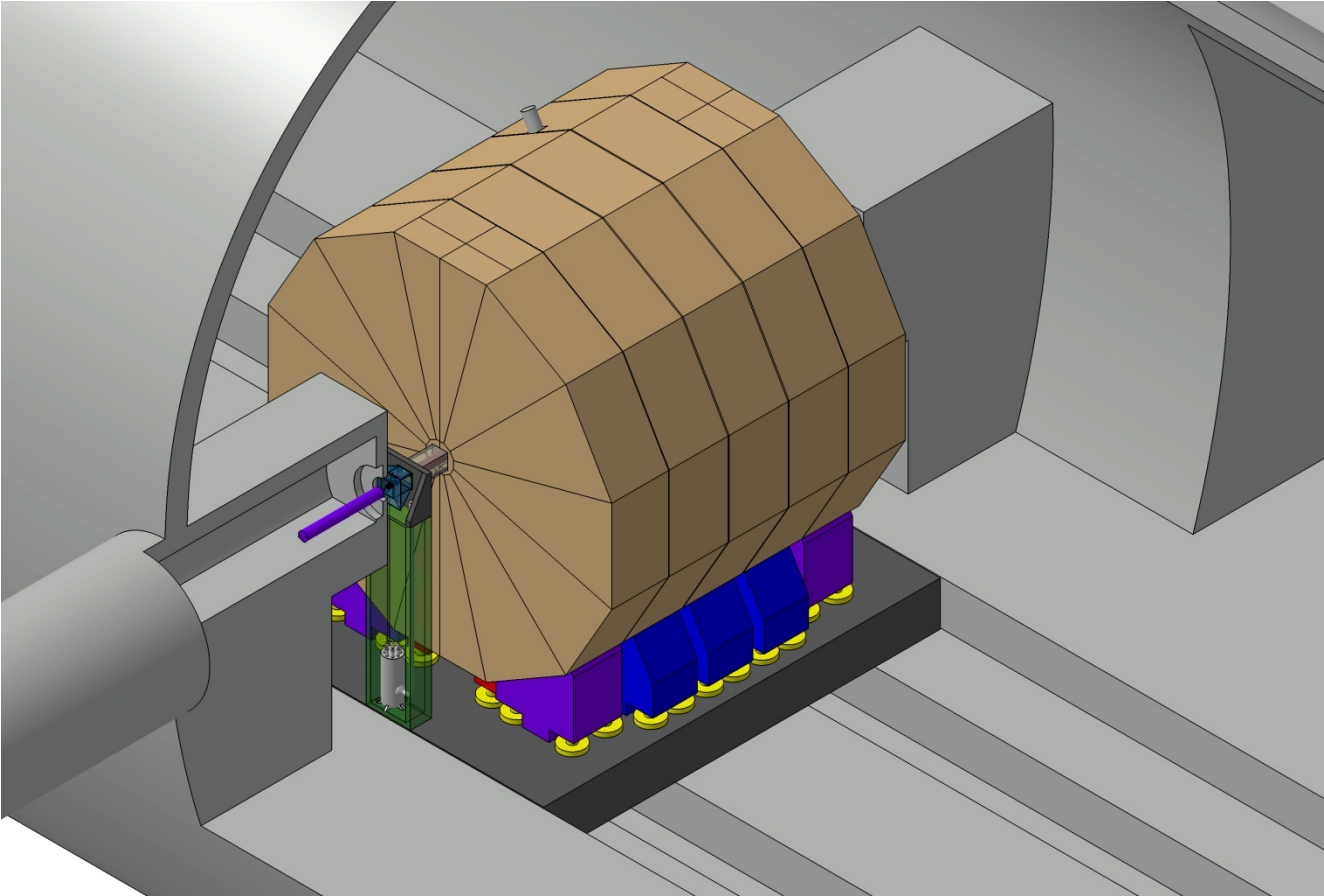
- The goal is to soon converge to a common solution between SiD and ILD
 - **With or without a platform**
- ILD prefers the platform solution for many reasons
- BUT beam height of each detector is different :
 - **9m for ILD**
 - **Around 8m for SiD ?**
- At CERN workshop we discussed about having both detector on 2 platforms with different height





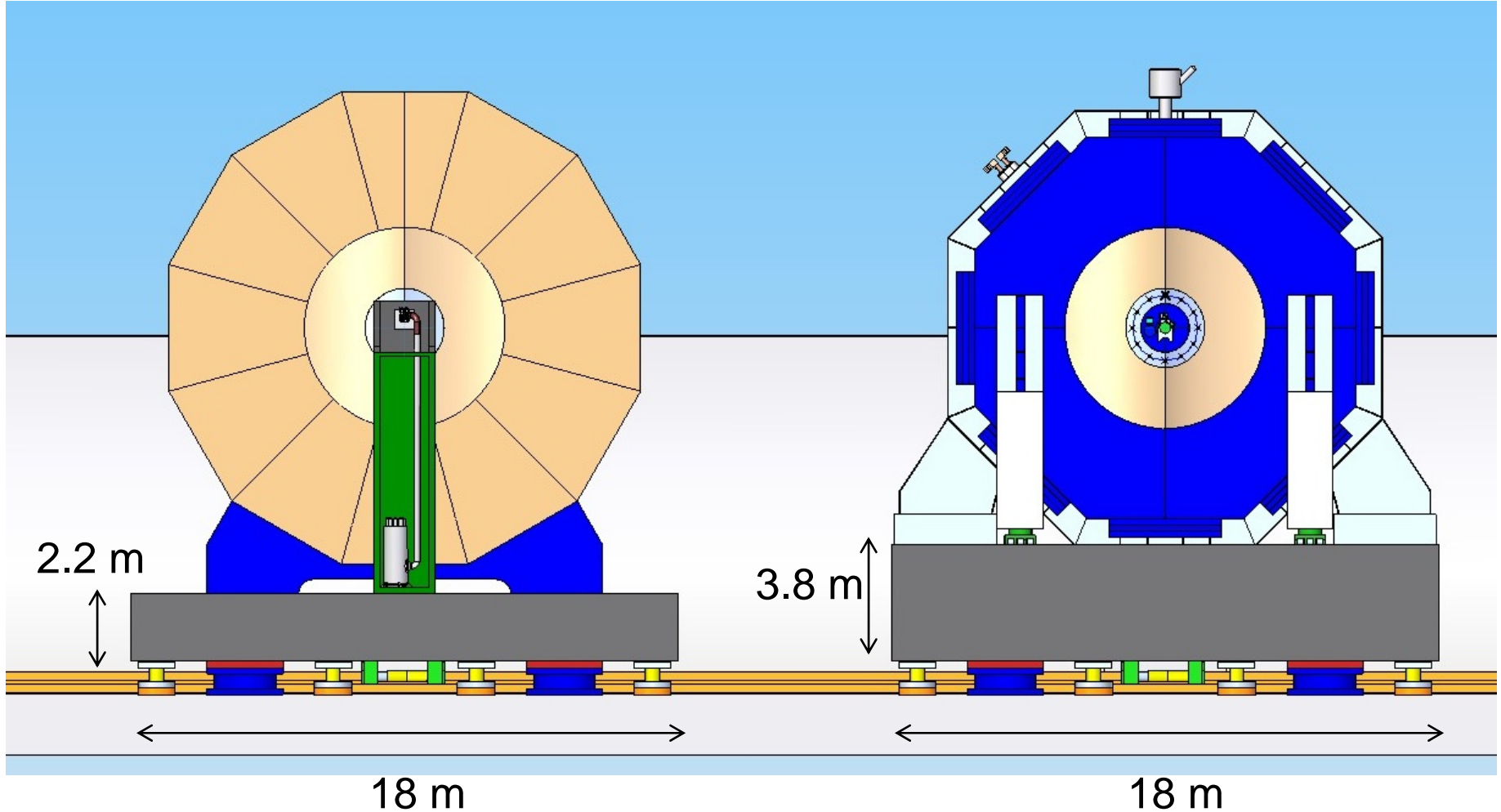
First consequence

- For opening on beam, the platform must take all the width of the cavern (18m)





How it looks like ?



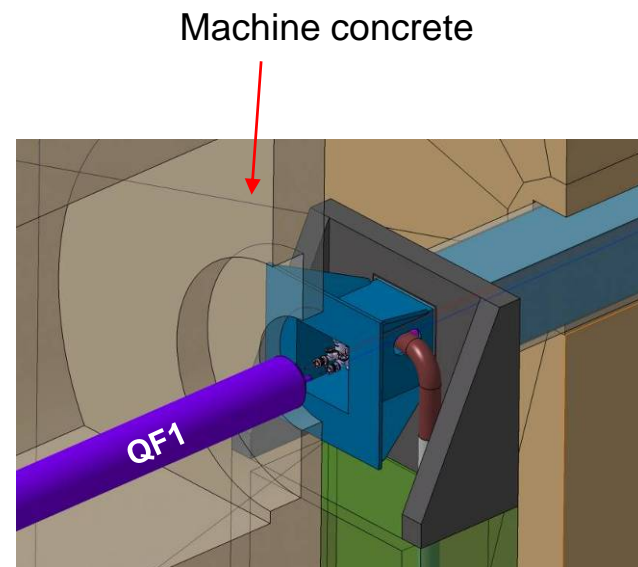
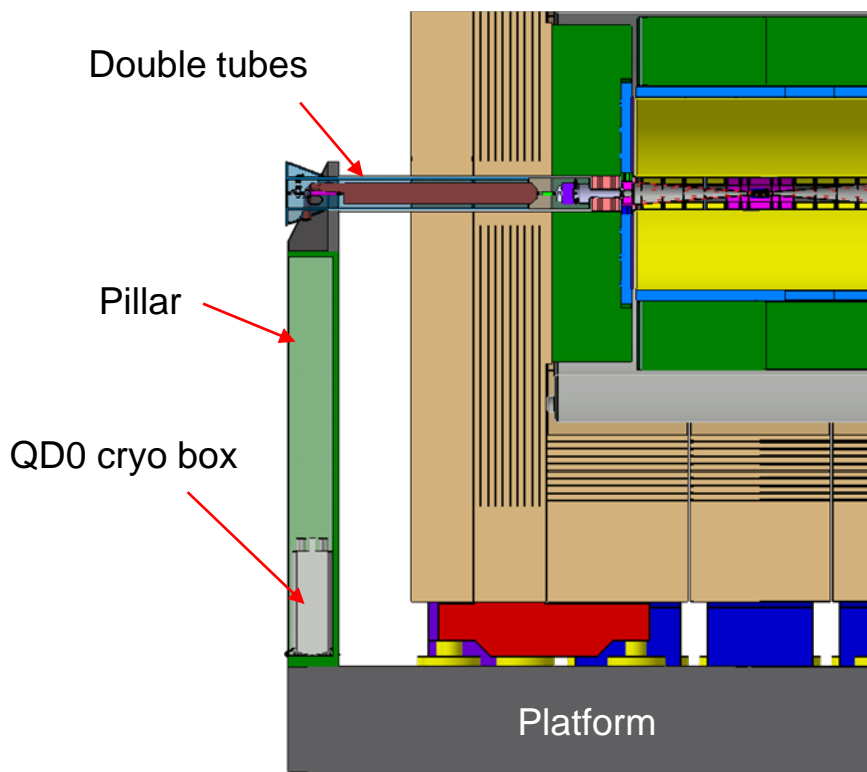
From M. Oriunno @ SiD workshop 2010 after CERN workshop

➔ It seems interesting to reduce the difference as much as possible



Reminder of the present design

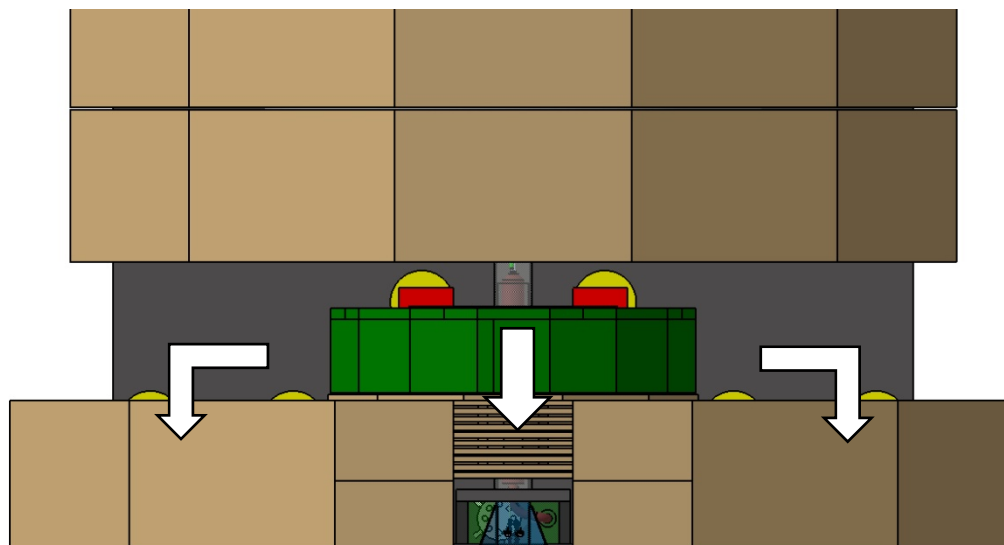
- Solution of double tube support for the forward region :
 - Inner tube fixed to the machine concrete on beam for QD0
 - Outer tube supported with pillar and tension rod
 - Pillar is used to support QD0 off beam





Present design with 9m

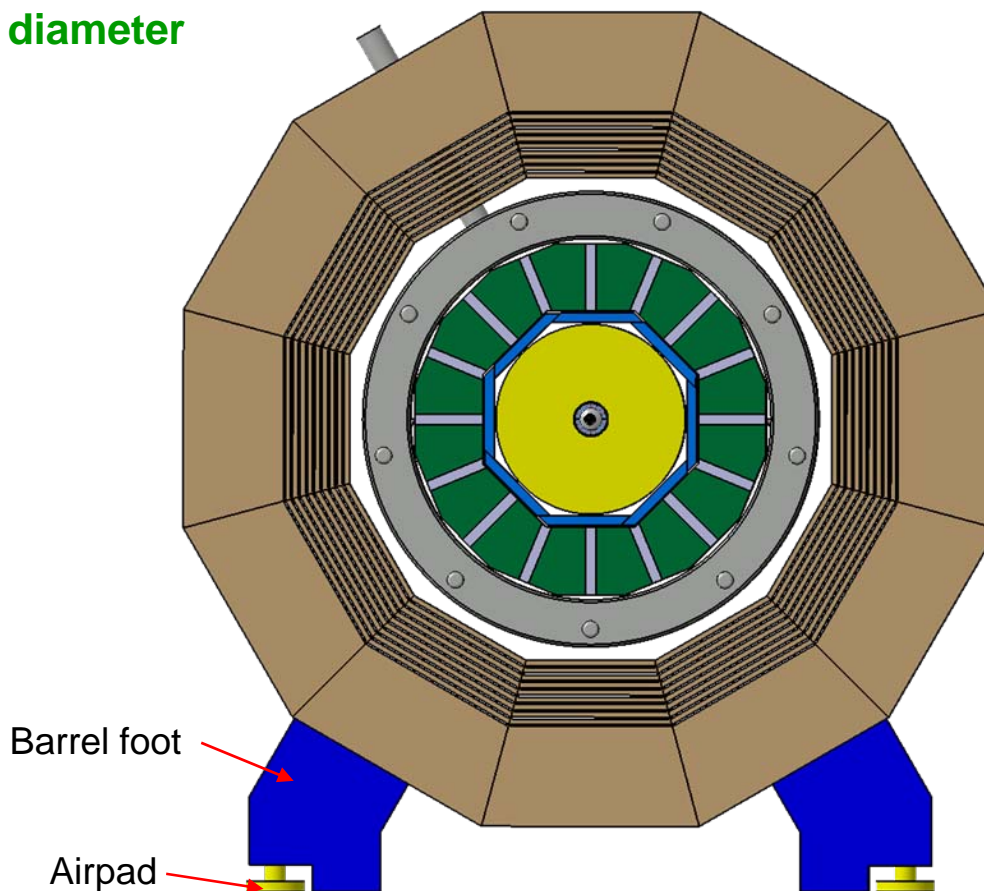
- Same as Lol : end cap in 3 parts
 - Inner endcap ring with muon chambers
 - Last endcap ring split in 2
- About 1m for accesing





Rough barrel feet design

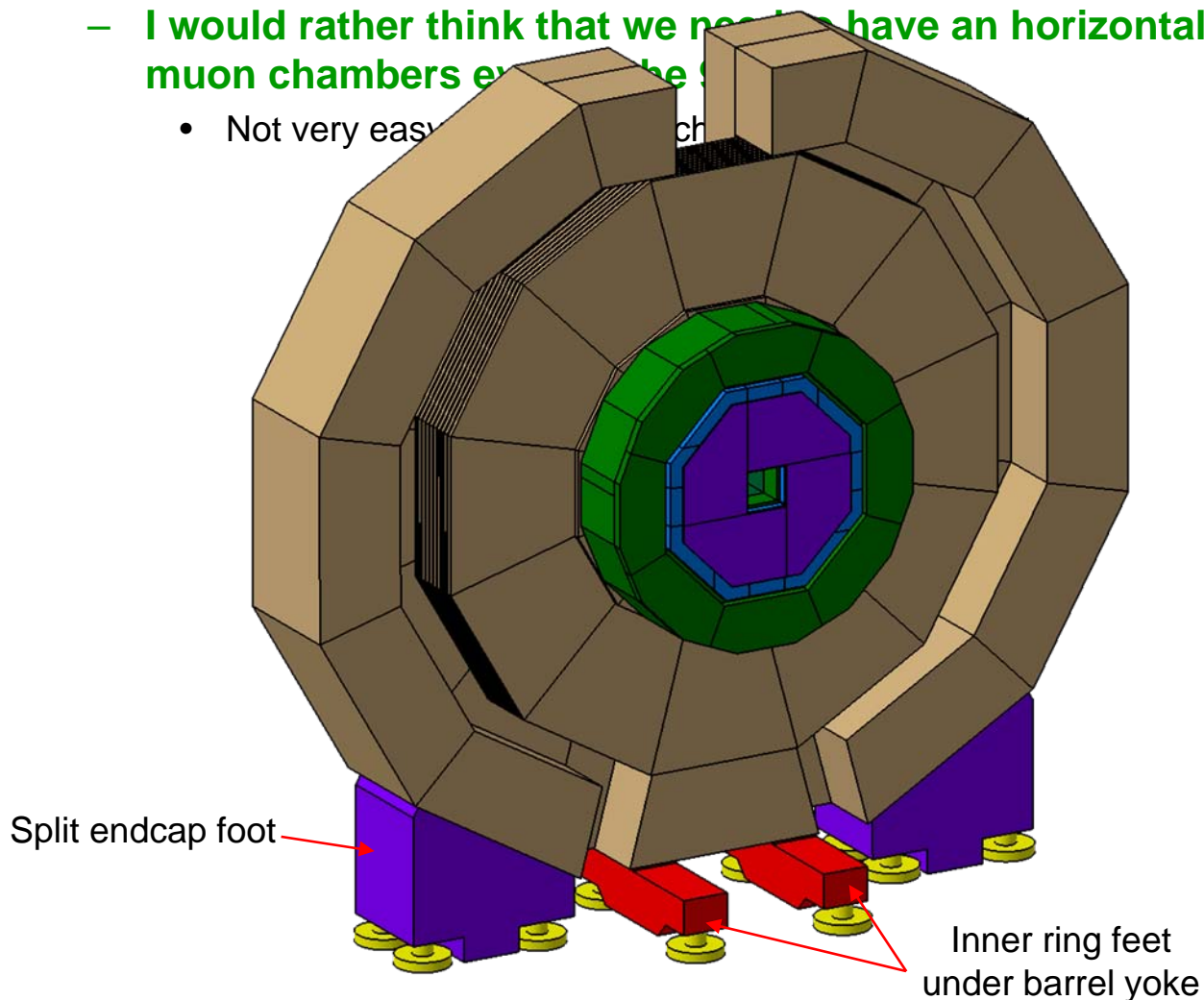
- Dimension of airpads :
 - 500mm height
 - 1100mm diameter





Endcap feet

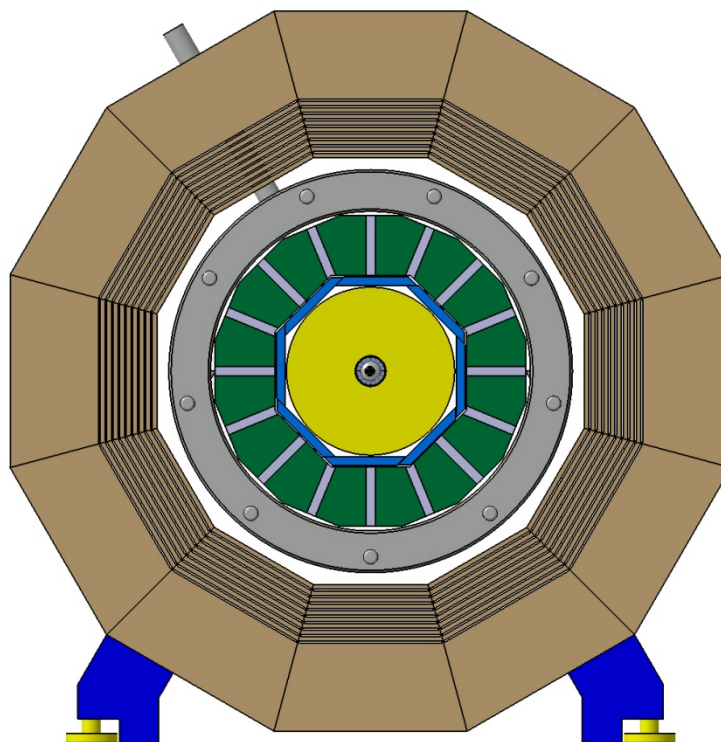
- Designed from H. Gerwing in 2009
 - 15% stability seems OK (to be checked)
 - I would rather think that we need to have an horizontal insertion of the muon chambers exactly where the split endcap foot is
 - Not very easy to reach

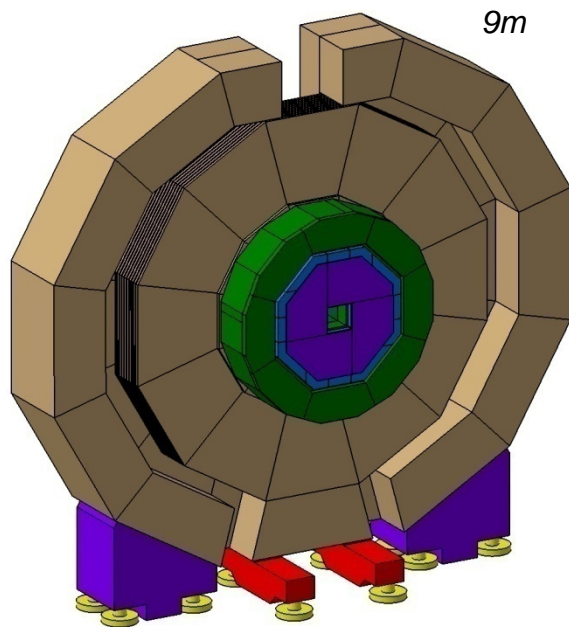




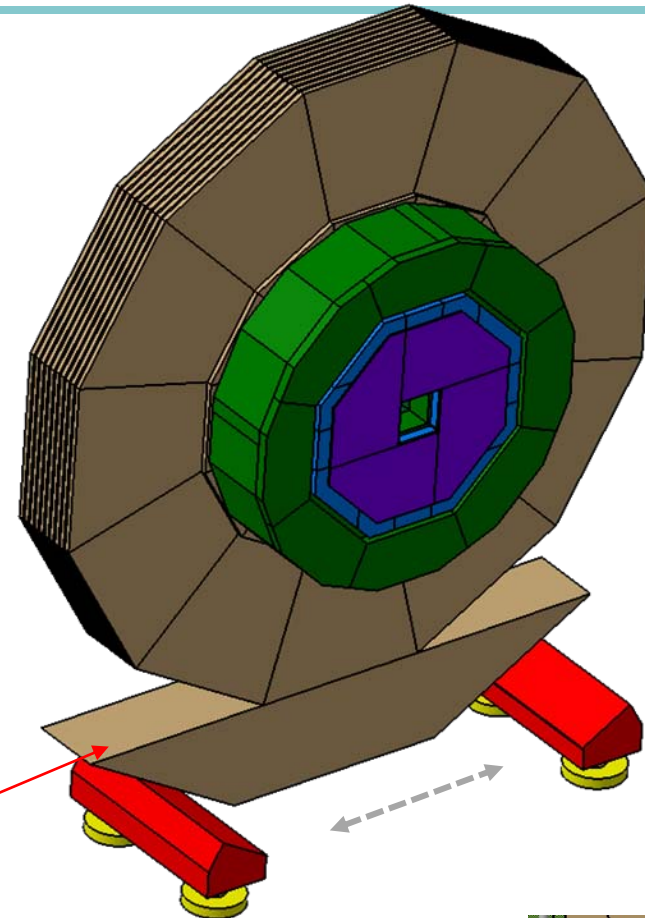
Toward 8m beam height

- Why 8m ? = Challenging goal in order to
 - See all the problems when reducing beam height
 - Check if one unique beam height is possible
- Distance between yoke and floor would then be around 250mm.
- Modification to the barrel yoke feet
 - No huge change



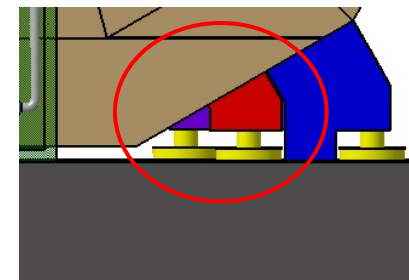


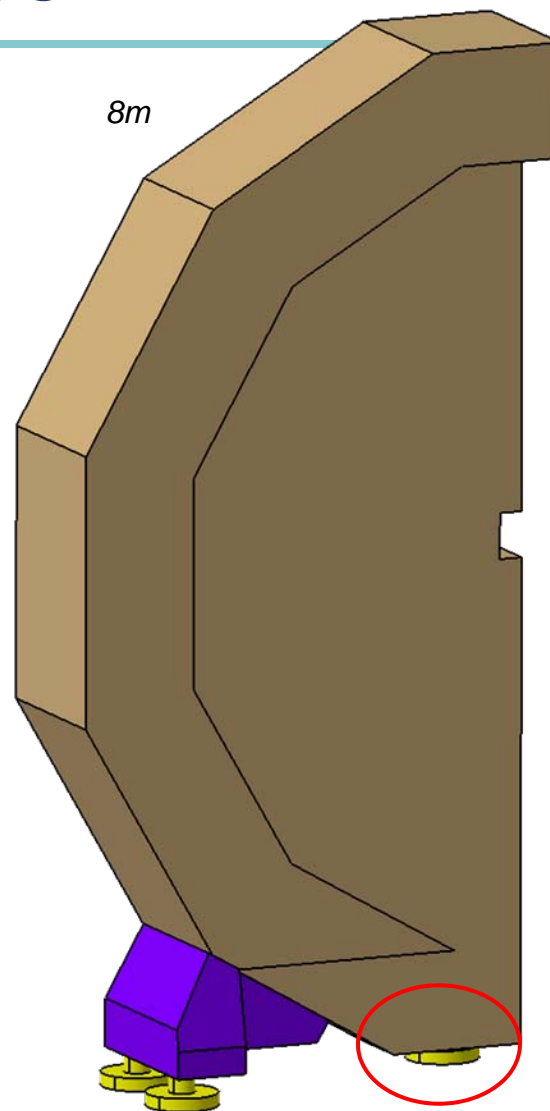
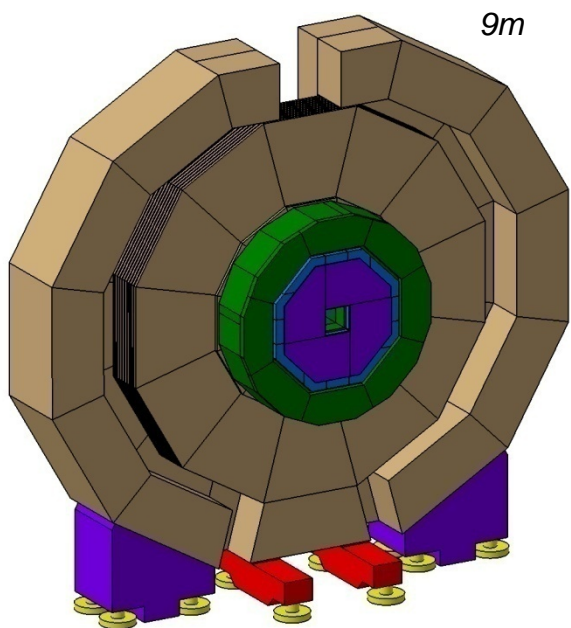
9m



8m

- Not enough space for feet
 - Yoke design must change
 - Feet design is modified
 - Distance between feet is increased
 - Muons chamber must then be inserted horizontally

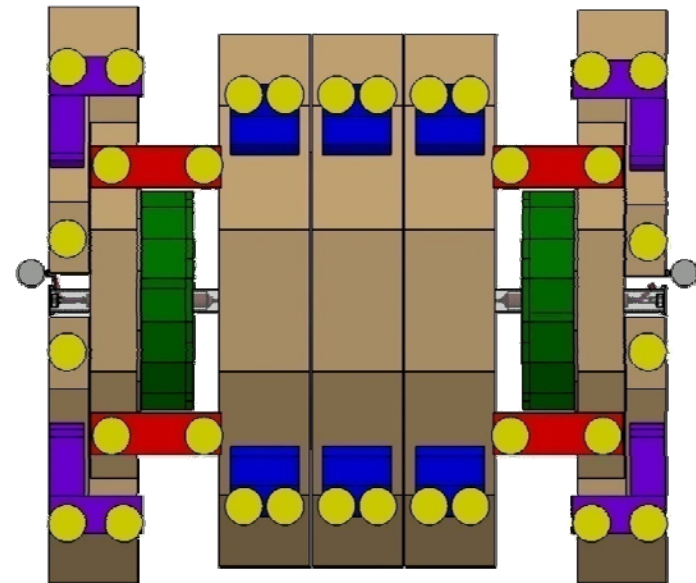
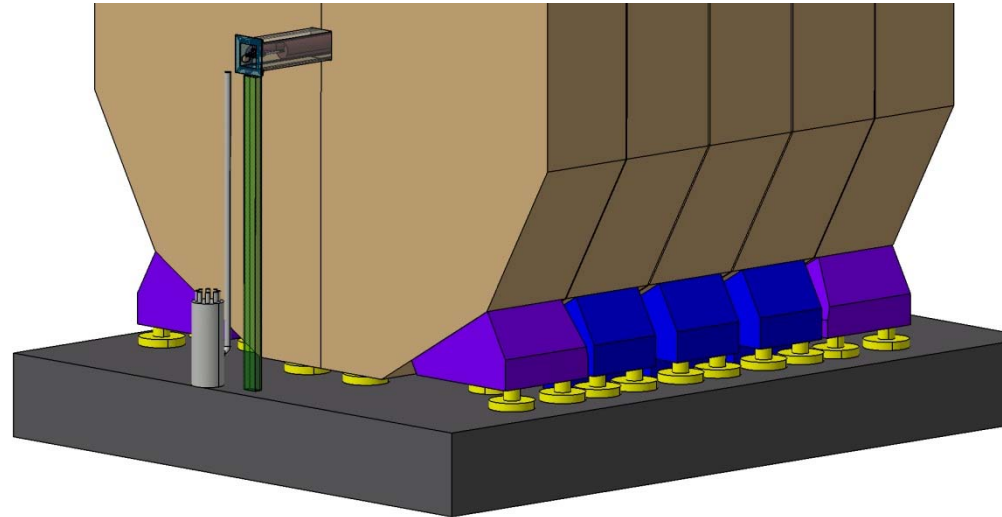
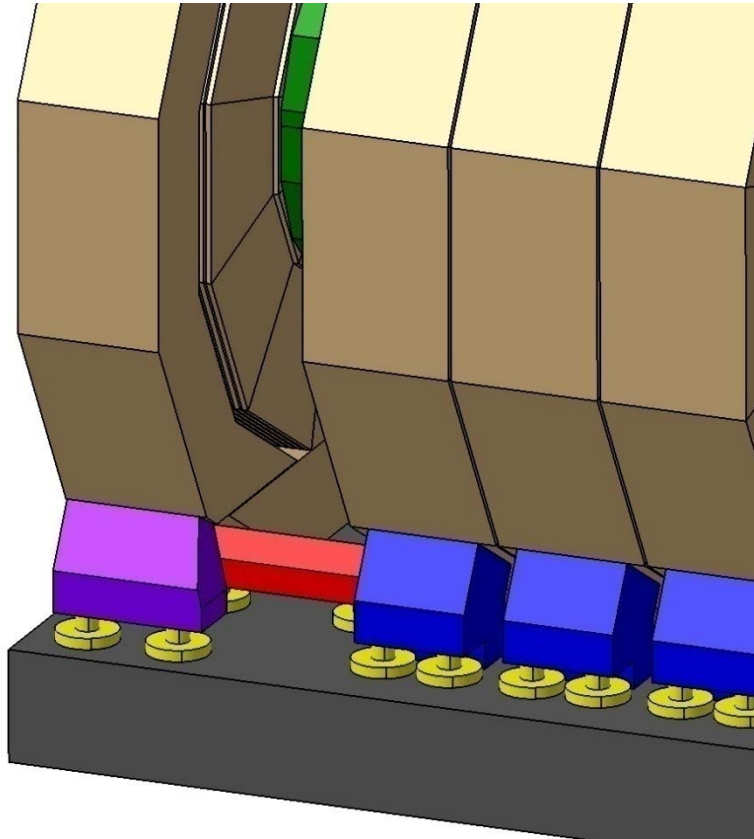




- In the case we keep the split endcaps
 - Feet design is modified
 - Yoke design also modified
 - One airpad is integrated into the yoke for stability reason

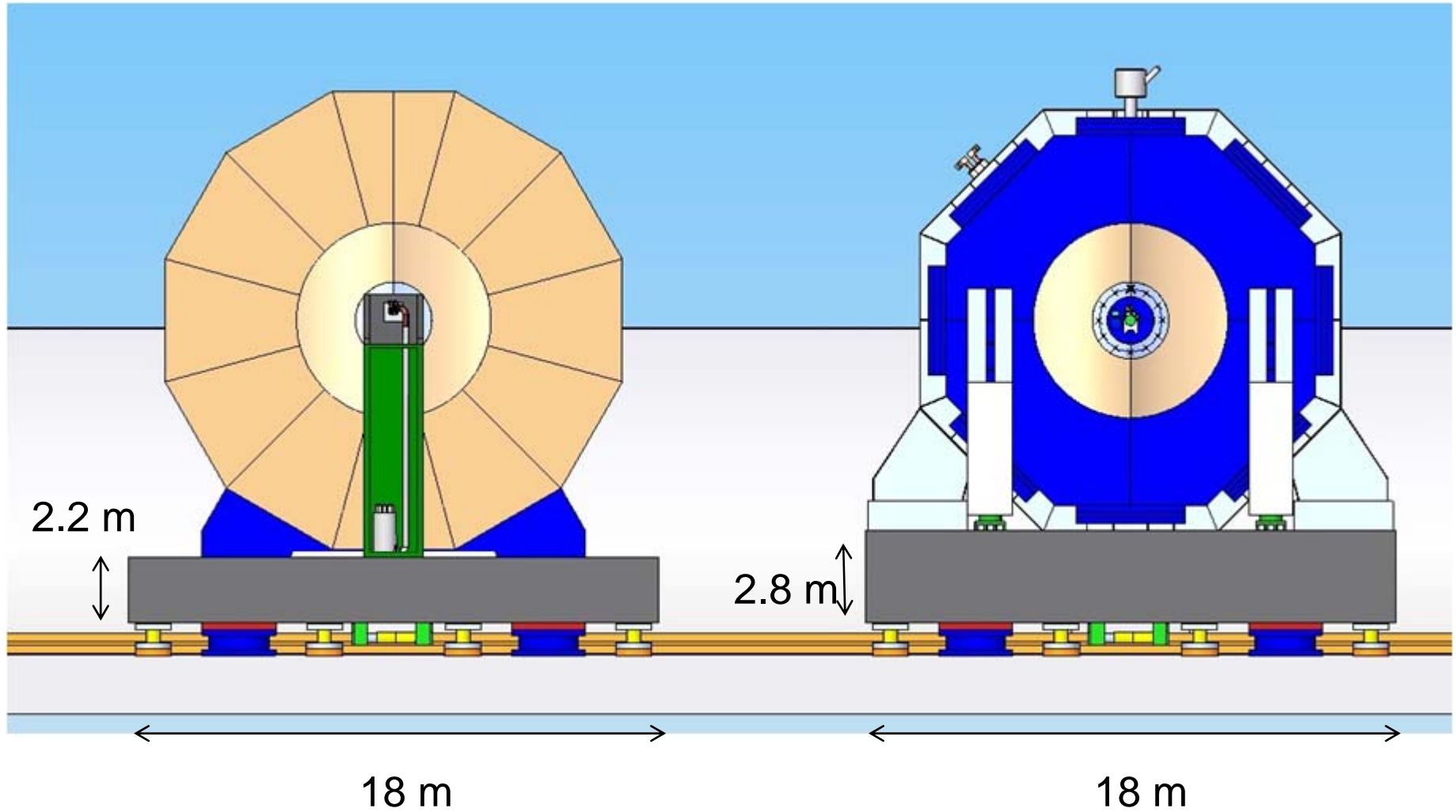


Some additionnal pictures





New ILD and SiD on a platform





Conclusions and comments

- Having a 8m beam height seems feasible in the present baseline
 - **No changes on barrel yoke**
 - **Review endcap yoke design**
 - Certainly accept horizontal insertion of the muons chambers
 - Review opening scenario on IP
 - **Any comments?**
- Some general comments on the integration :
 - **Pillar dimensions is defined by the cryoline + cryobox**
 - Possible to reduce the length by putting the box outside the platform
 - **Is that split endcap easy to handle?**
 - Need 2 different movements
 - **If we want to avoid these split endcaps, how to recover the beam access?**
 - Reduce the pillar length to the minimum (about 200mm)
 - Reduce the yoke size
 - Is it possible to relax the fringe fields constraints?
 - Use this famous endcap coils as CLIC?