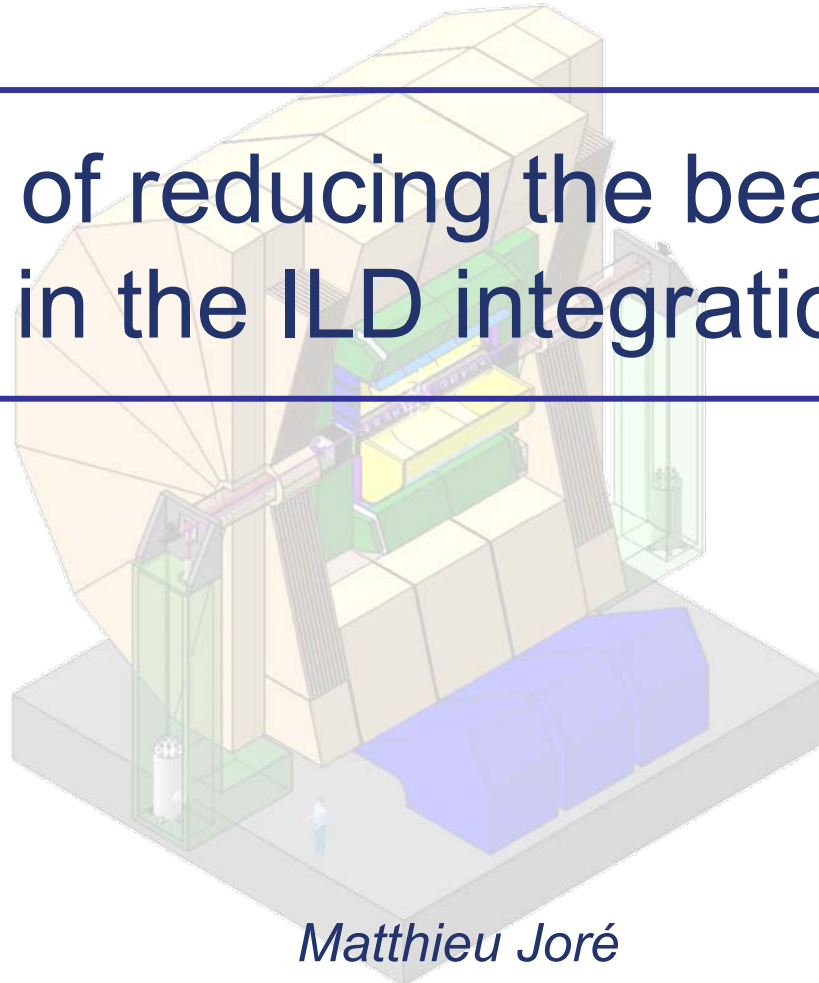


# Impact of reducing the beam height in the ILD integration



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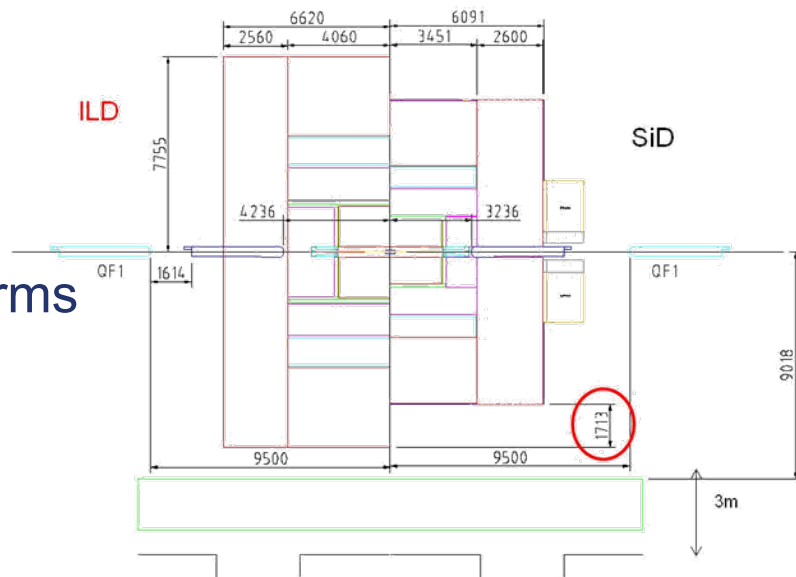
# Outline

- 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

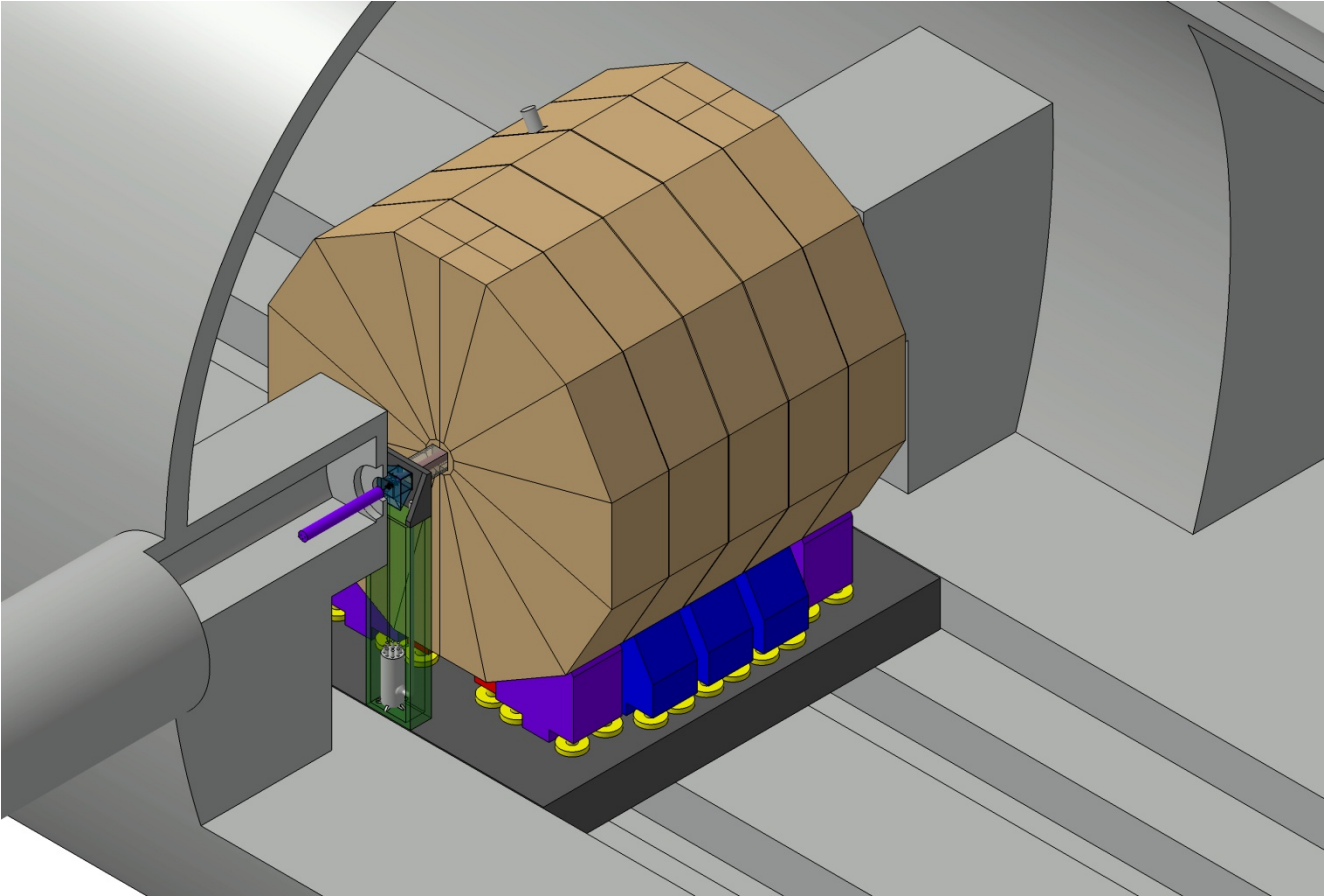
- The goal is to soon converge to a common solution between SiD and ILD
  - **With or without a platform**
- ILD prefers the platform solution for many reasons
- BUT beam height of each detector is different :
  - **9m for ILD**
  - **Around 8m for SiD ?**
- At CERN workshop we discussed about having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





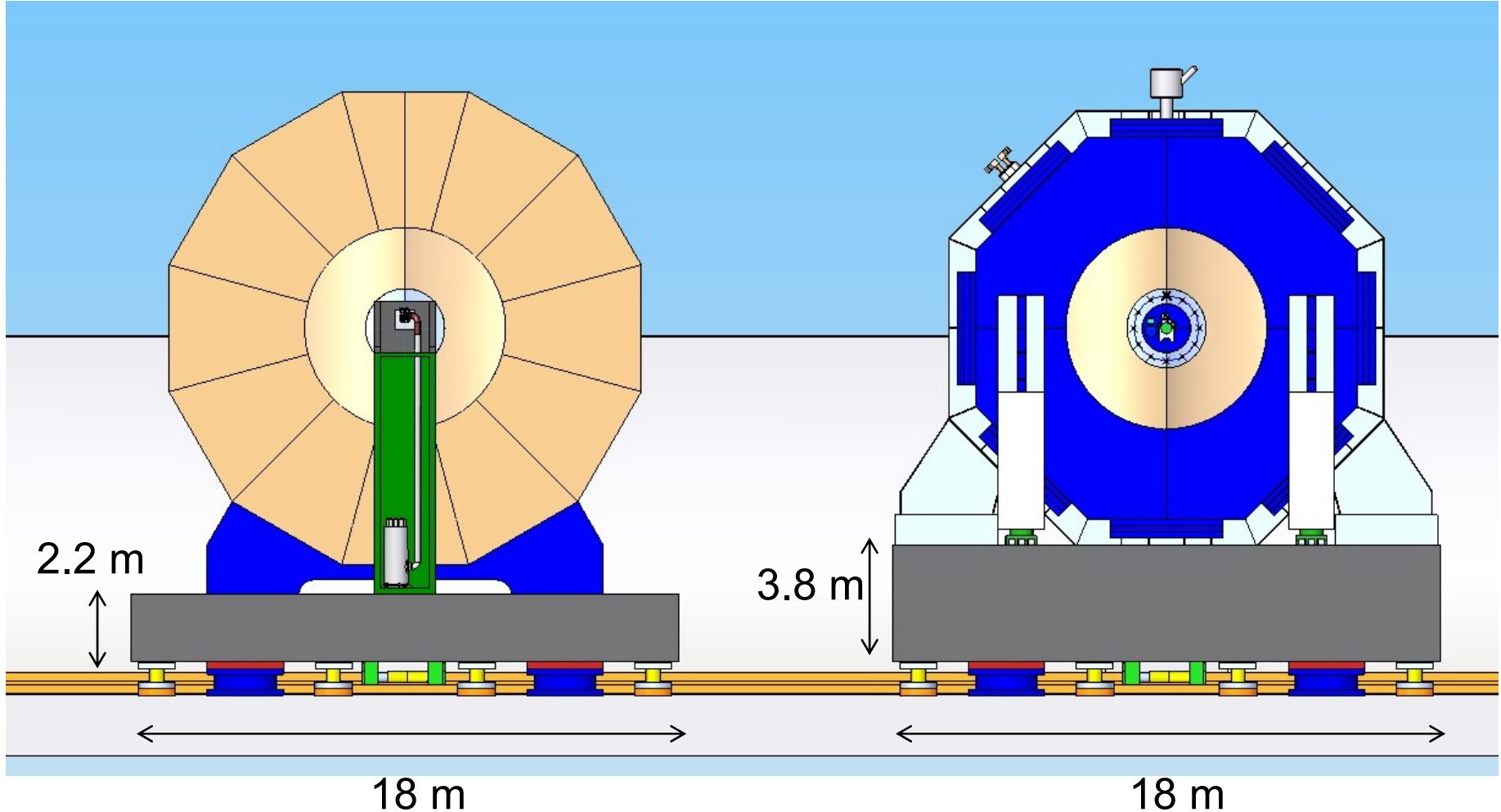
# First consequence

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





# How it looks like ?



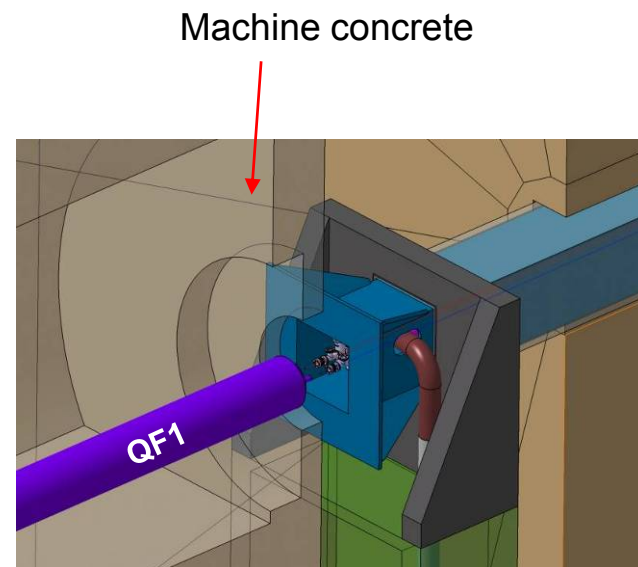
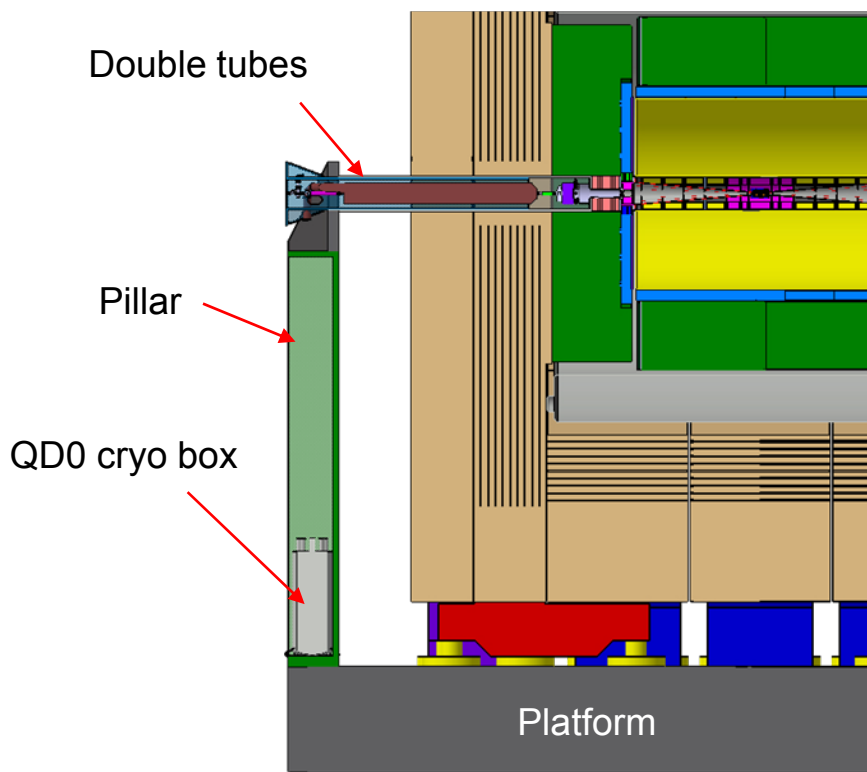
*From M. Oriunno @ SiD workshop 2010 after CERN workshop*

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



# Reminder of the present design

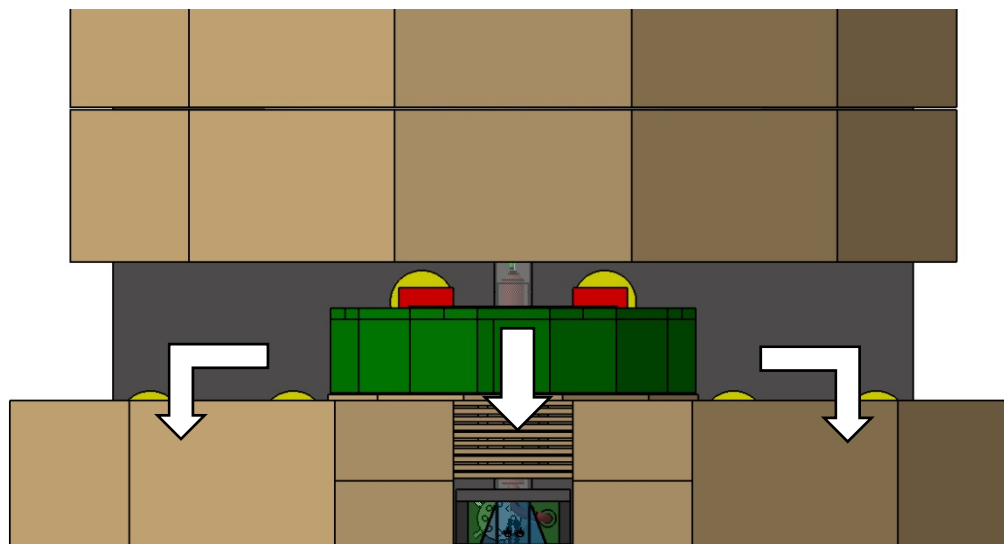
- Solution of double tube support for the forward region :
  - Inner tube fixed to the machine concrete on beam for QD0
  - Outer tube supported with pillar and tension rod
  - Pillar is used to support QD0 off beam





# Present design with 9m

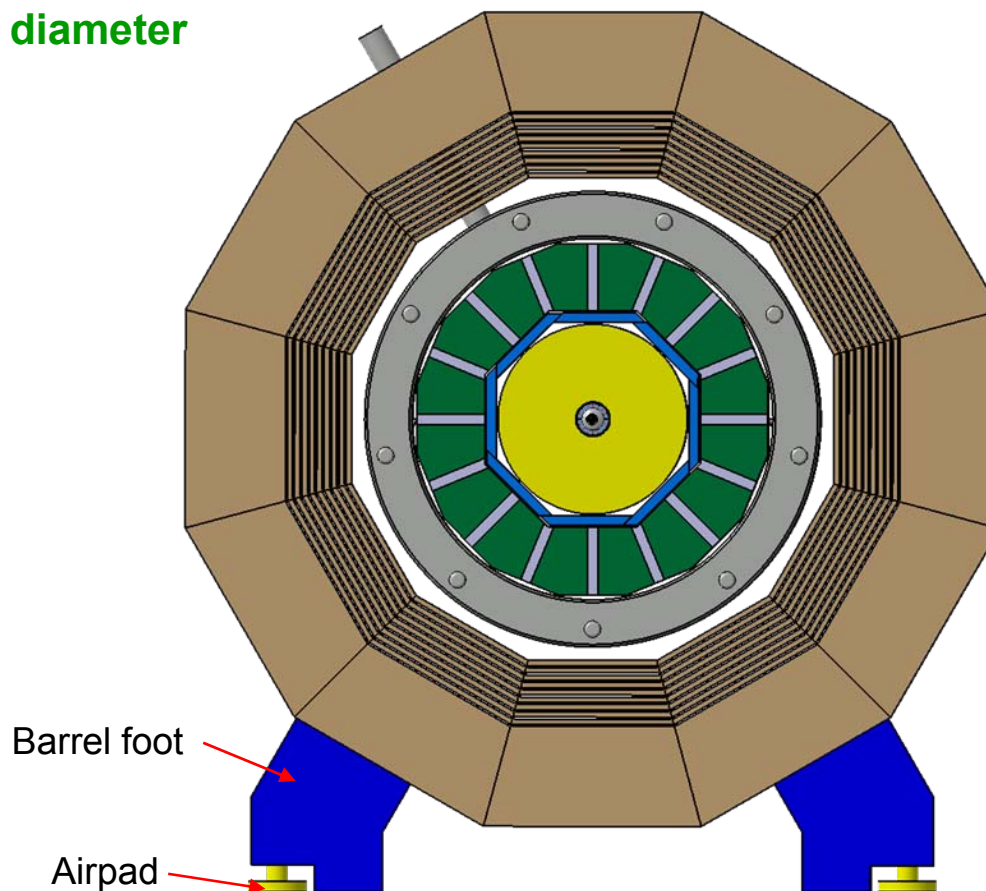
- Same as Lol : end cap in 3 parts
  - Inner endcap ring with muon chambers
  - Last endcap ring split in 2
- About 1m for accesing





# Rough barrel feet design

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

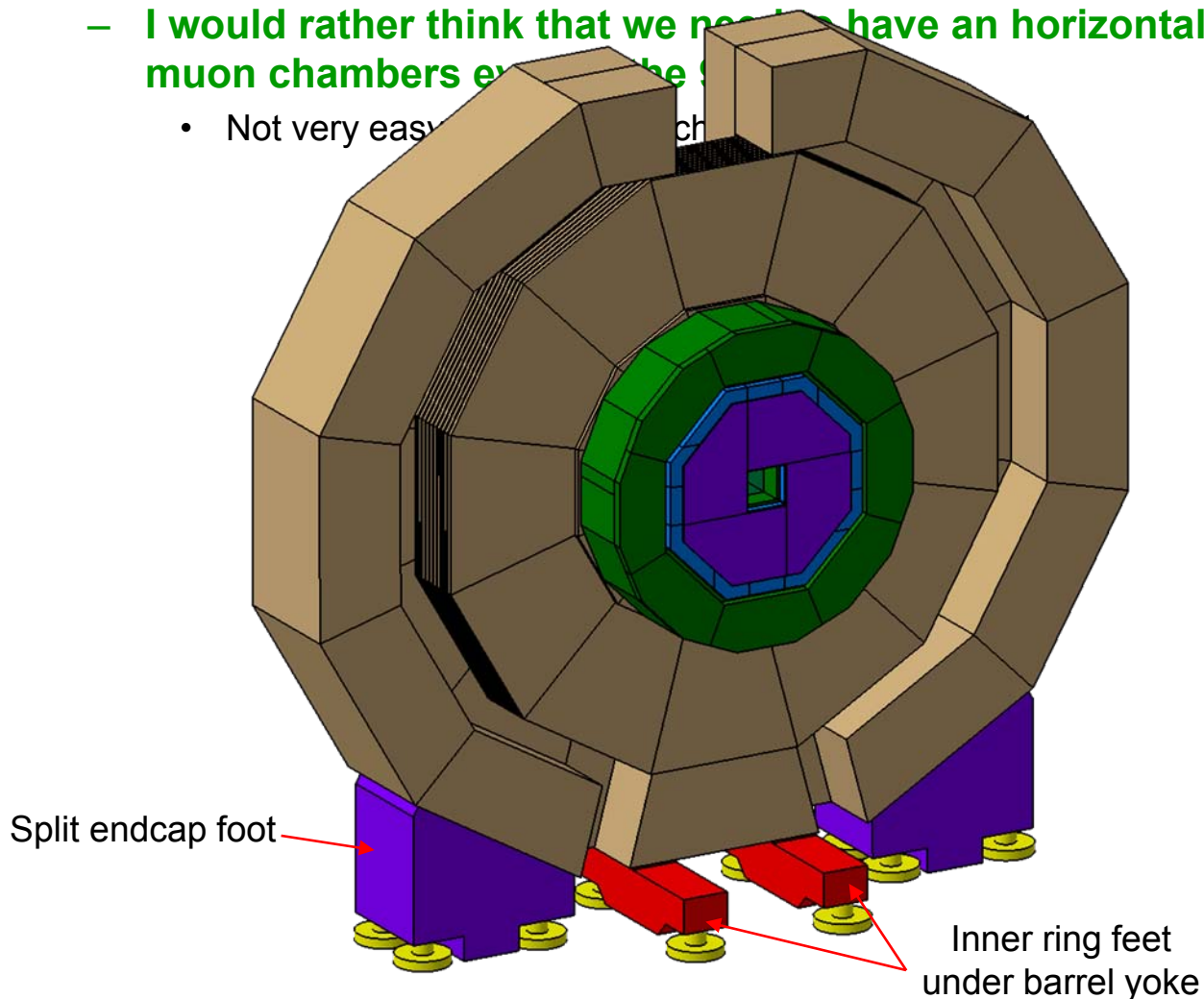






# Endcap feet

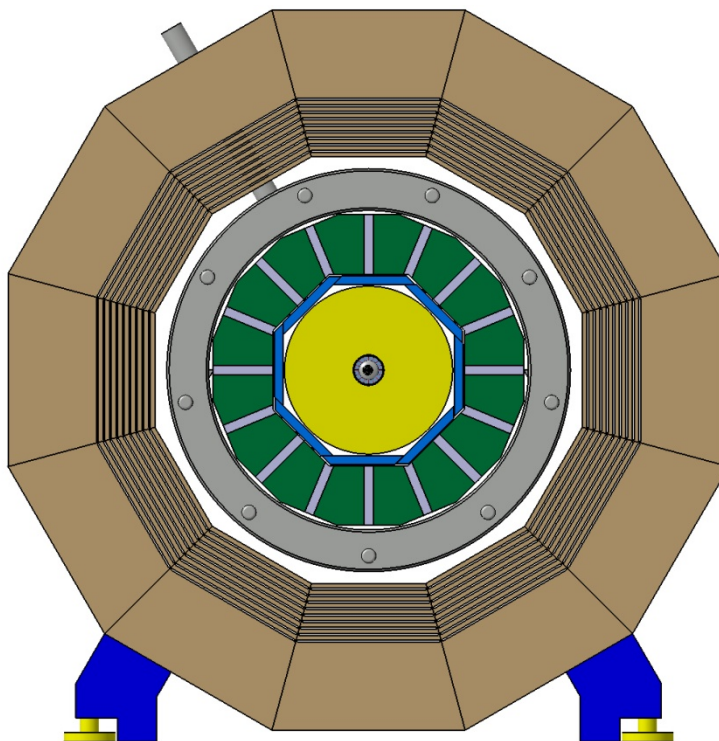
- Designed from H. Gerwing in 2009
  - 15% stability seems OK (to be checked)
  - I would rather think that we need to have an horizontal insertion of the muon chambers exactly where the split endcap foot is
  - Not very easy to reach

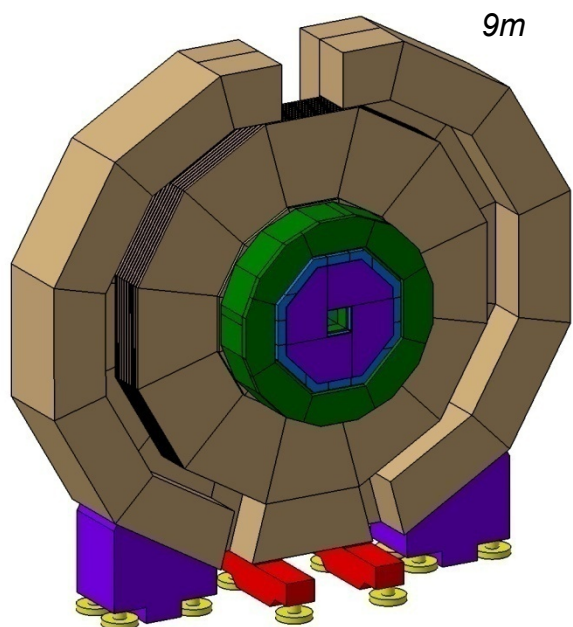




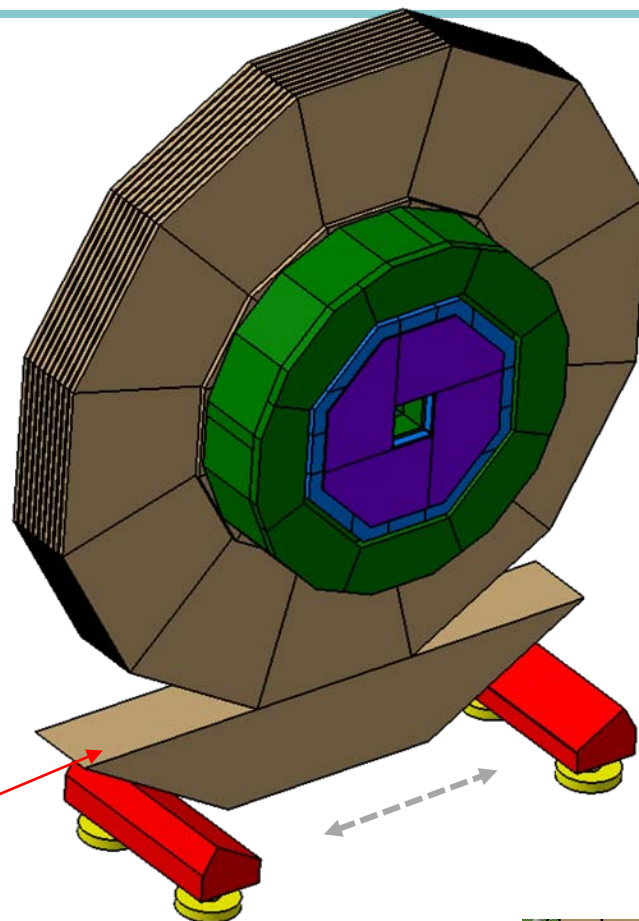
# Toward 8m beam height

- 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



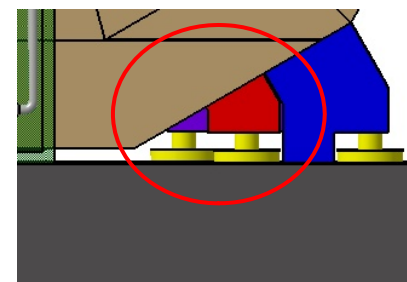


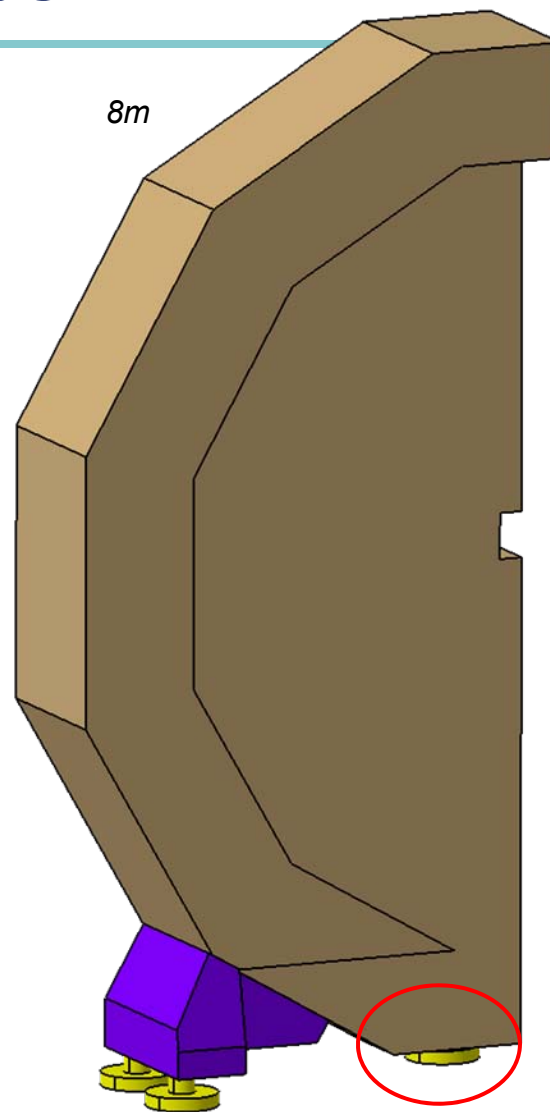
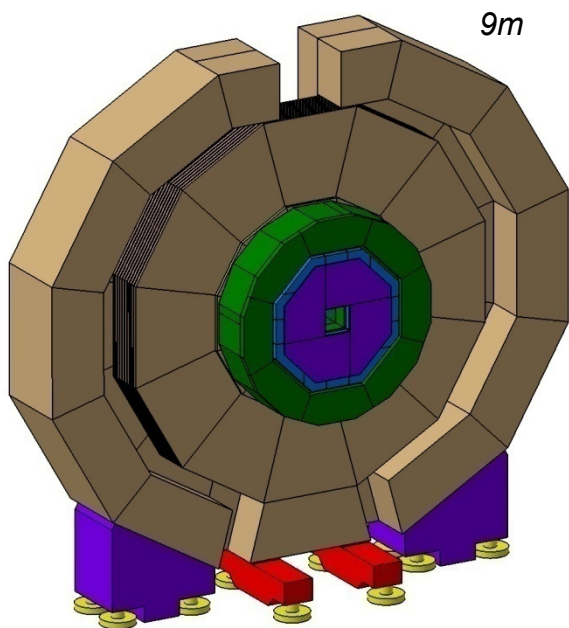
9m



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

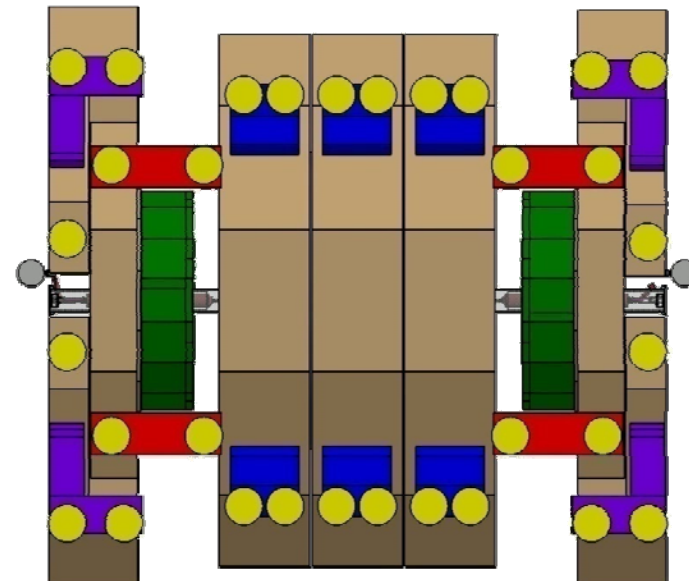
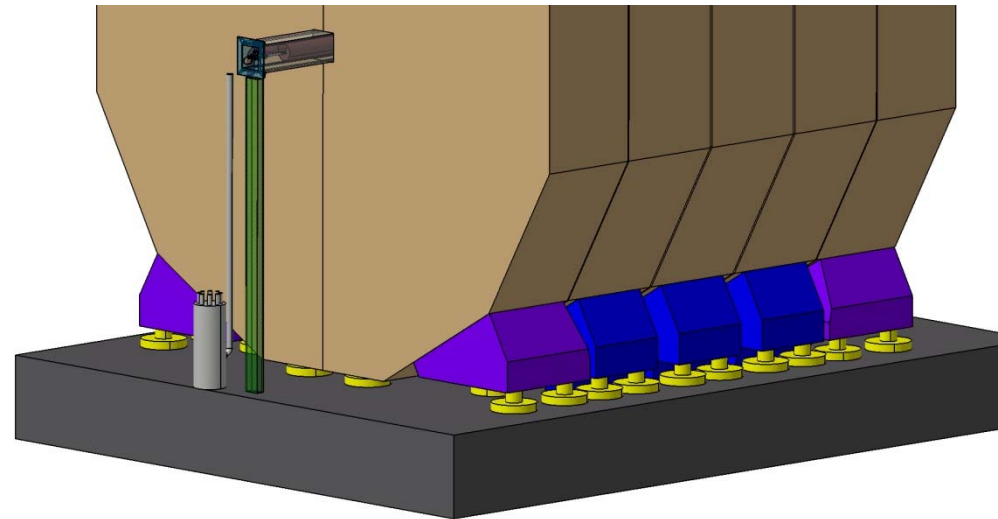
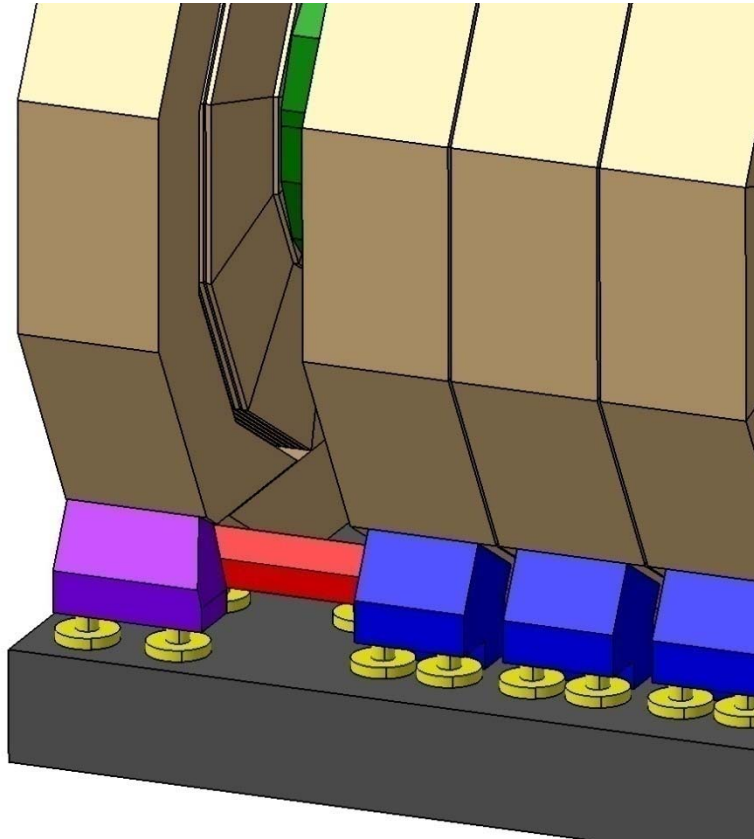




- In the case we keep the split endcaps
  - Feet design is modified
  - Yoke design also modified
  - One airpad is integrated into the yoke for stability reason

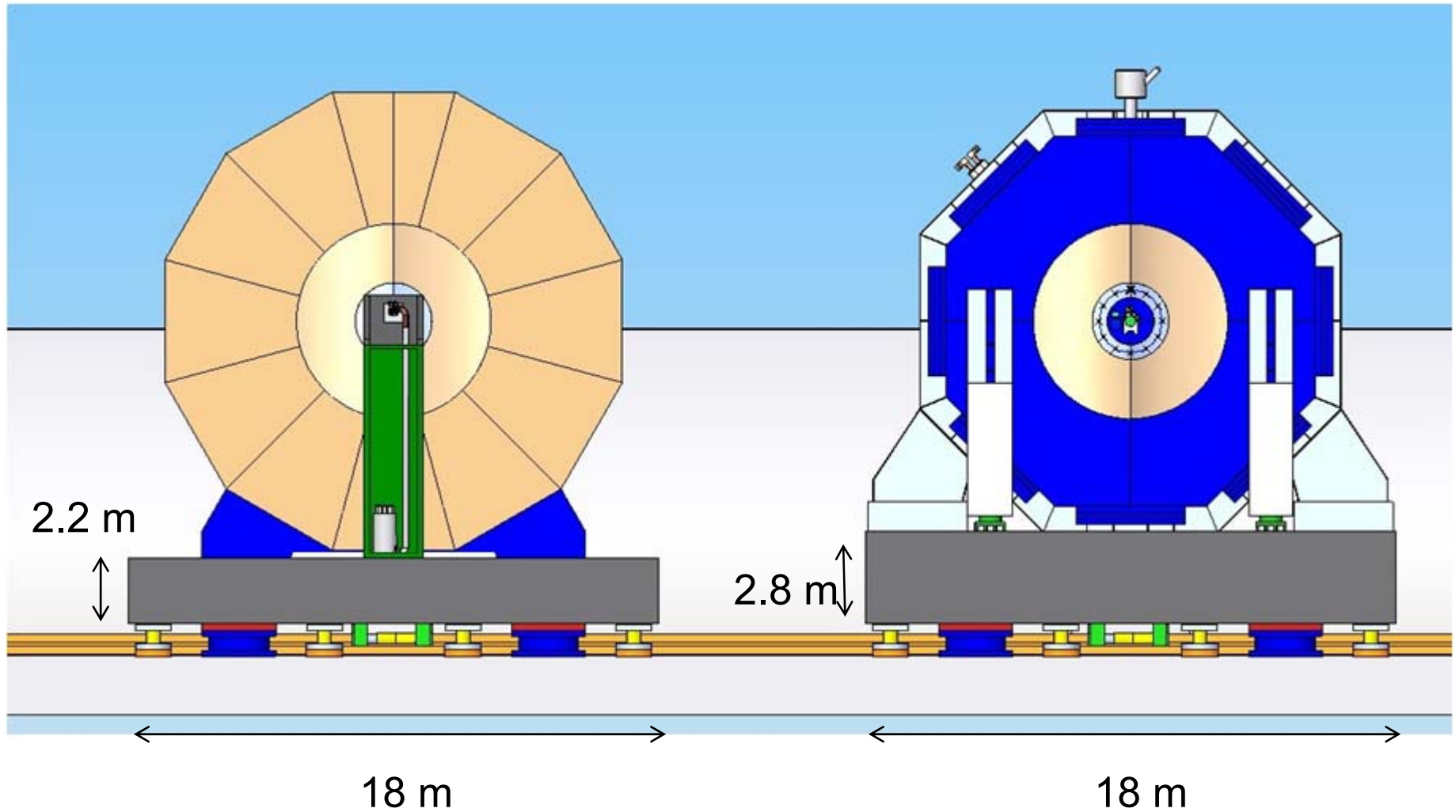


# Some additionnal pictures





# 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?