

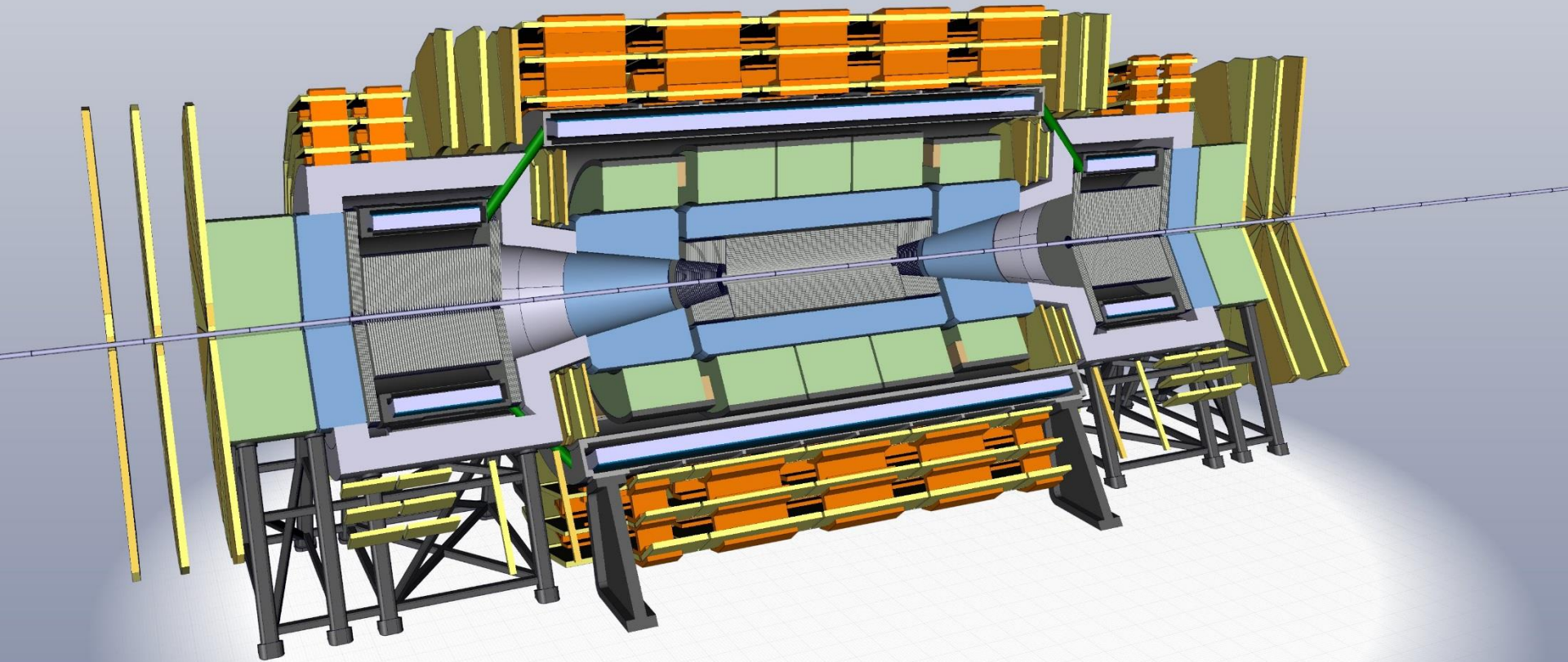


ASSEMBLY AND OPENING SCENARIOS

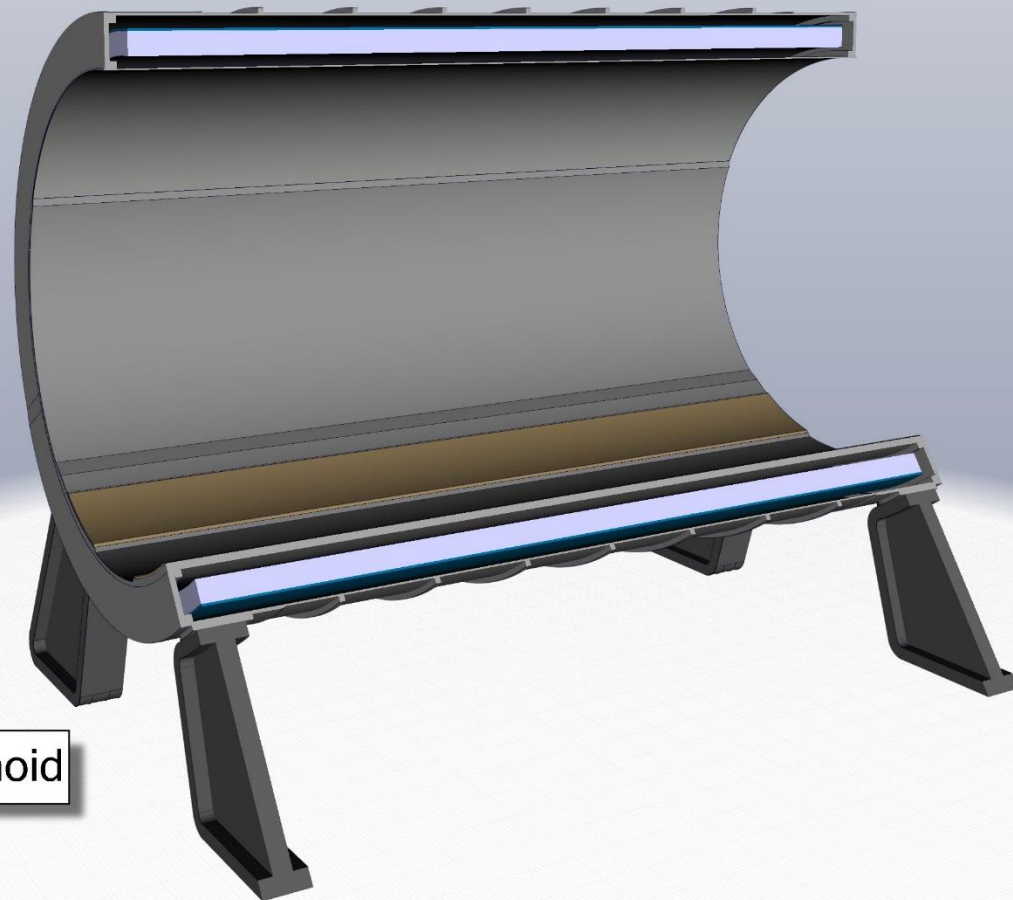
Helder Filipe Pais da Silva

FCC collaboration,
Hadron detector meeting , October 18, 2016

3D view of the detector

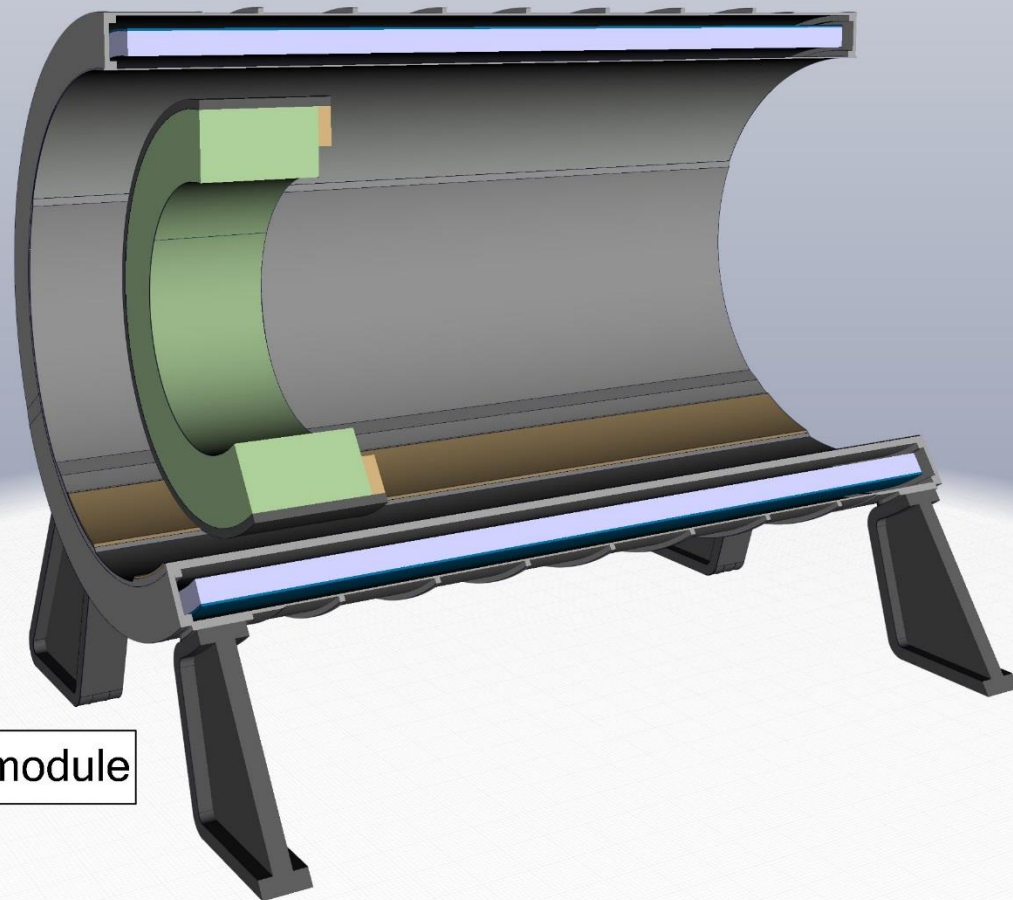


Assembly procedure



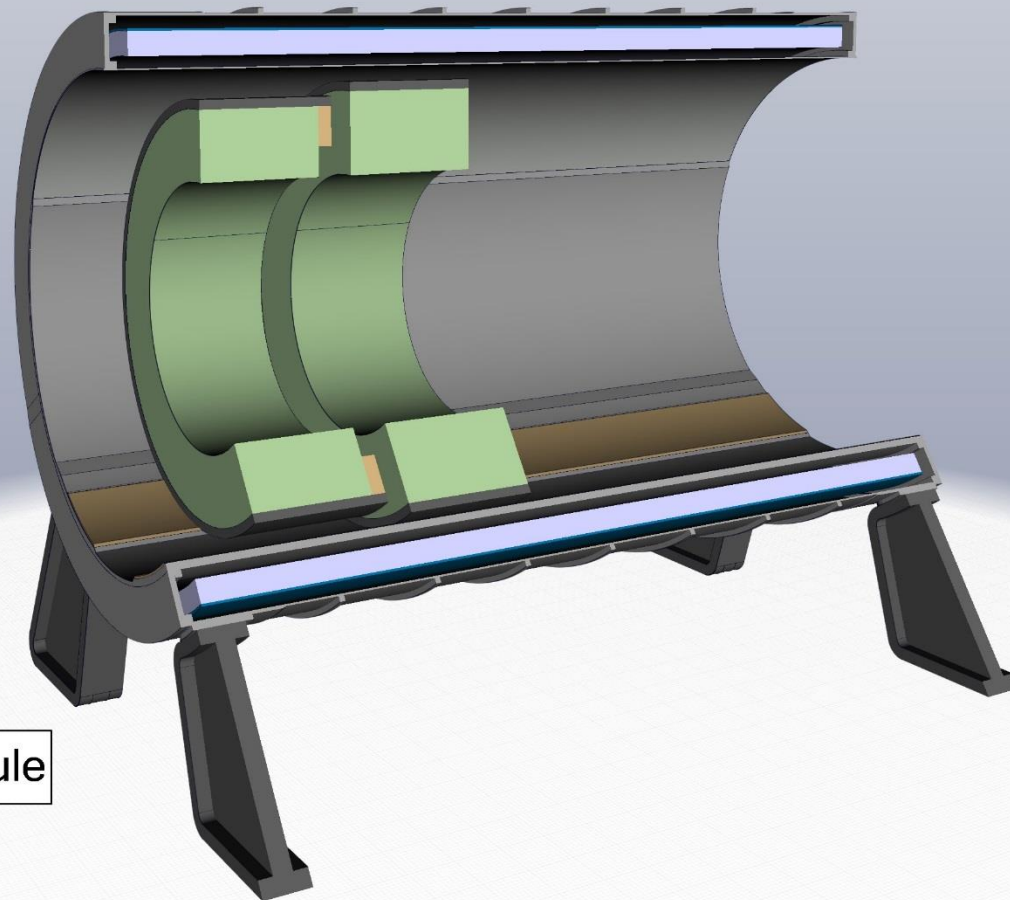
Install main solenoid

Assembly procedure



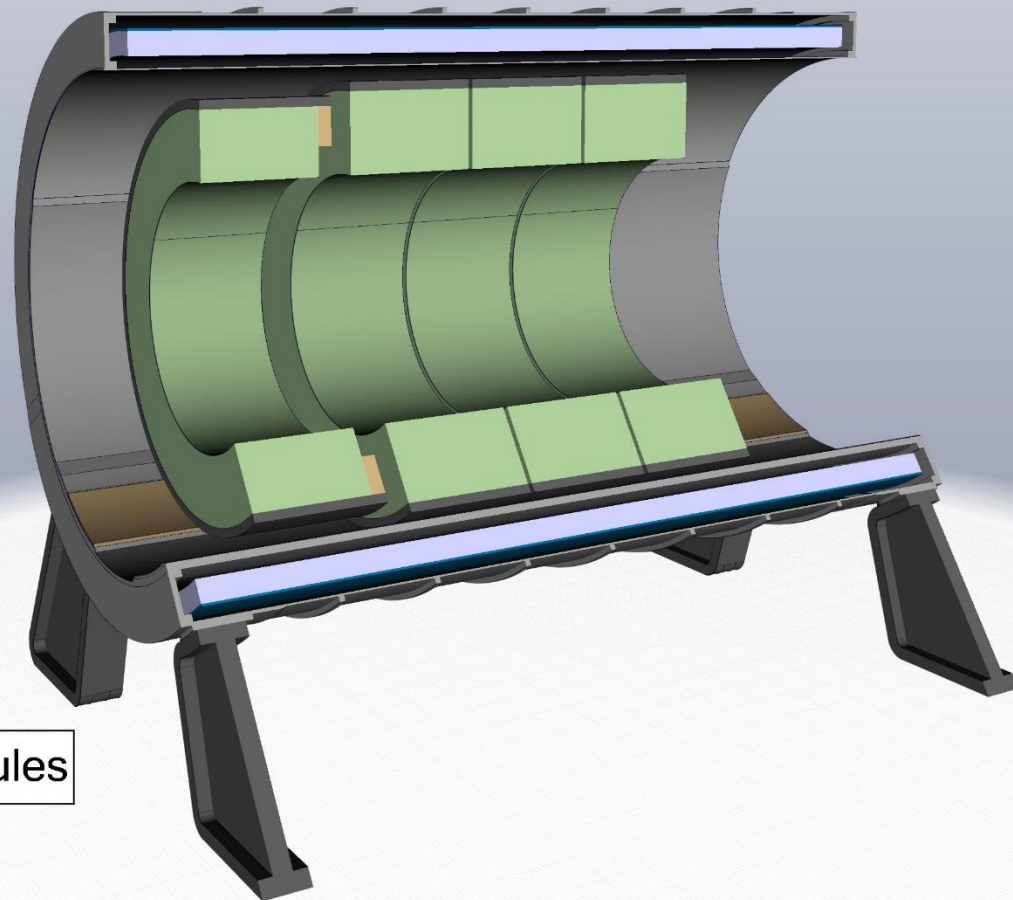
Install first HCal module

Assembly procedure



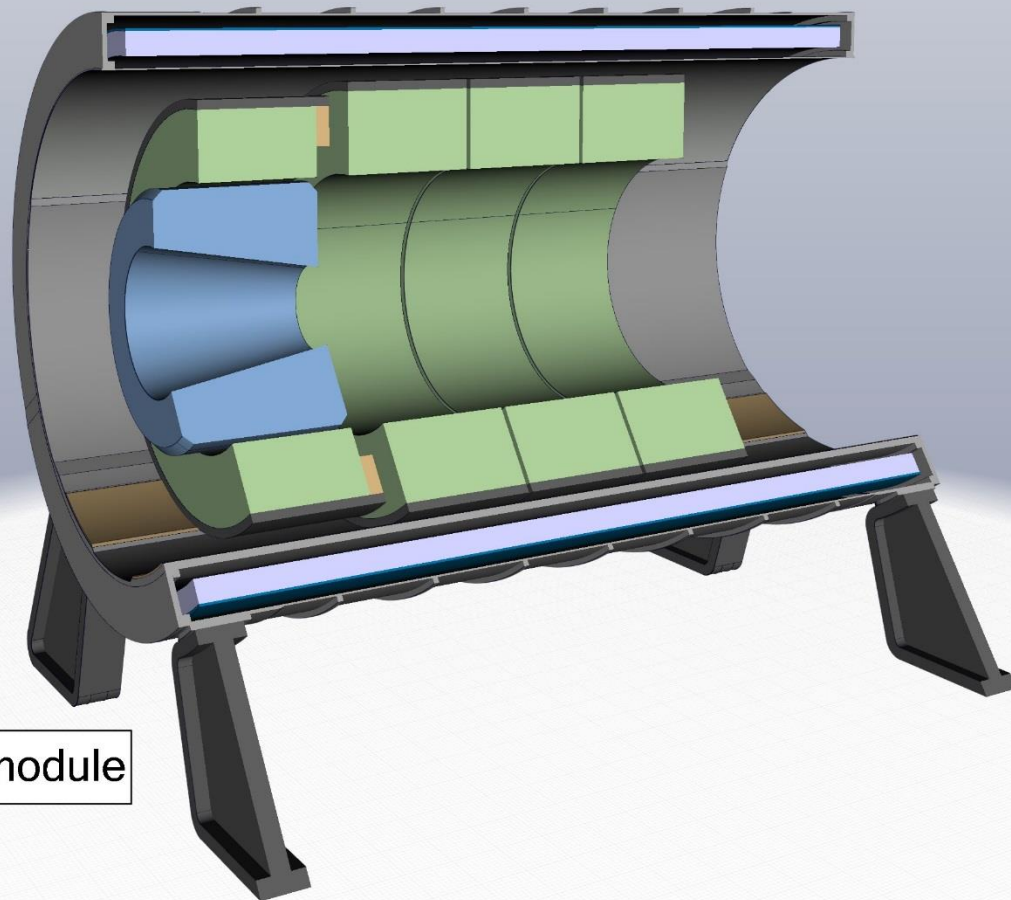
Install HCal module

Assembly procedure



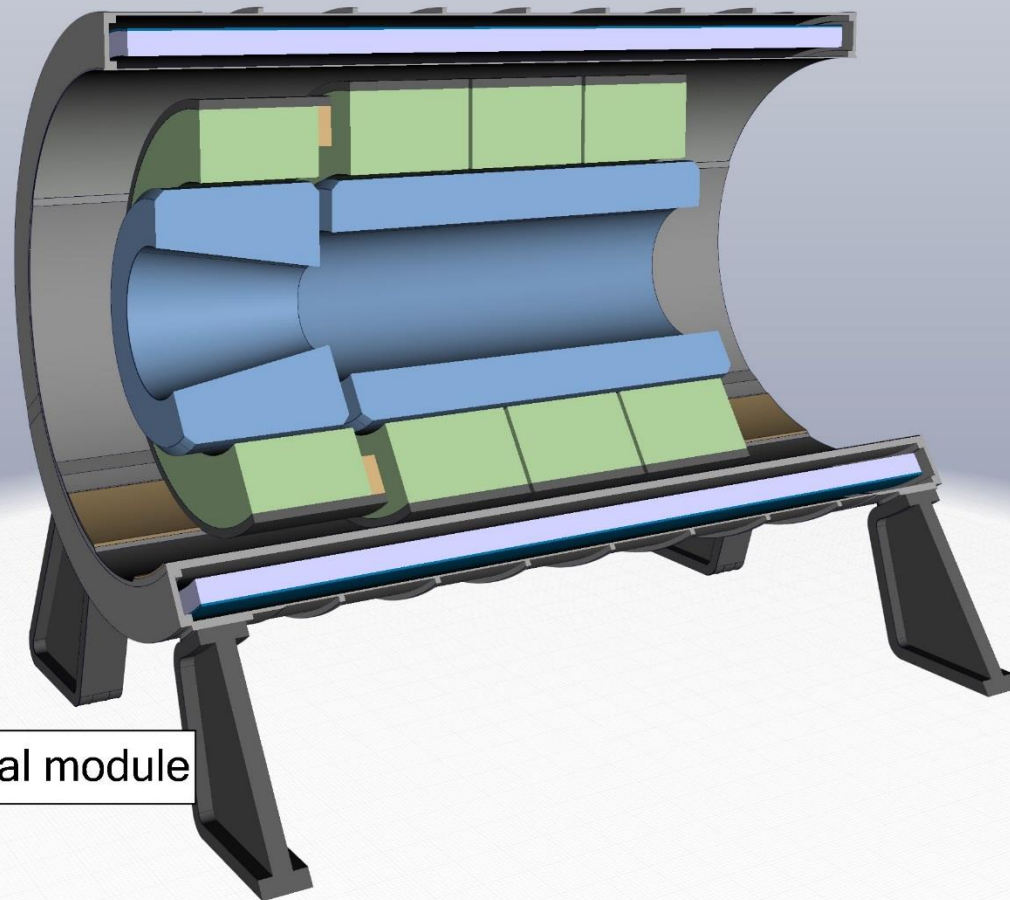
Install HCal modules

Assembly procedure



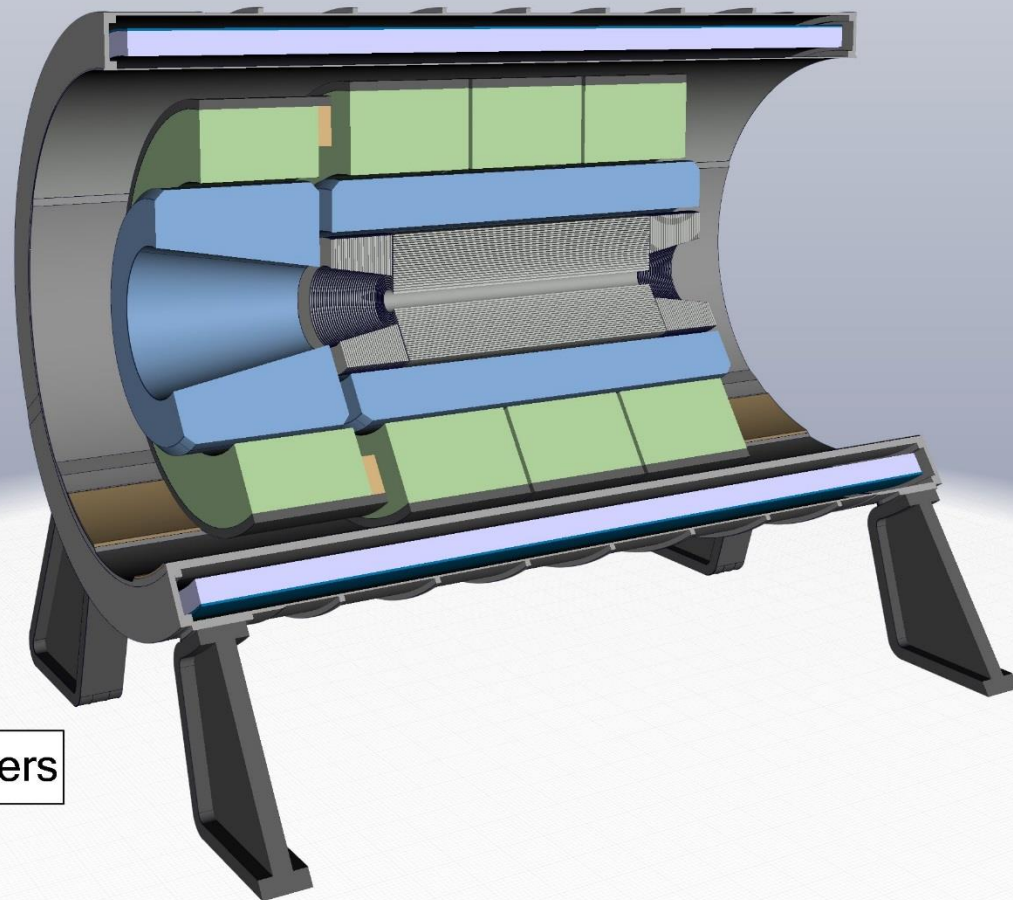
Install first ECal module

Assembly procedure



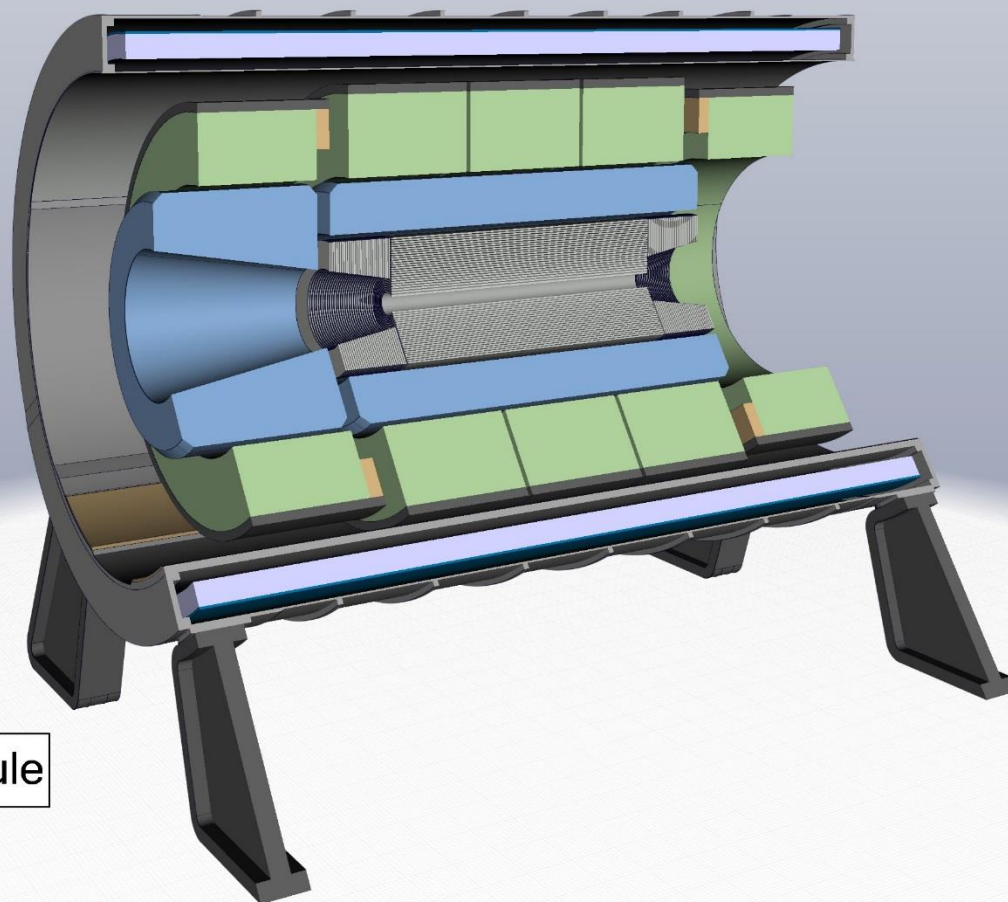
Install ECal central module

Assembly procedure



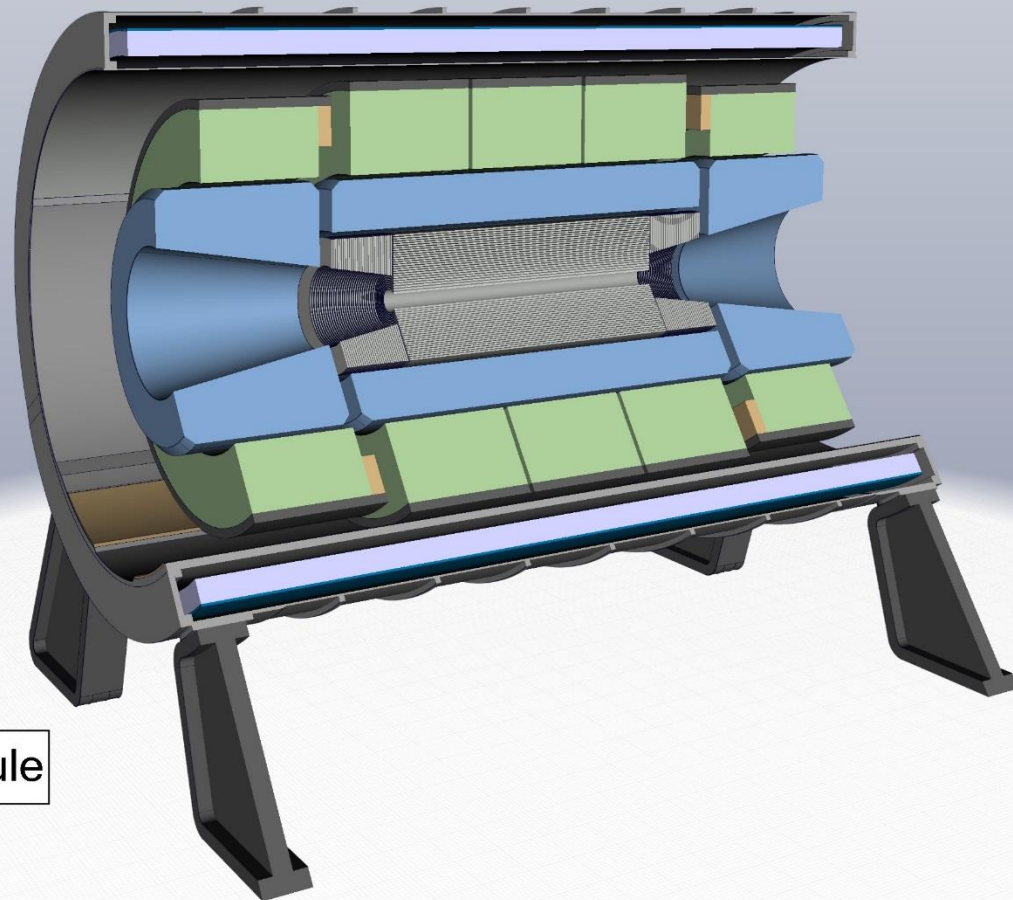
Install inner trackers

Assembly procedure



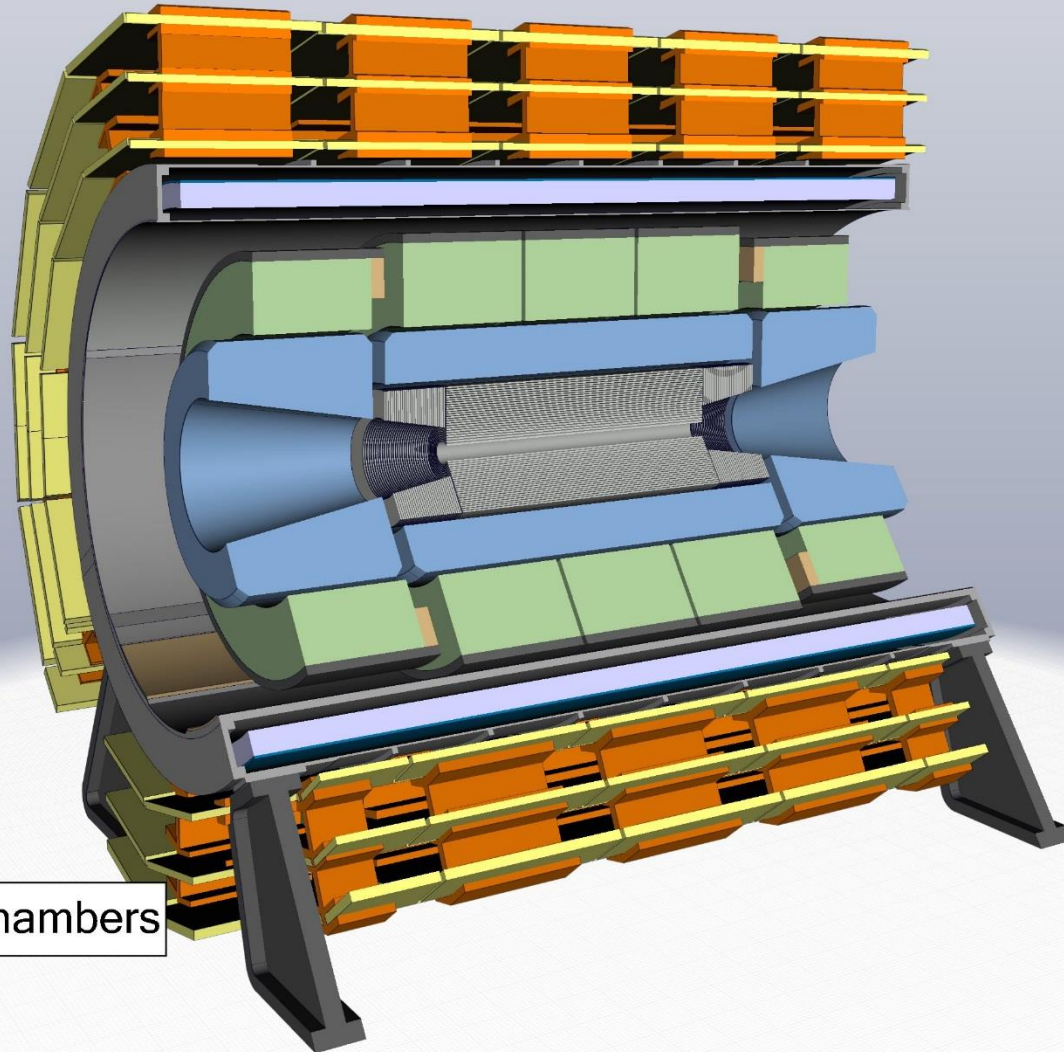
Install HCal module

Assembly procedure



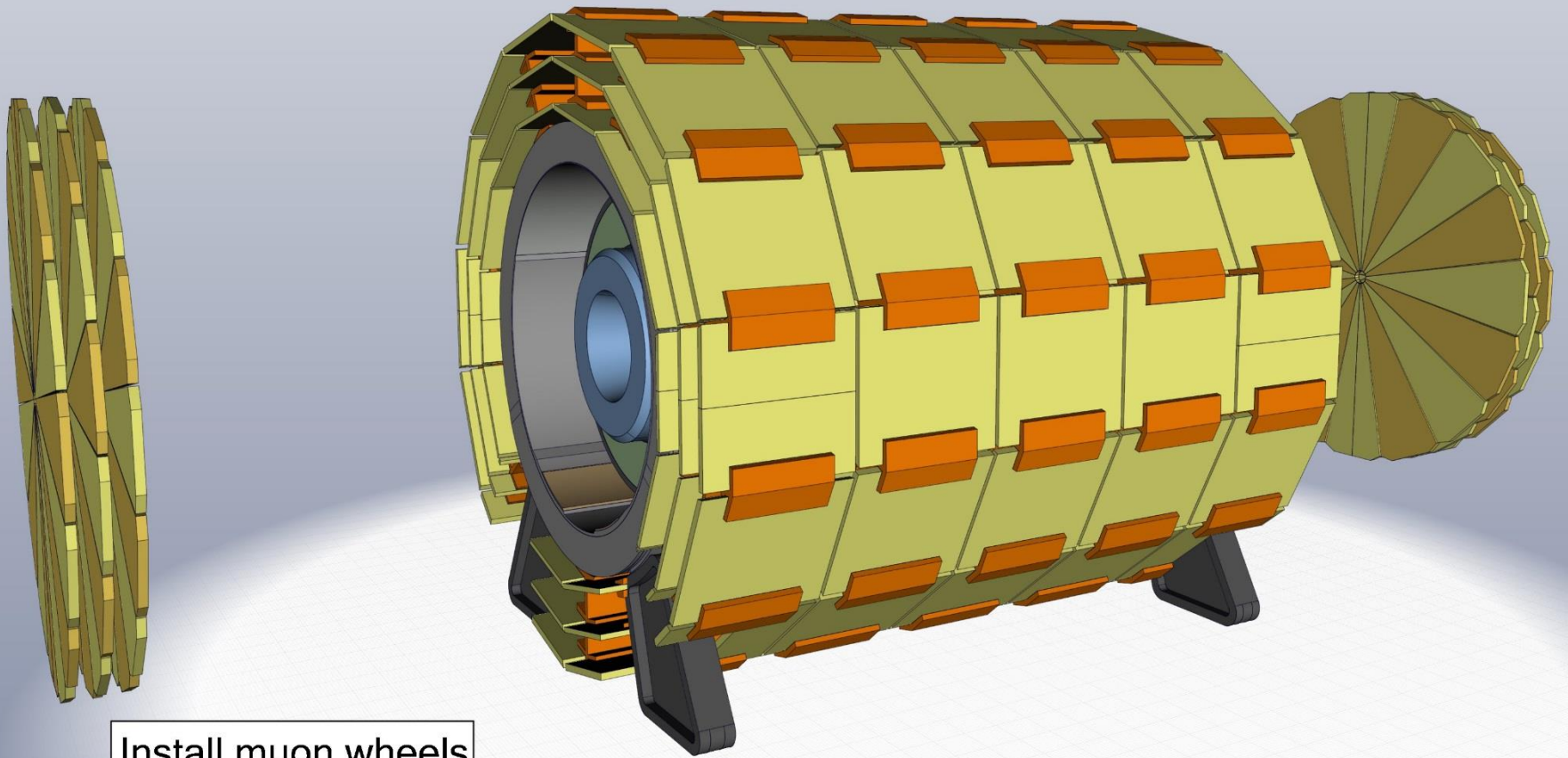
Install ECal module

Assembly procedure



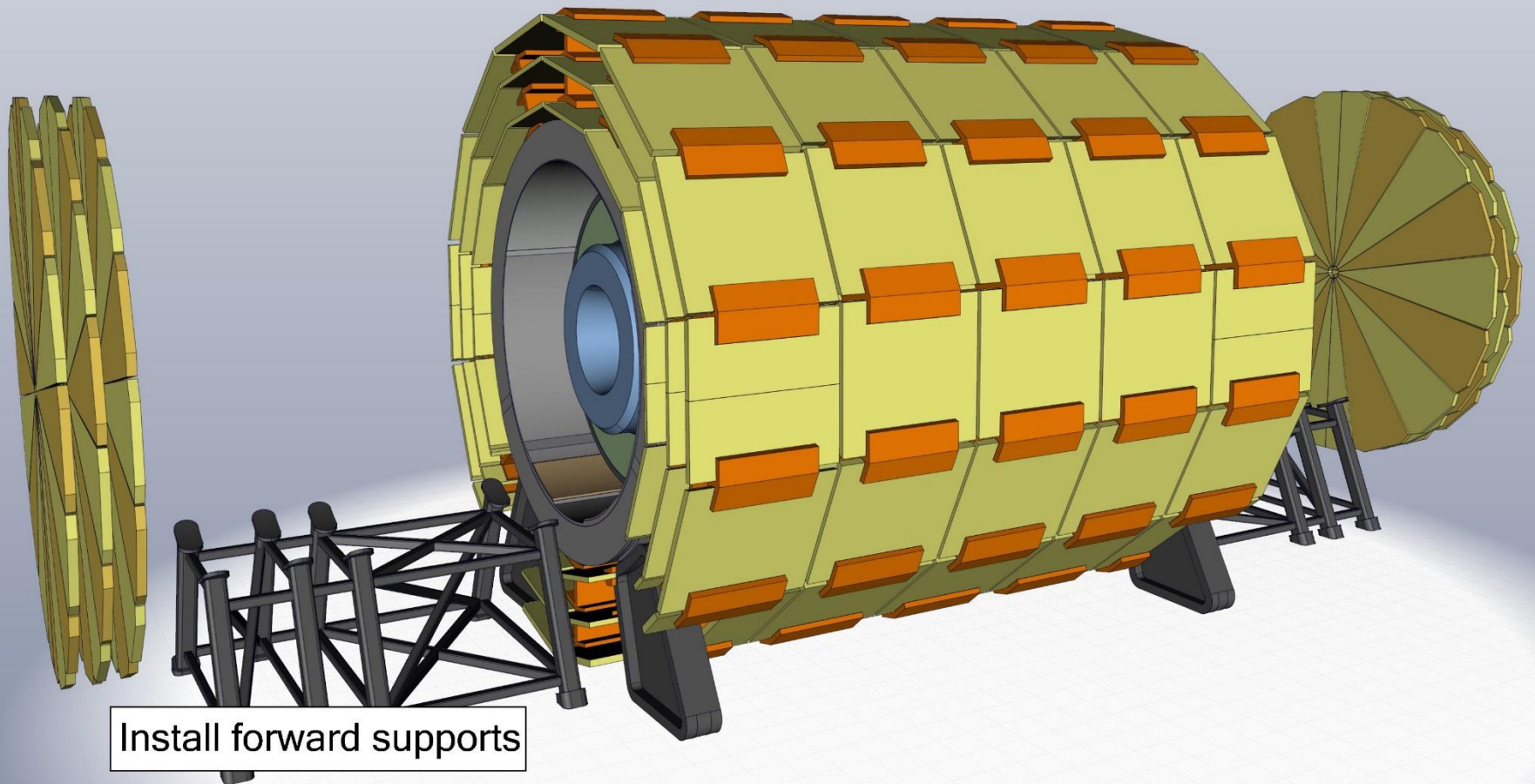
Install muon chambers

Assembly procedure

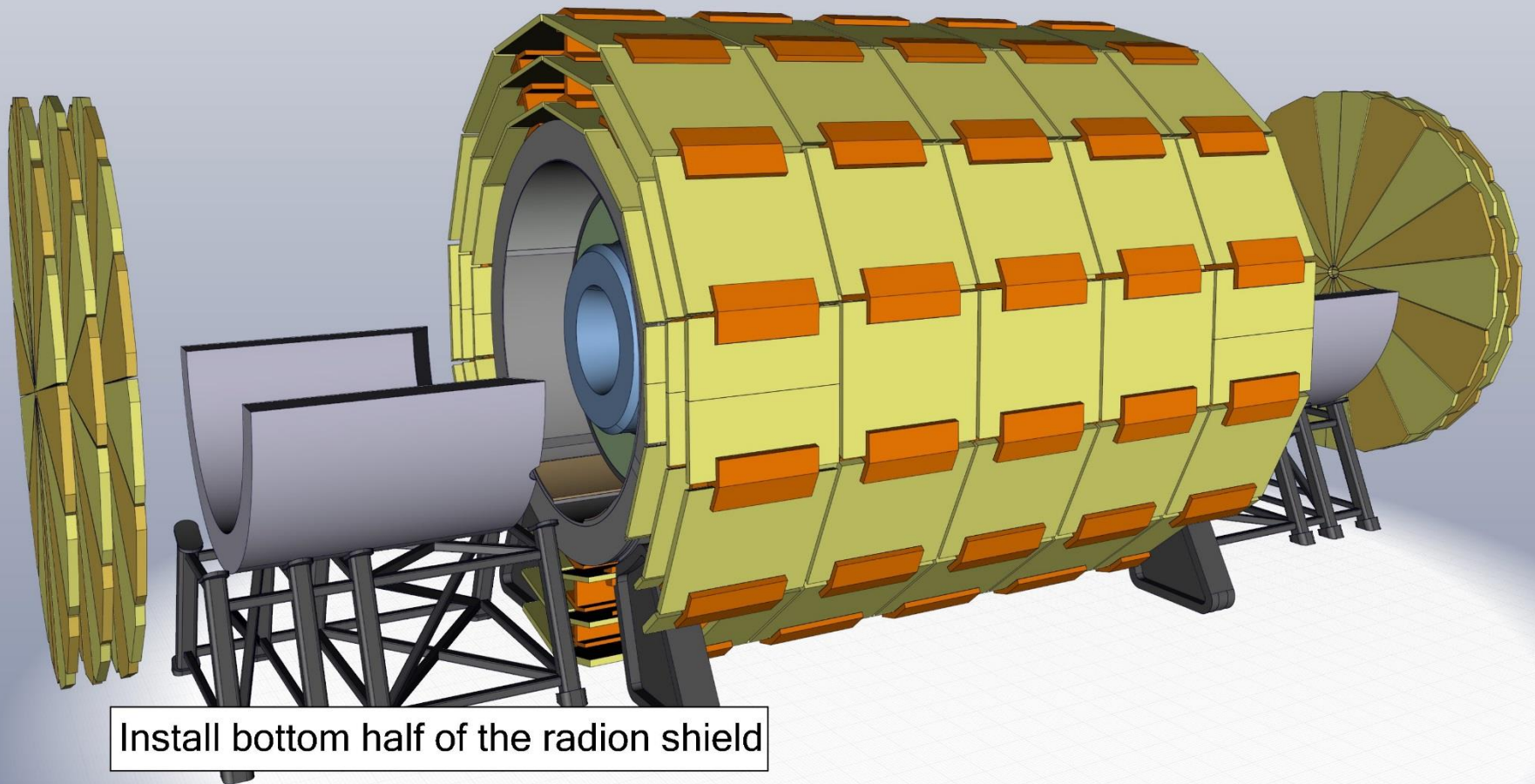


Install muon wheels

Assembly procedure

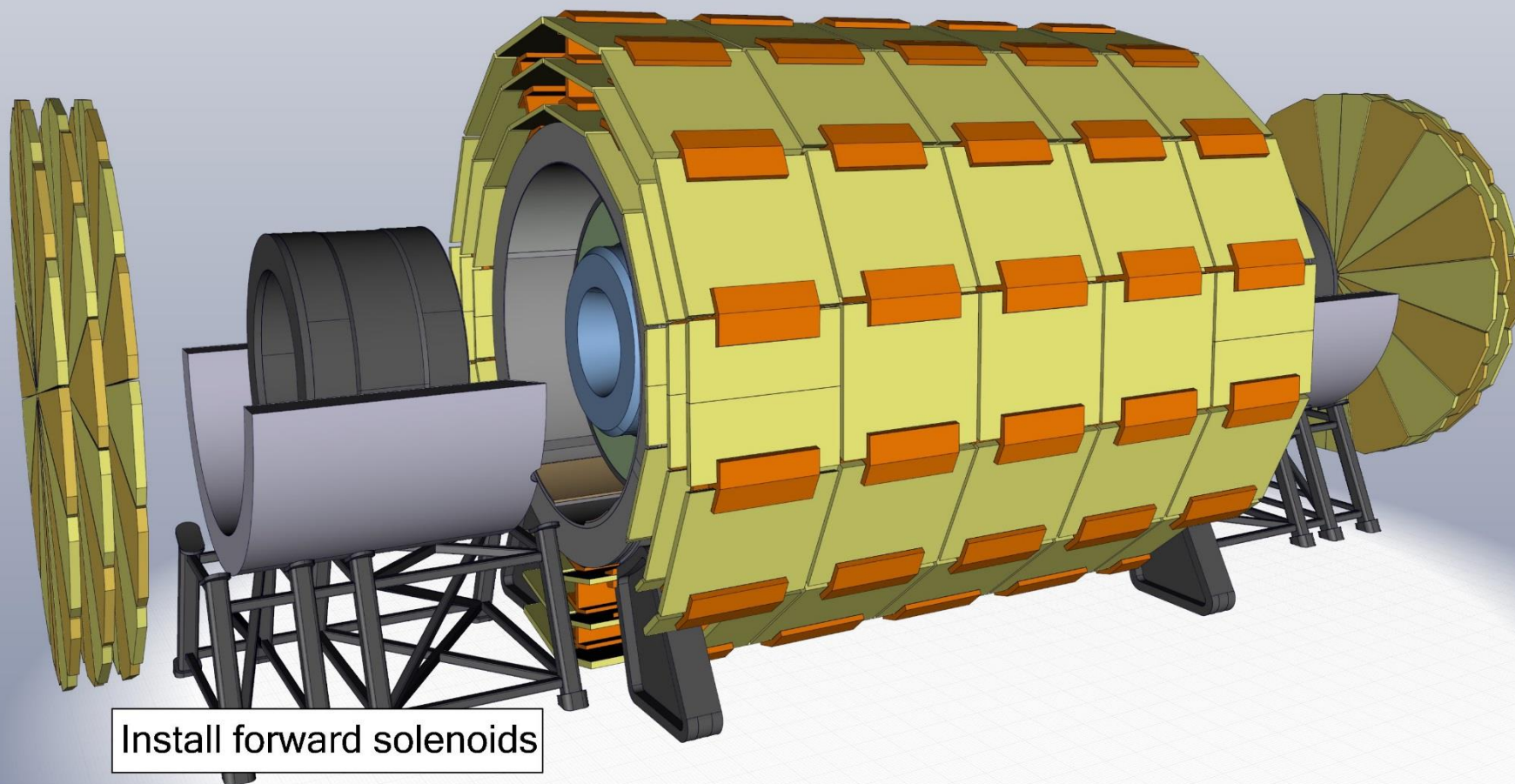


Assembly procedure



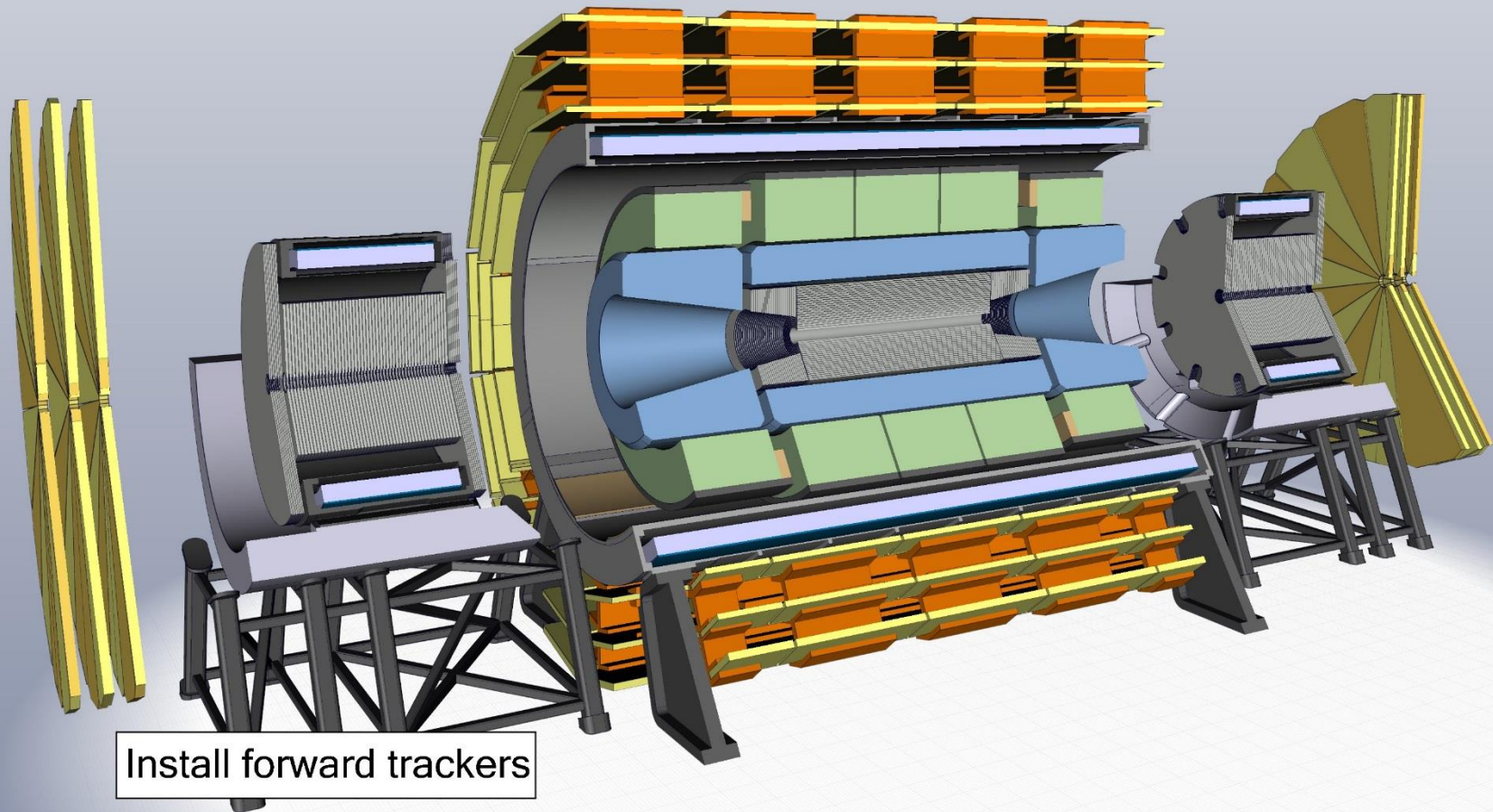
Install bottom half of the radion shield

Assembly procedure



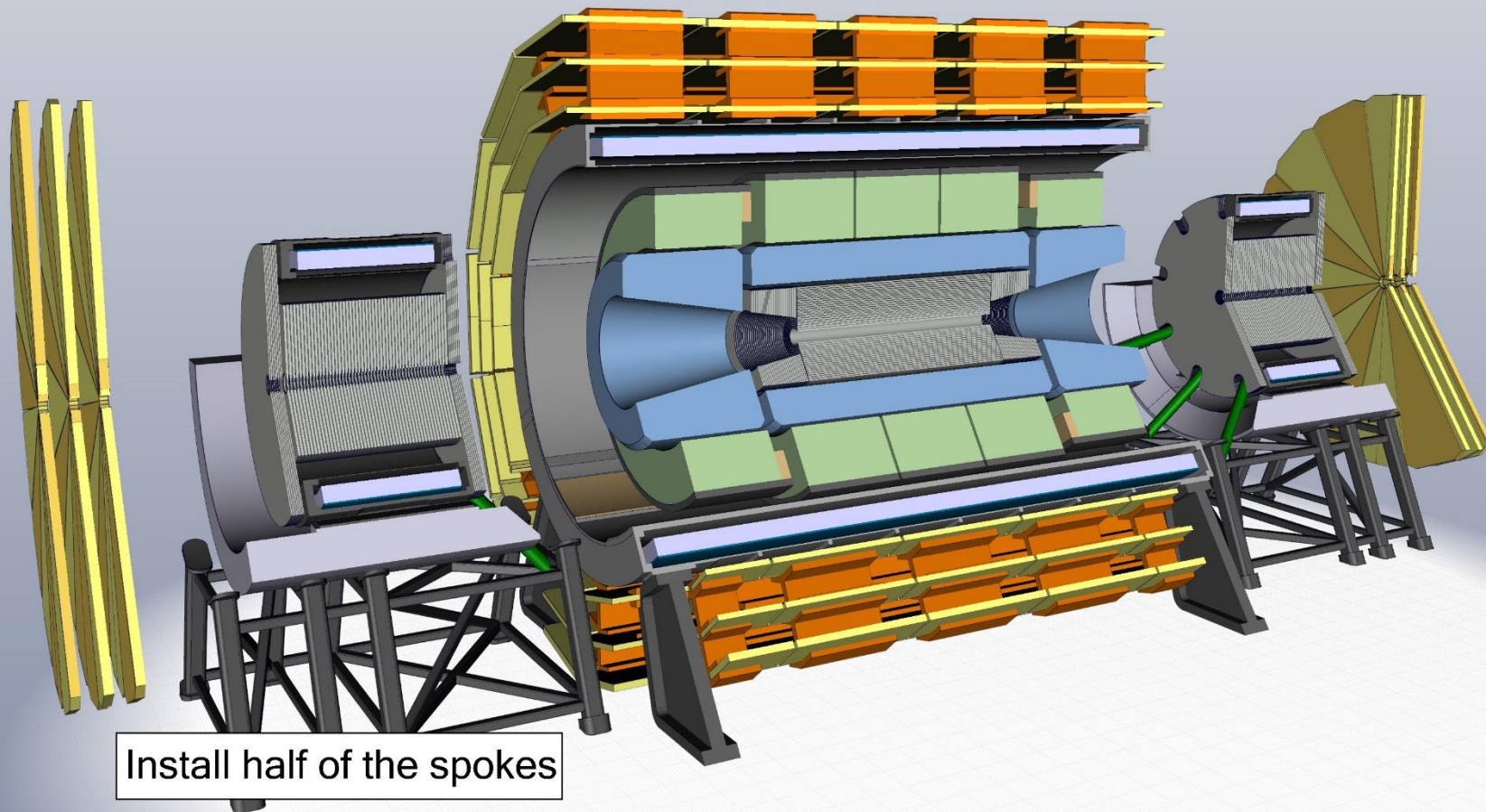
Install forward solenoids

Assembly procedure



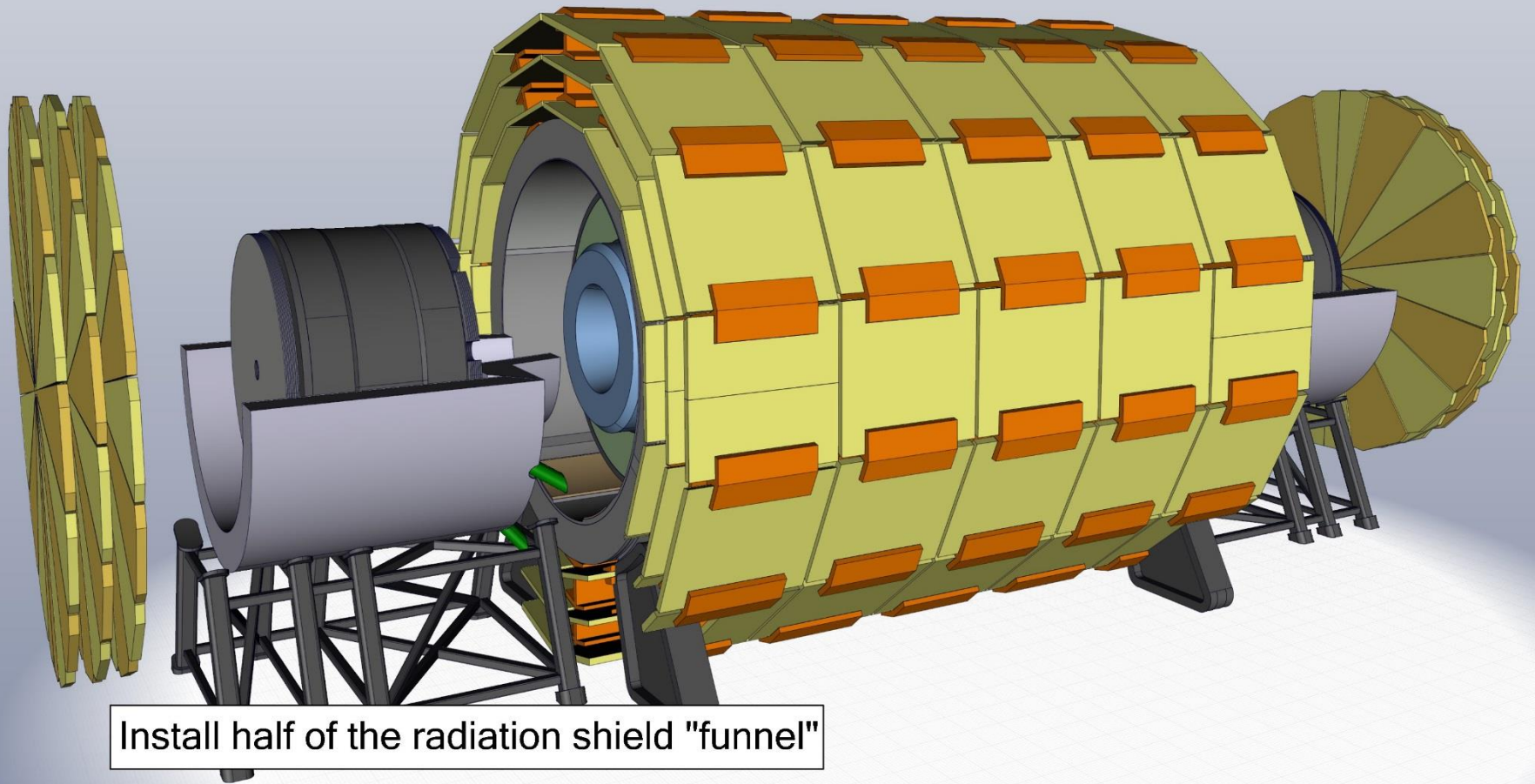
Install forward trackers

Assembly procedure

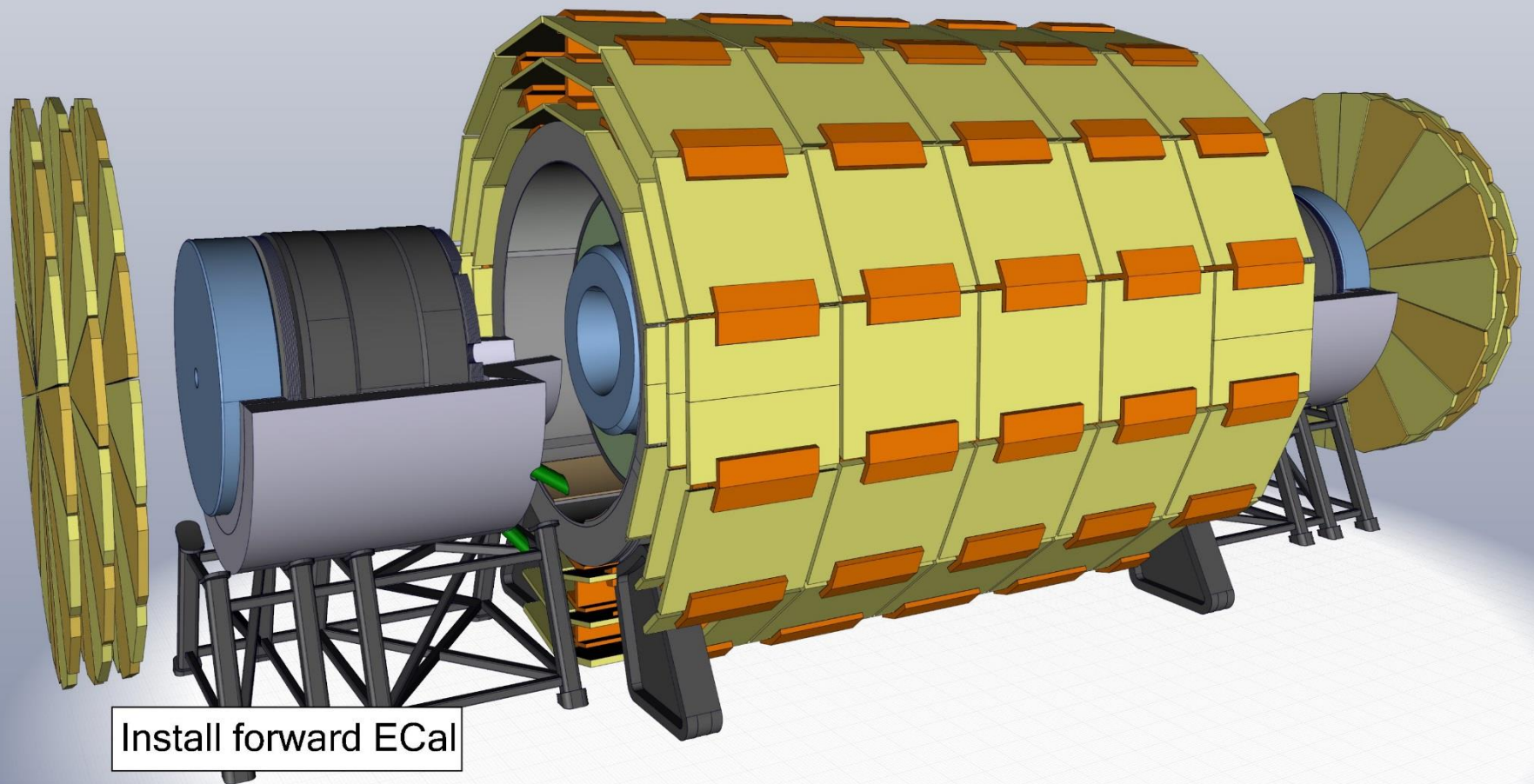


Install half of the spokes

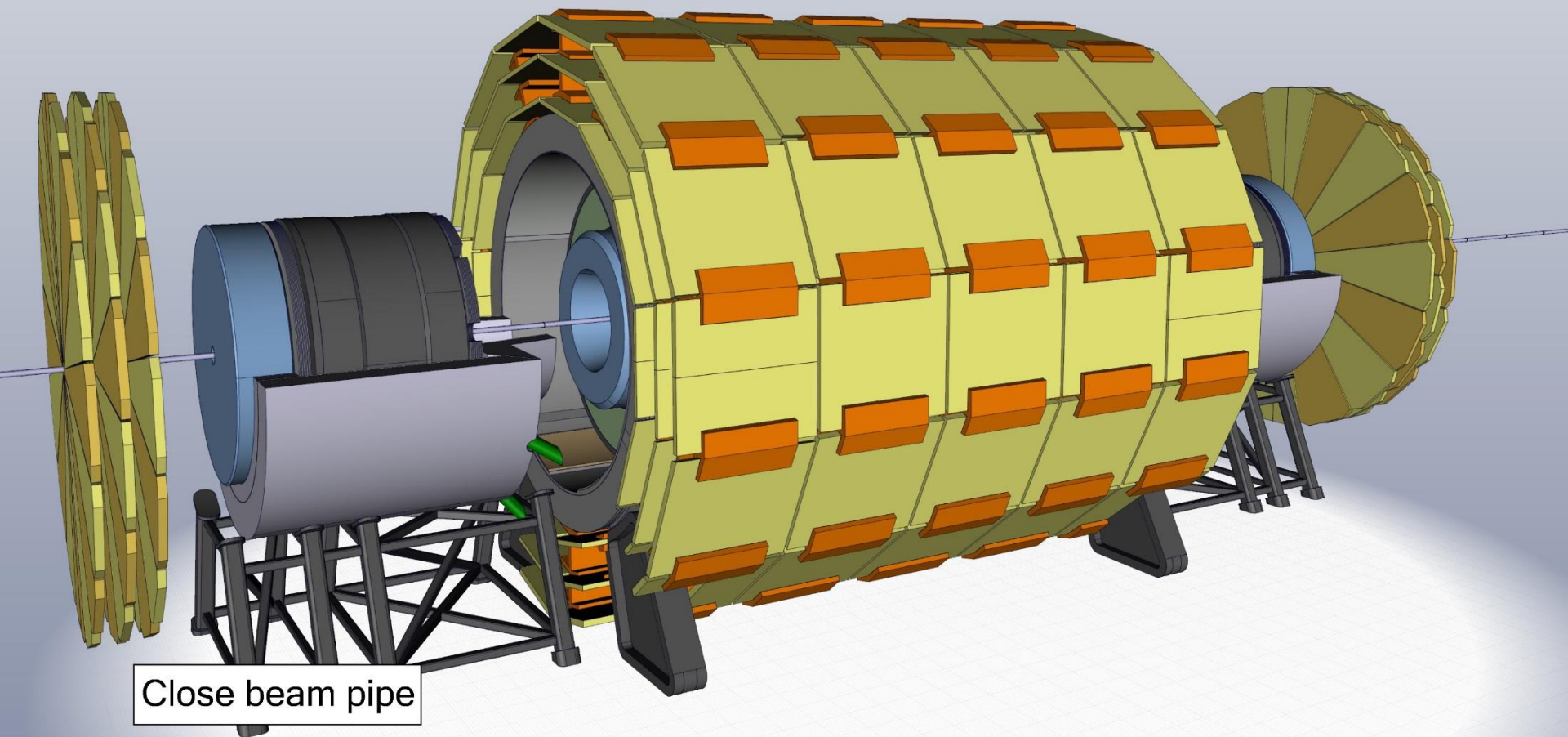
Assembly procedure



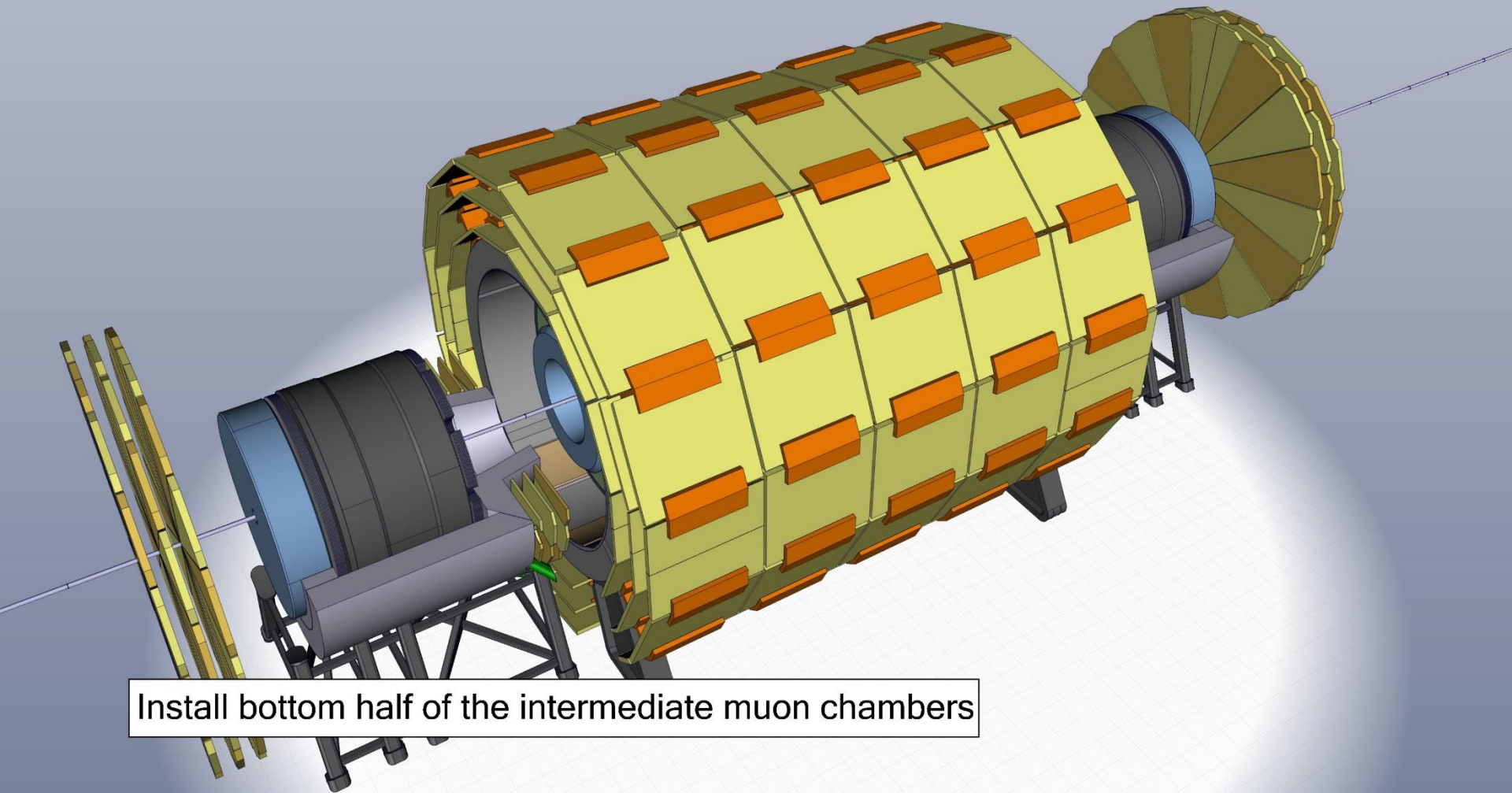
Assembly procedure



Assembly procedure

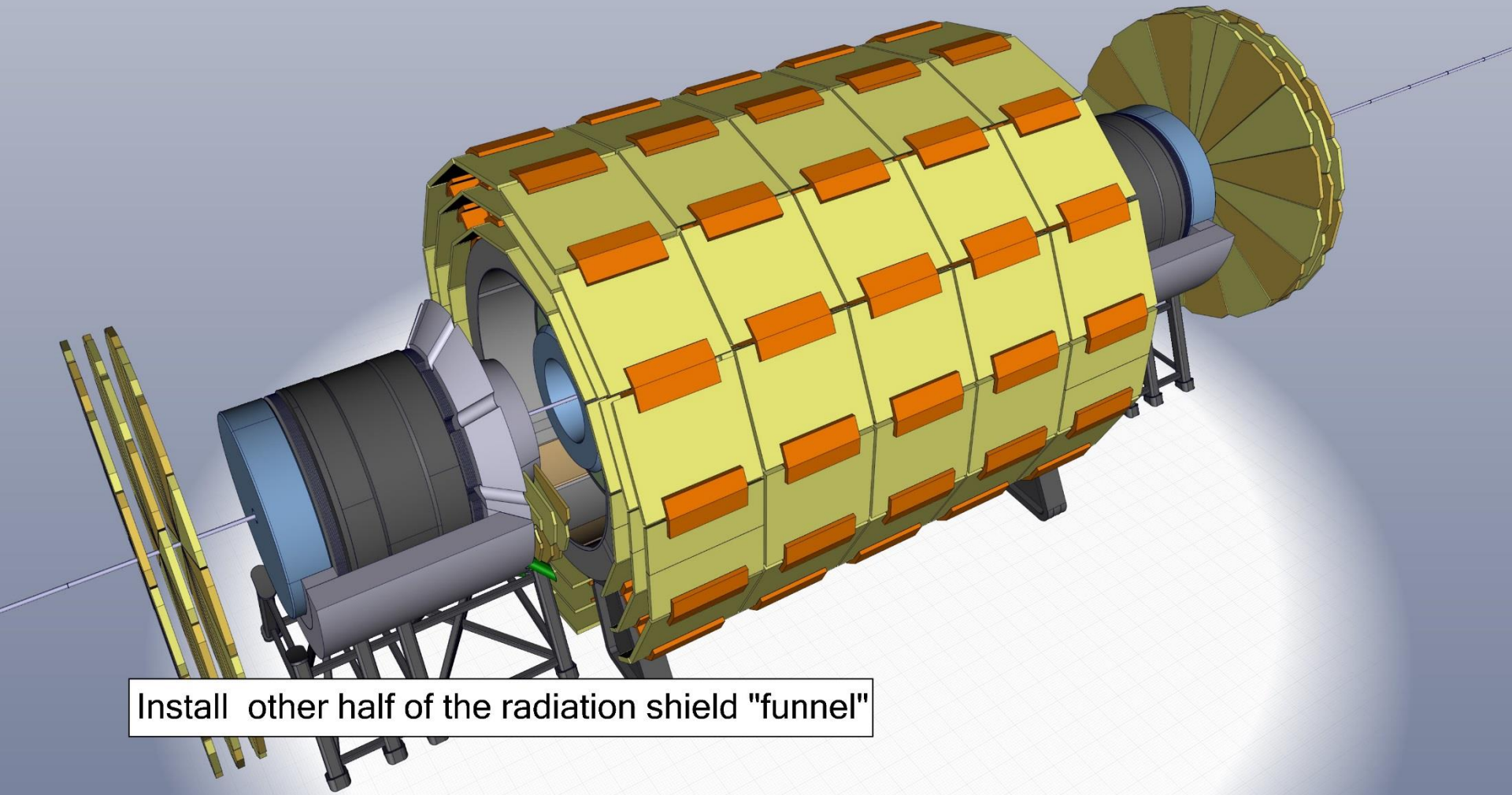


Assembly procedure



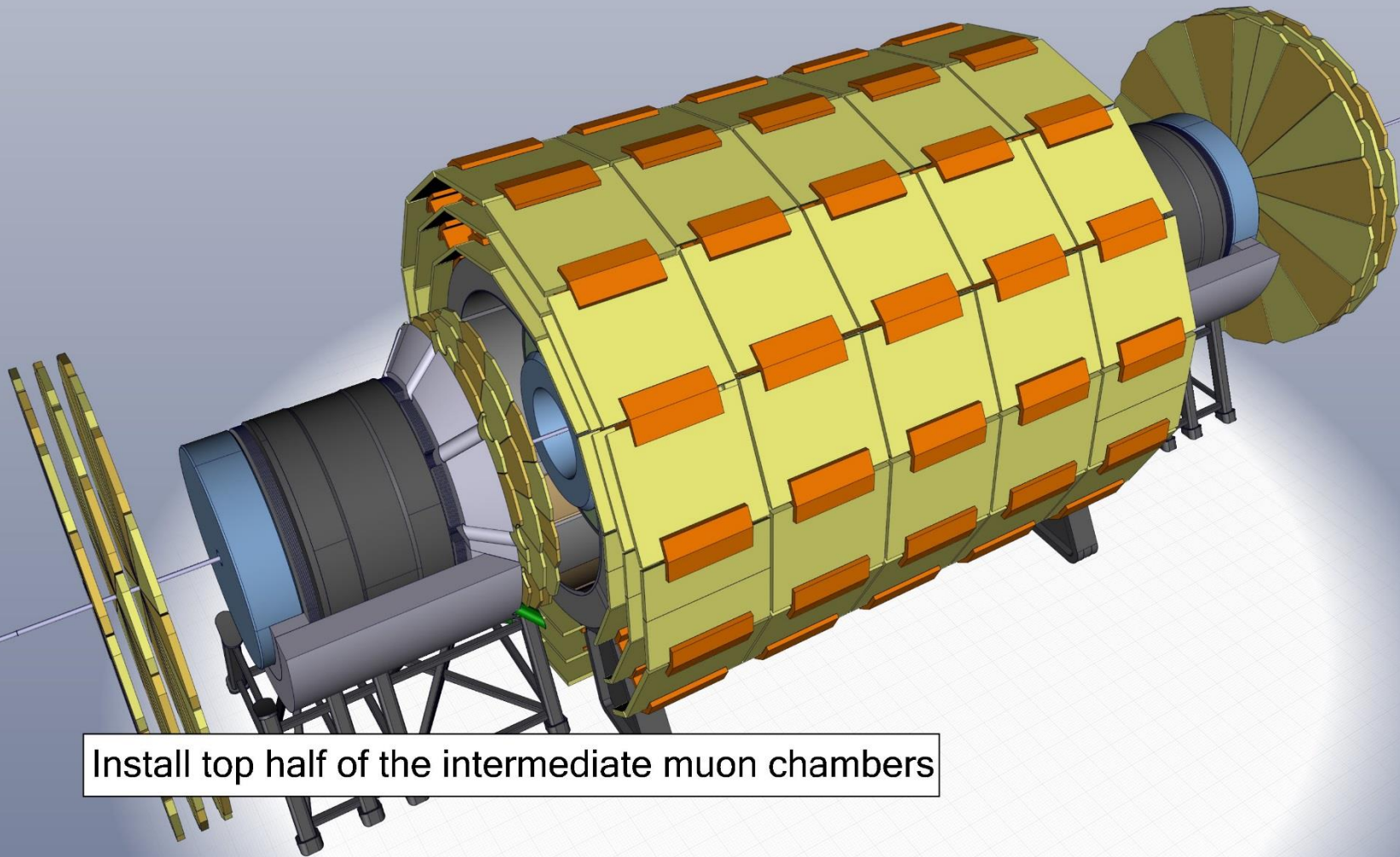
Install bottom half of the intermediate muon chambers

Assembly procedure



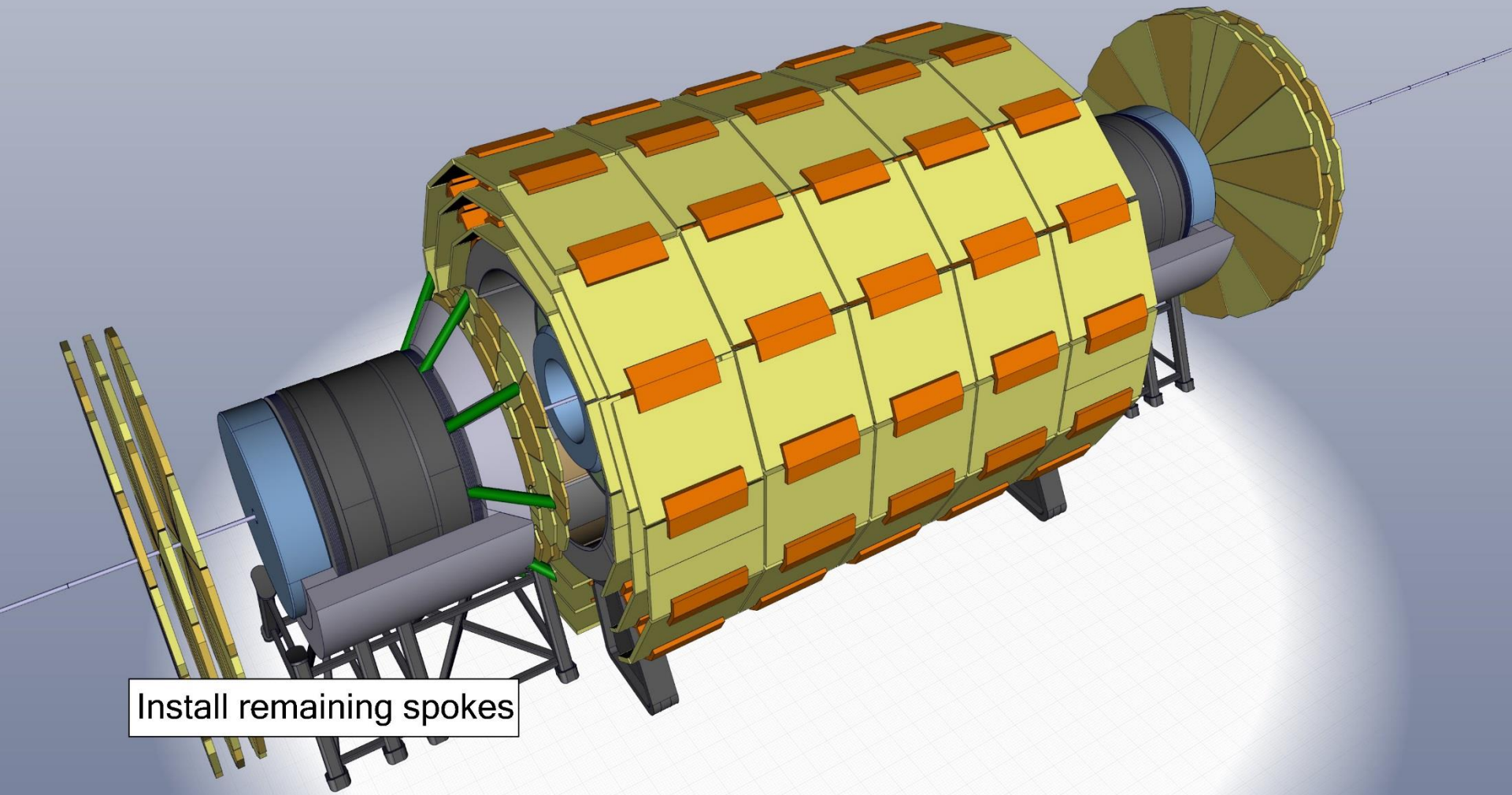
Install other half of the radiation shield "funnel"

Assembly procedure



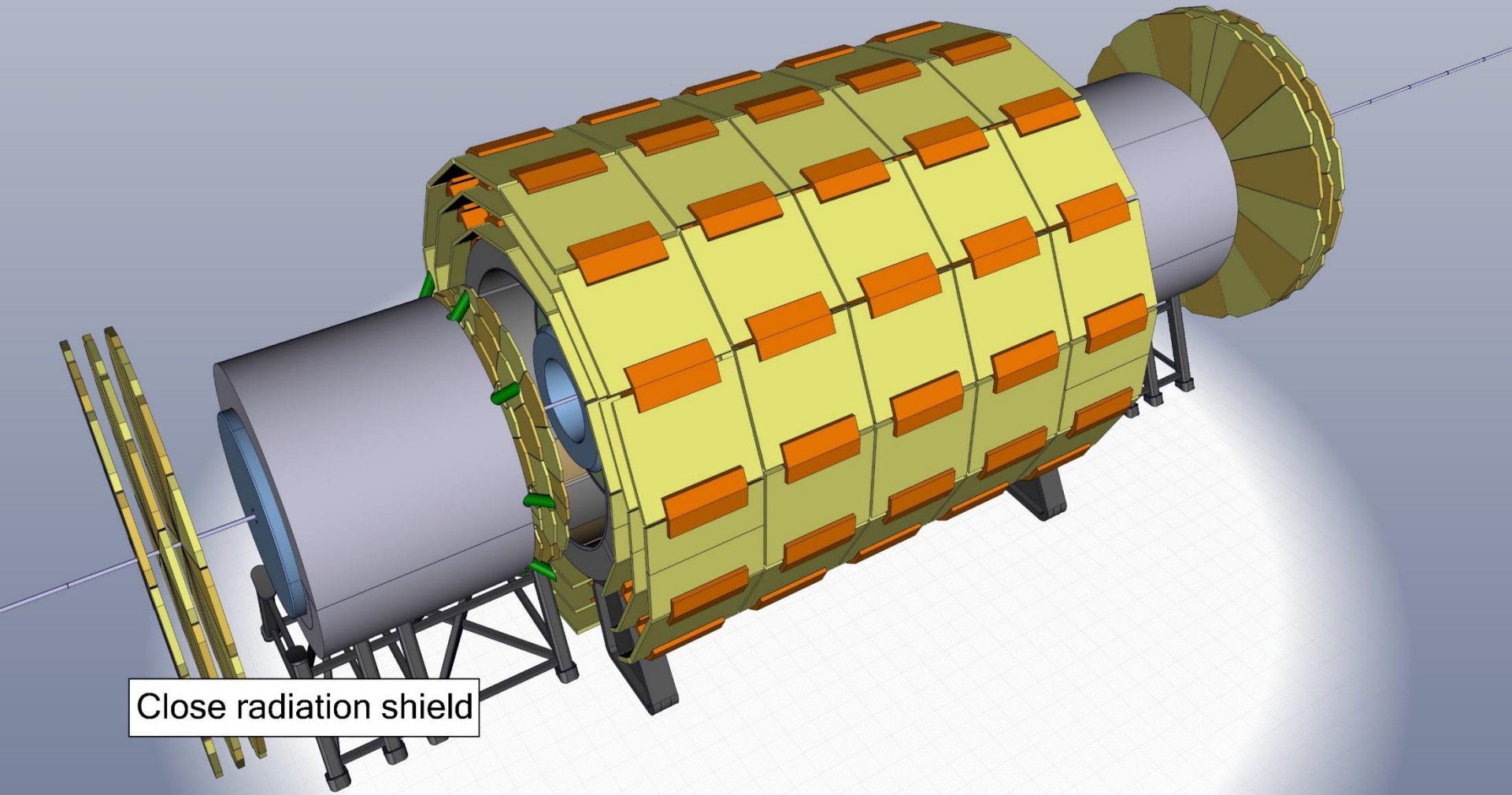
Install top half of the intermediate muon chambers

Assembly procedure



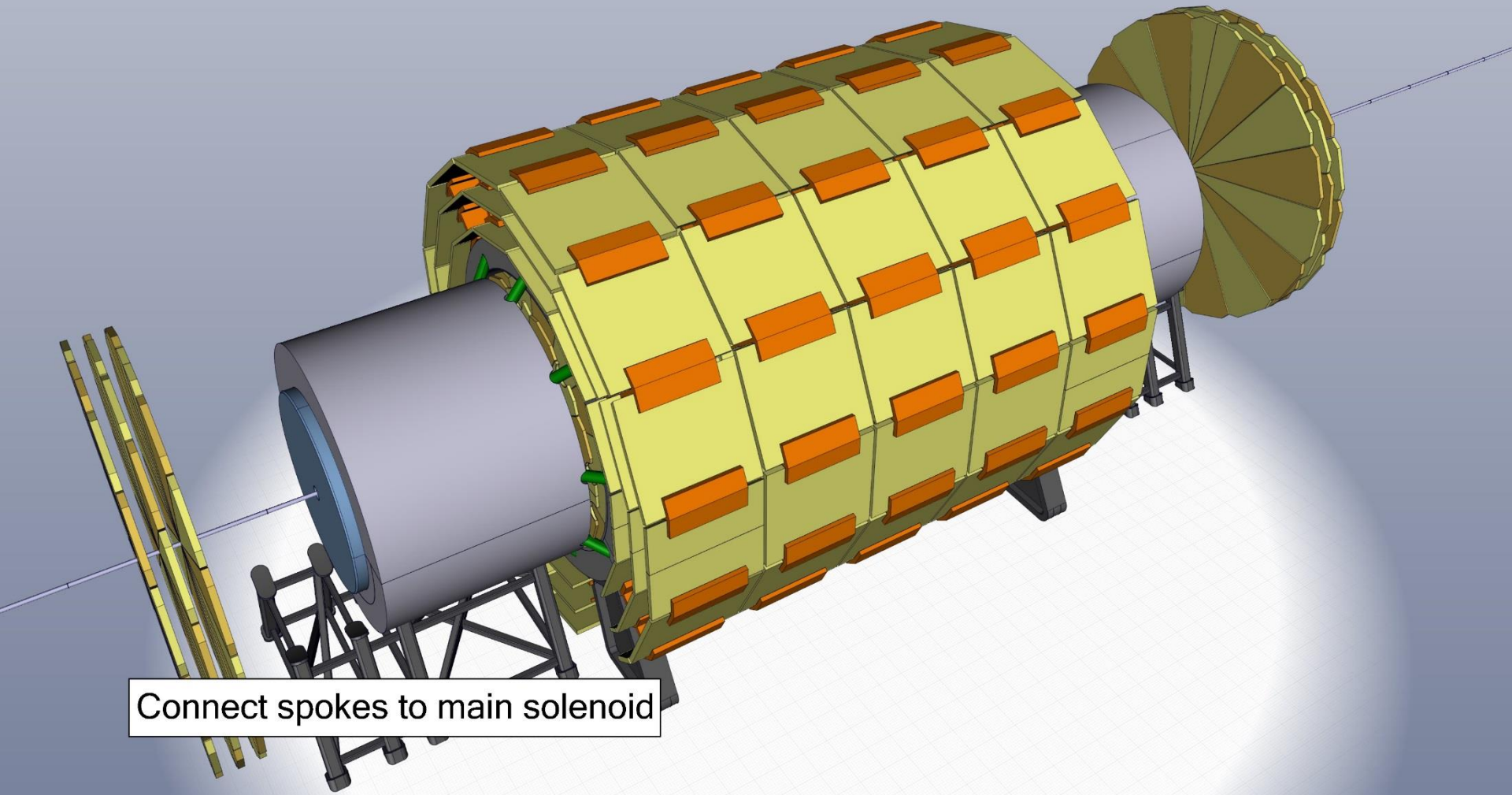
Install remaining spokes

Assembly procedure

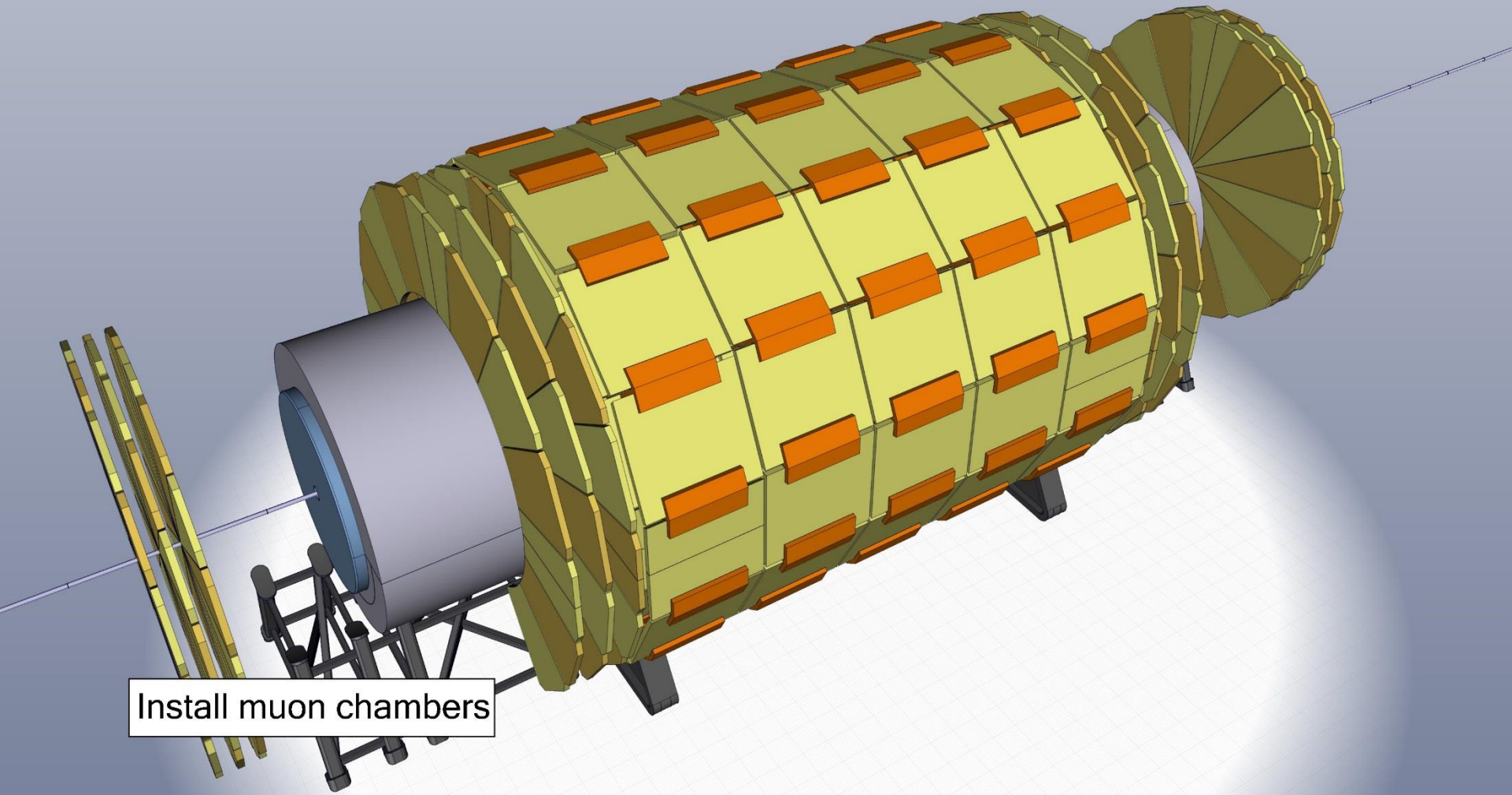


Close radiation shield

Assembly procedure

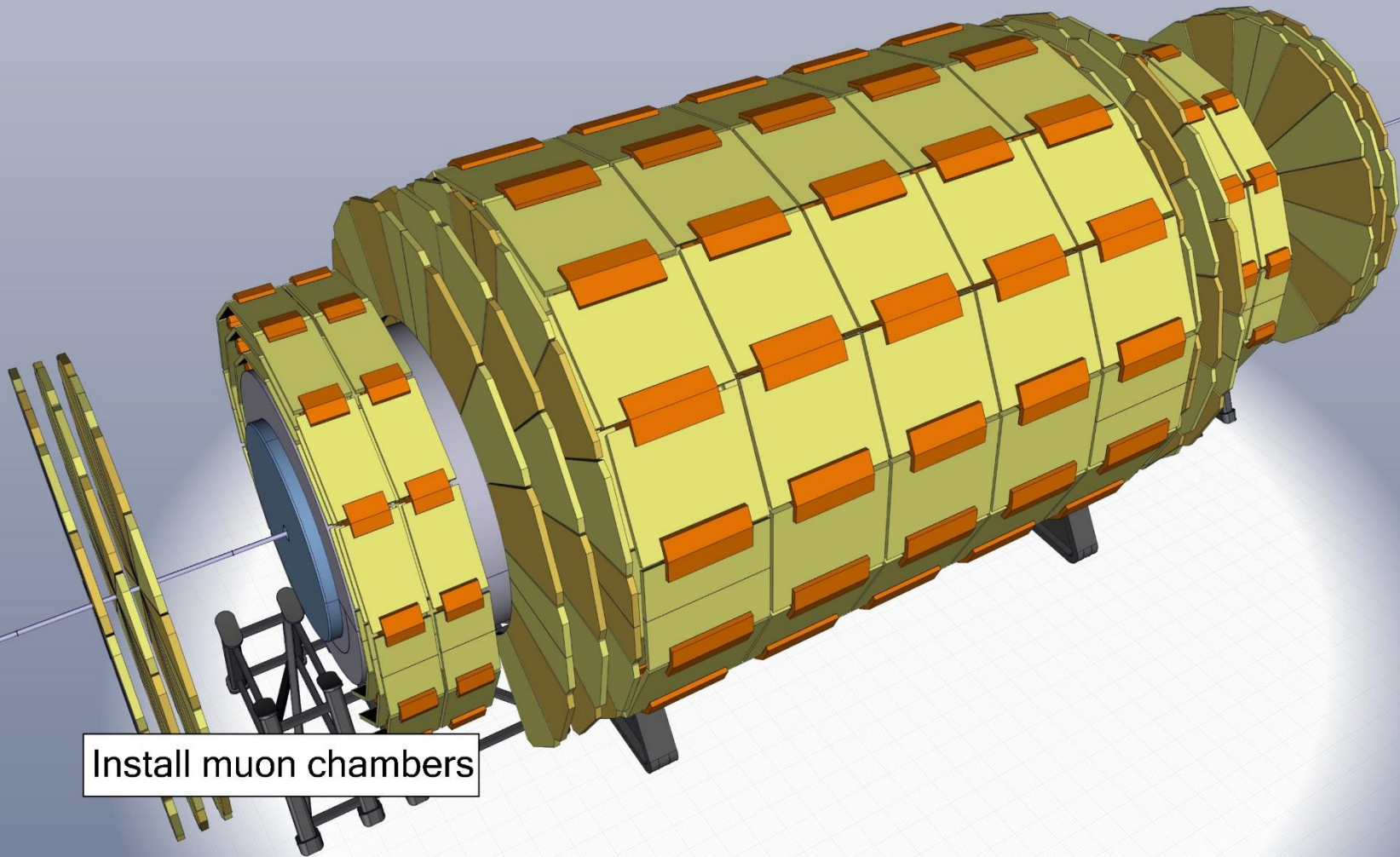


Assembly procedure



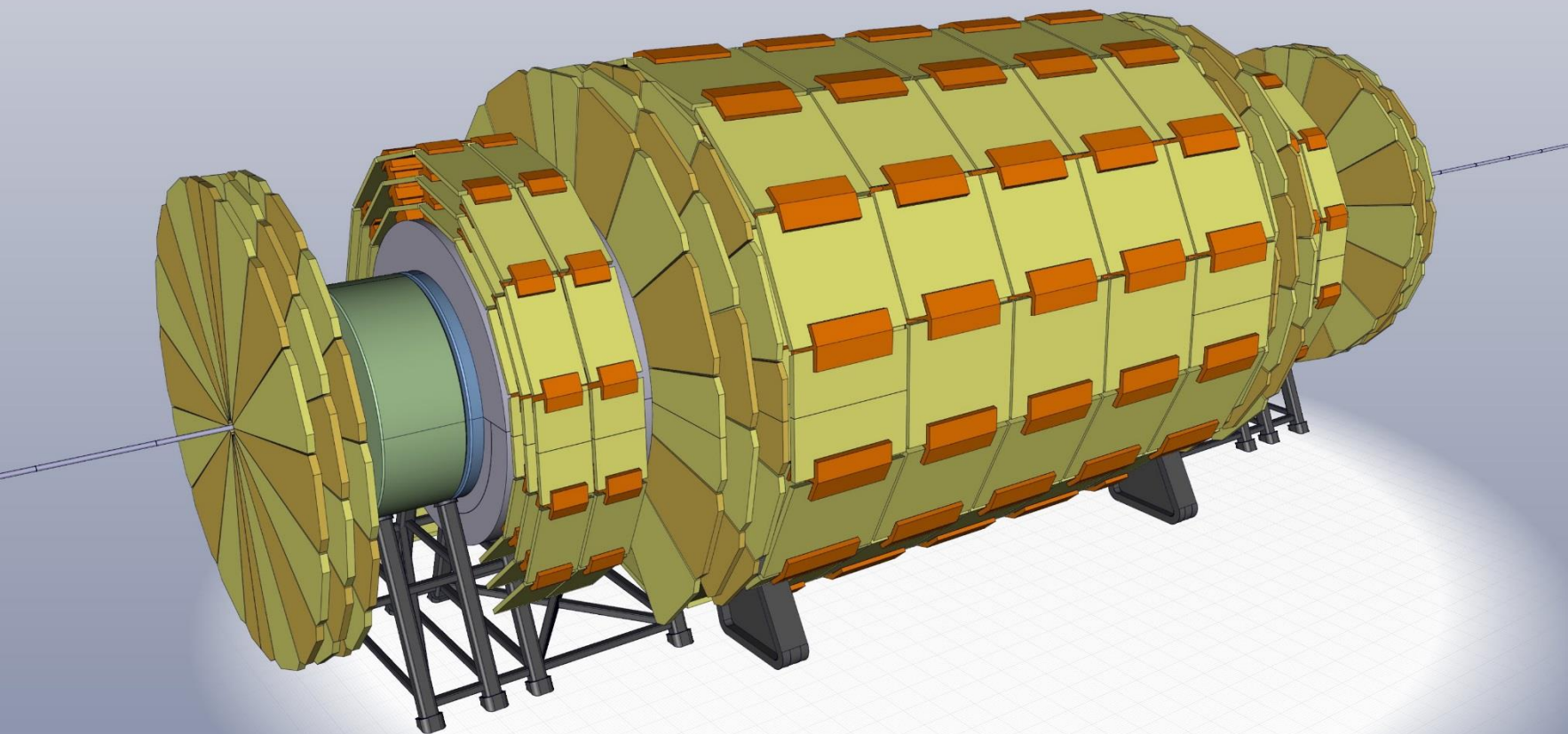
Install muon chambers

Assembly procedure



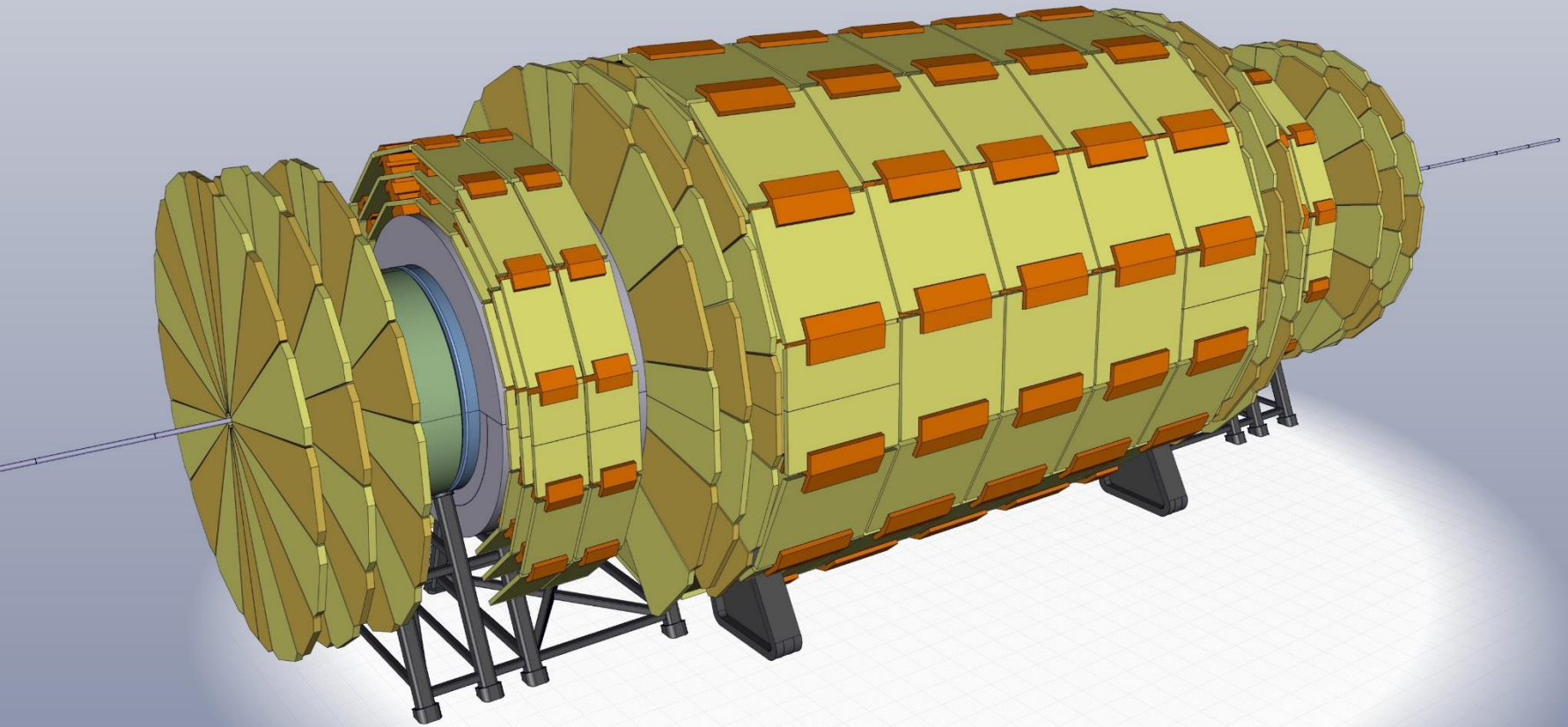
Install muon chambers

Assembly procedure



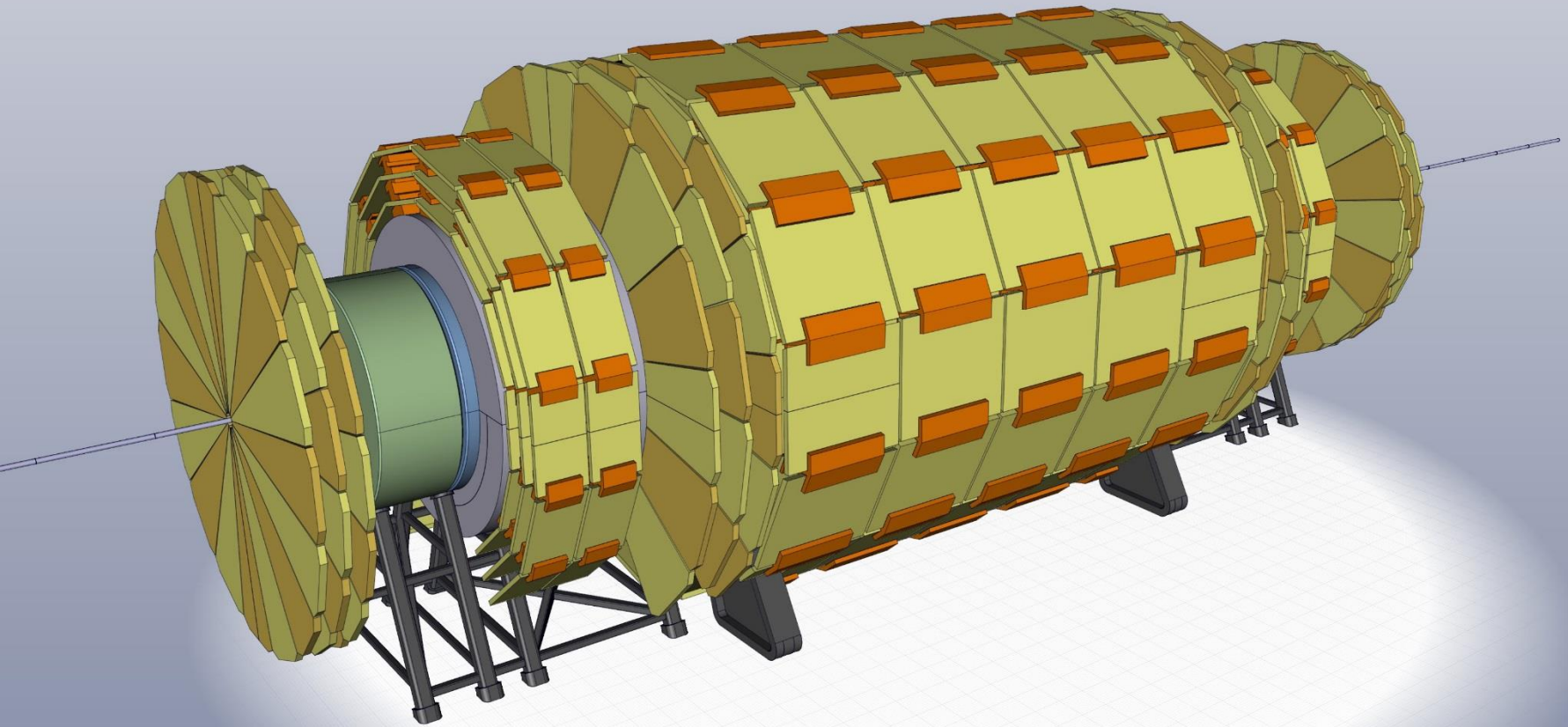
Install forward HCal

Assembly procedure



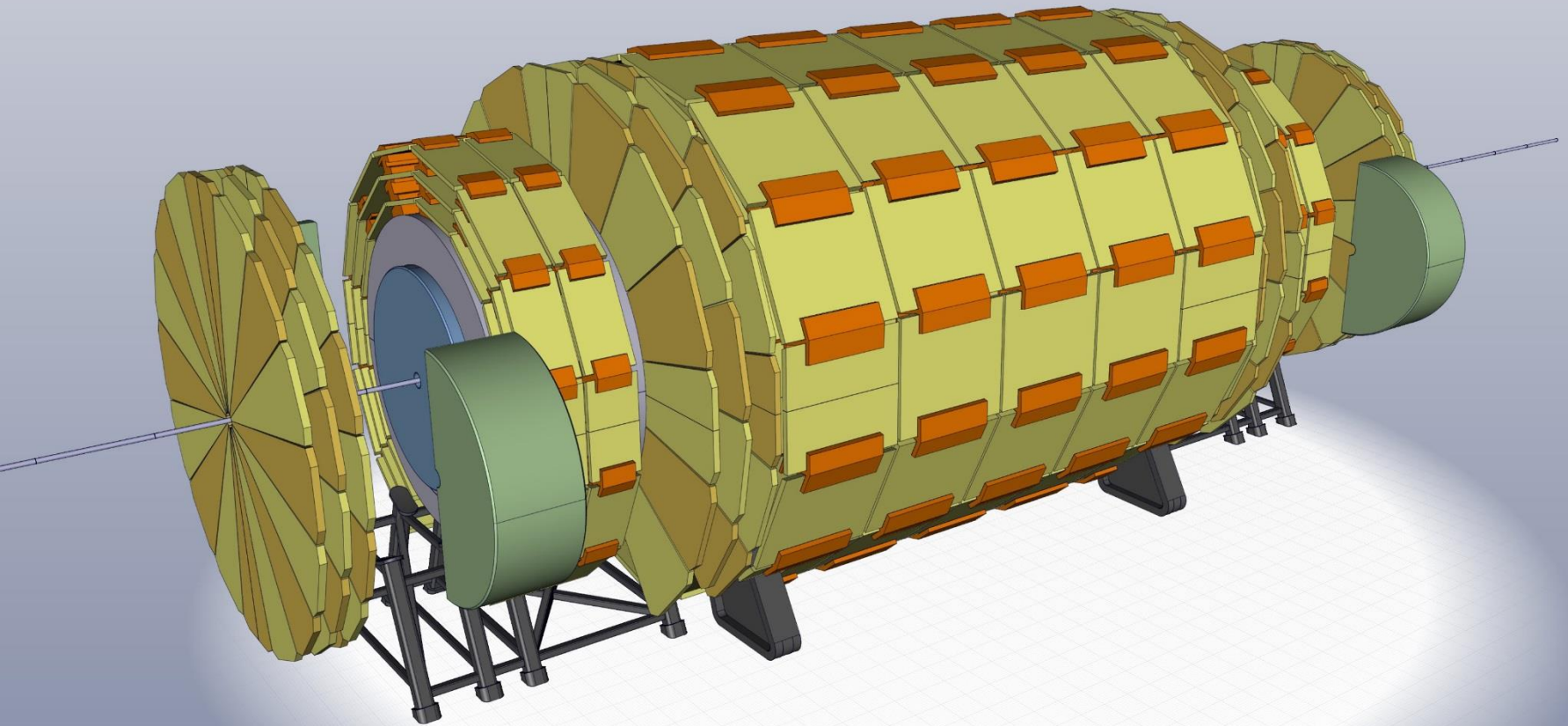
Expand muon chambers to their final position

Short stop opening layout



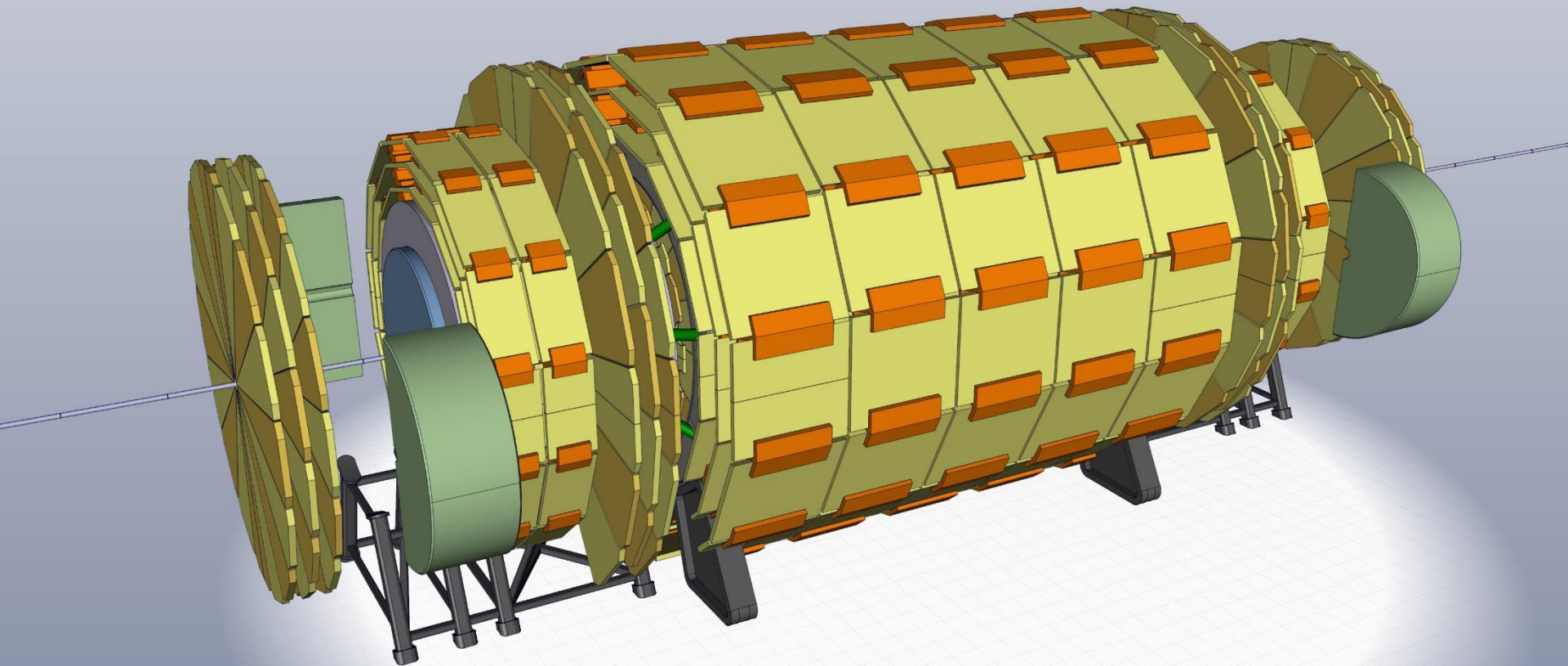
Compress forward muon chambers

Short stop opening layout



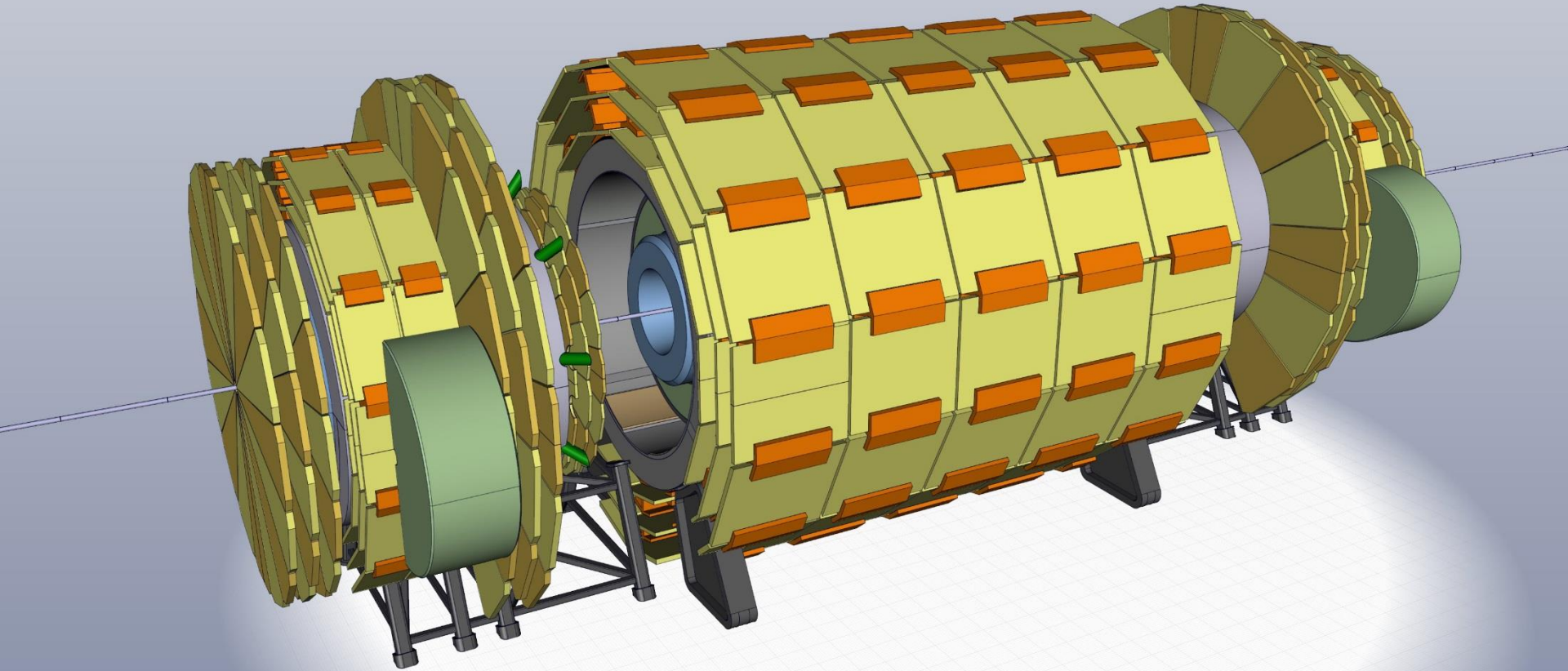
Open forward HCal sideways

Short stop opening layout



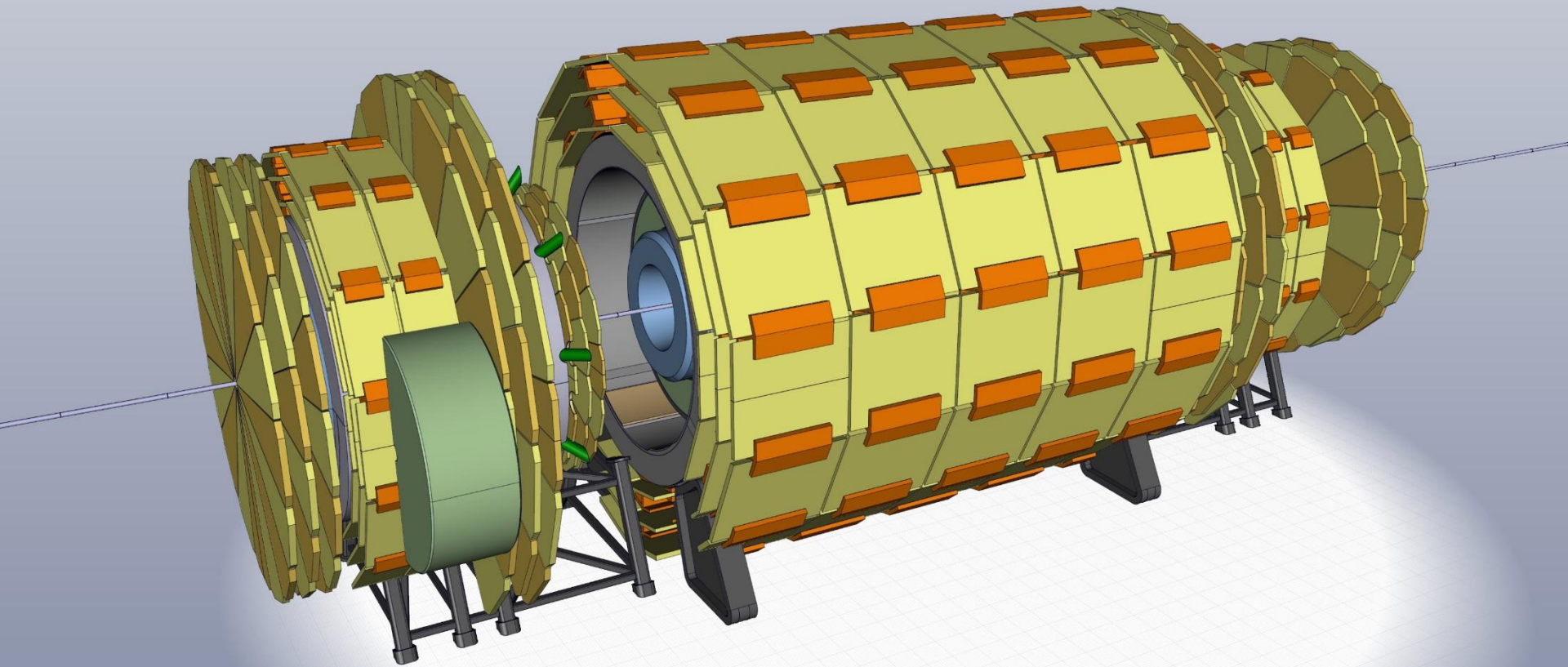
Compress muon chambers and move them forward

Short stop opening layout



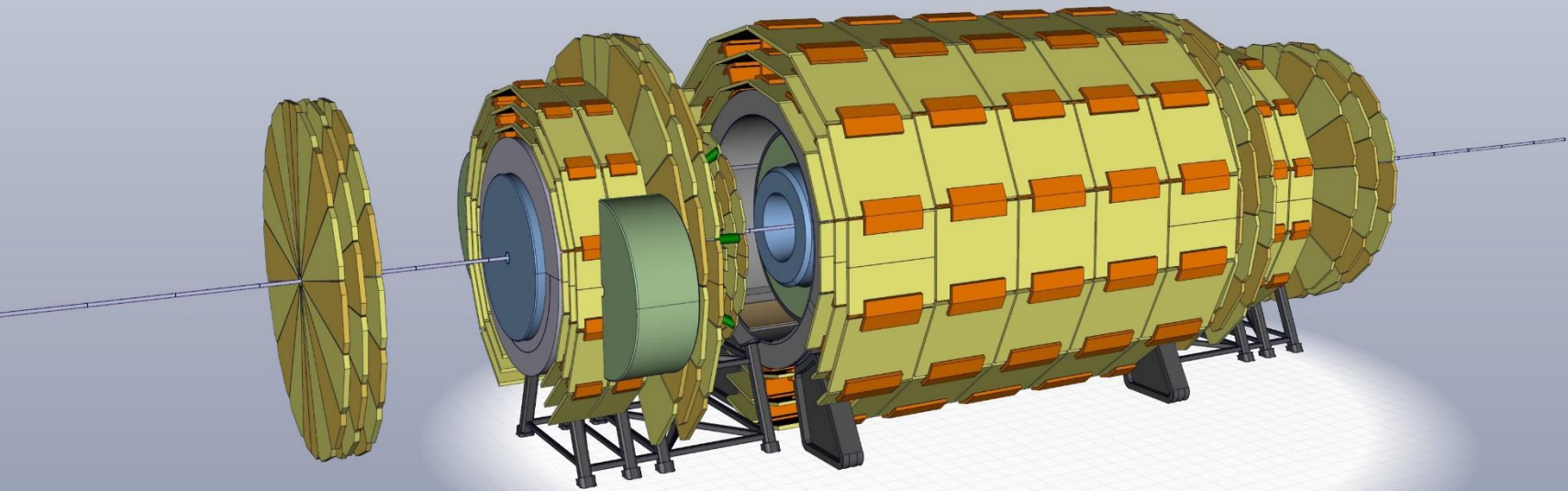
Slide radiation shield and attached elements forward

Long shutdown opening layout



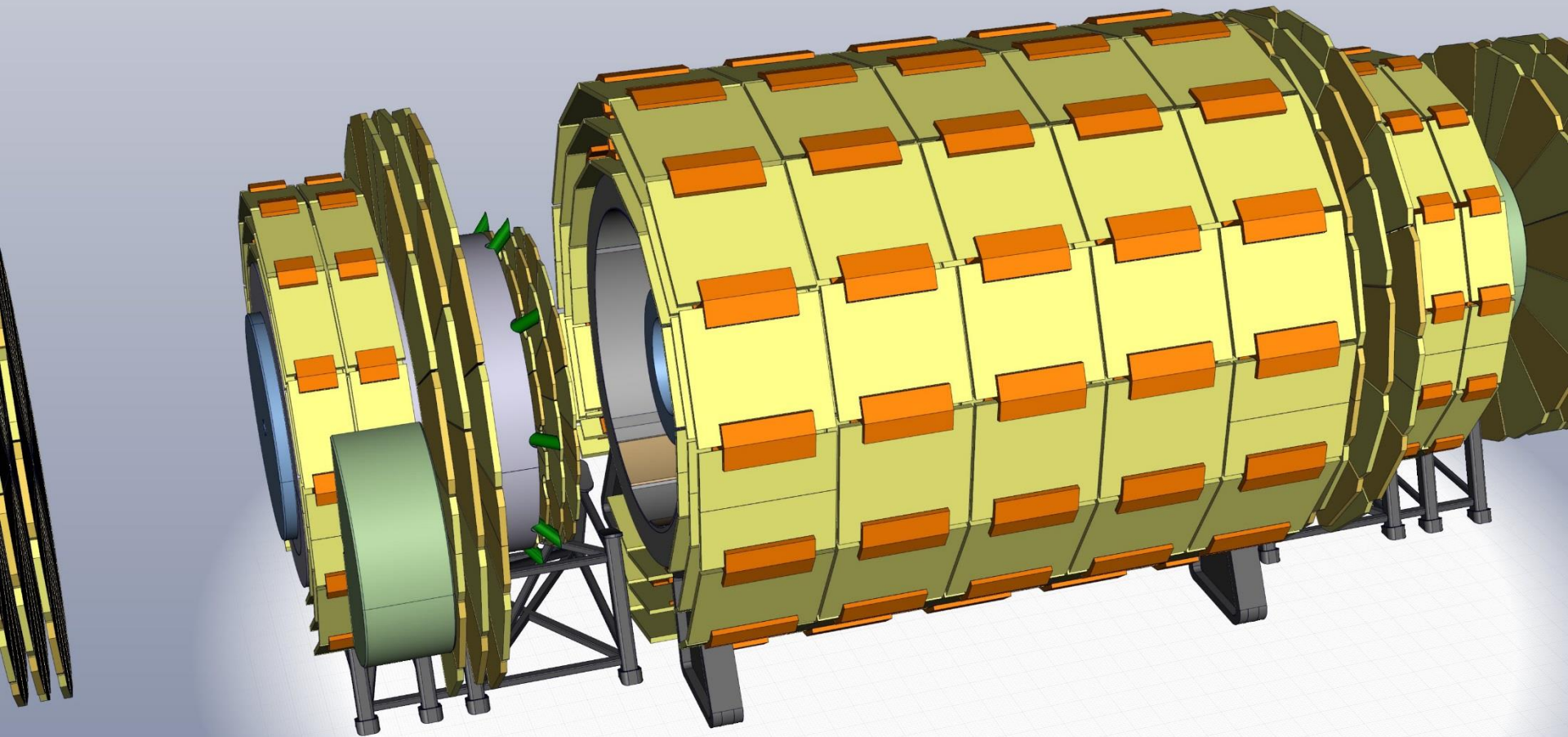
Long shut down initial steps are the same as the short opening

Long shutdown opening layout



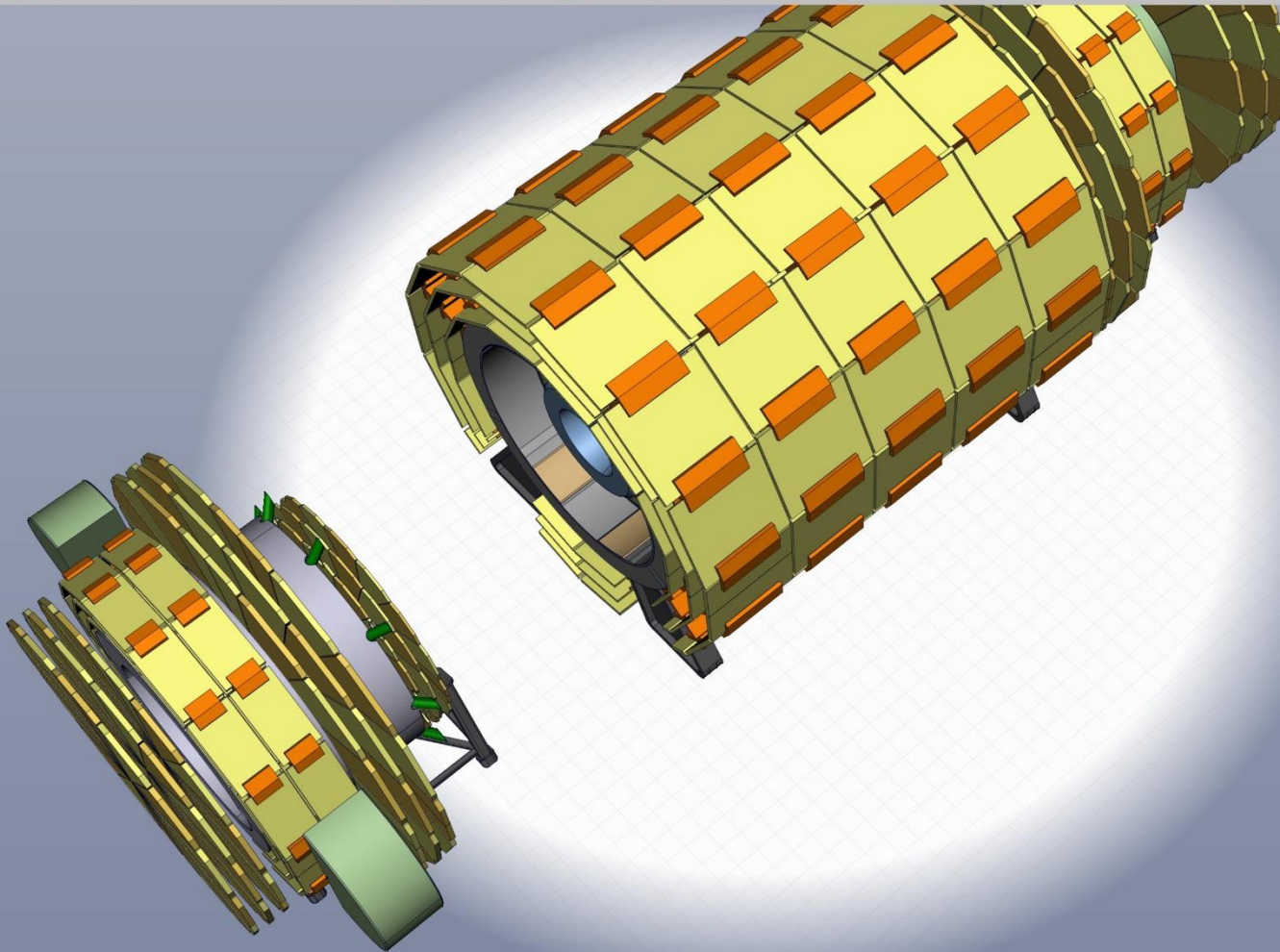
Move muon wheels 6.5m forward

Long shutdown opening layout



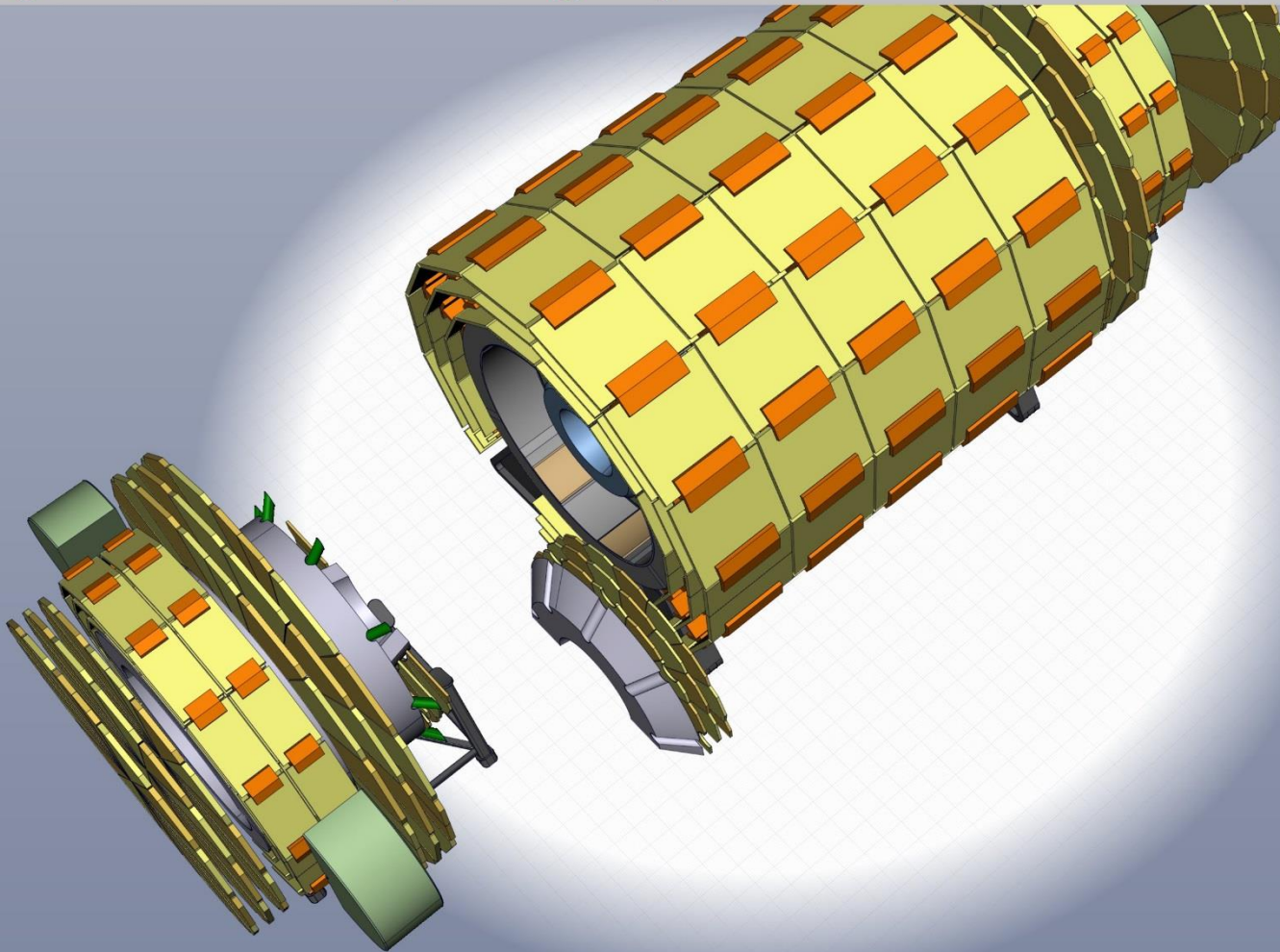
Open beam pipe

Long shutdown opening layout



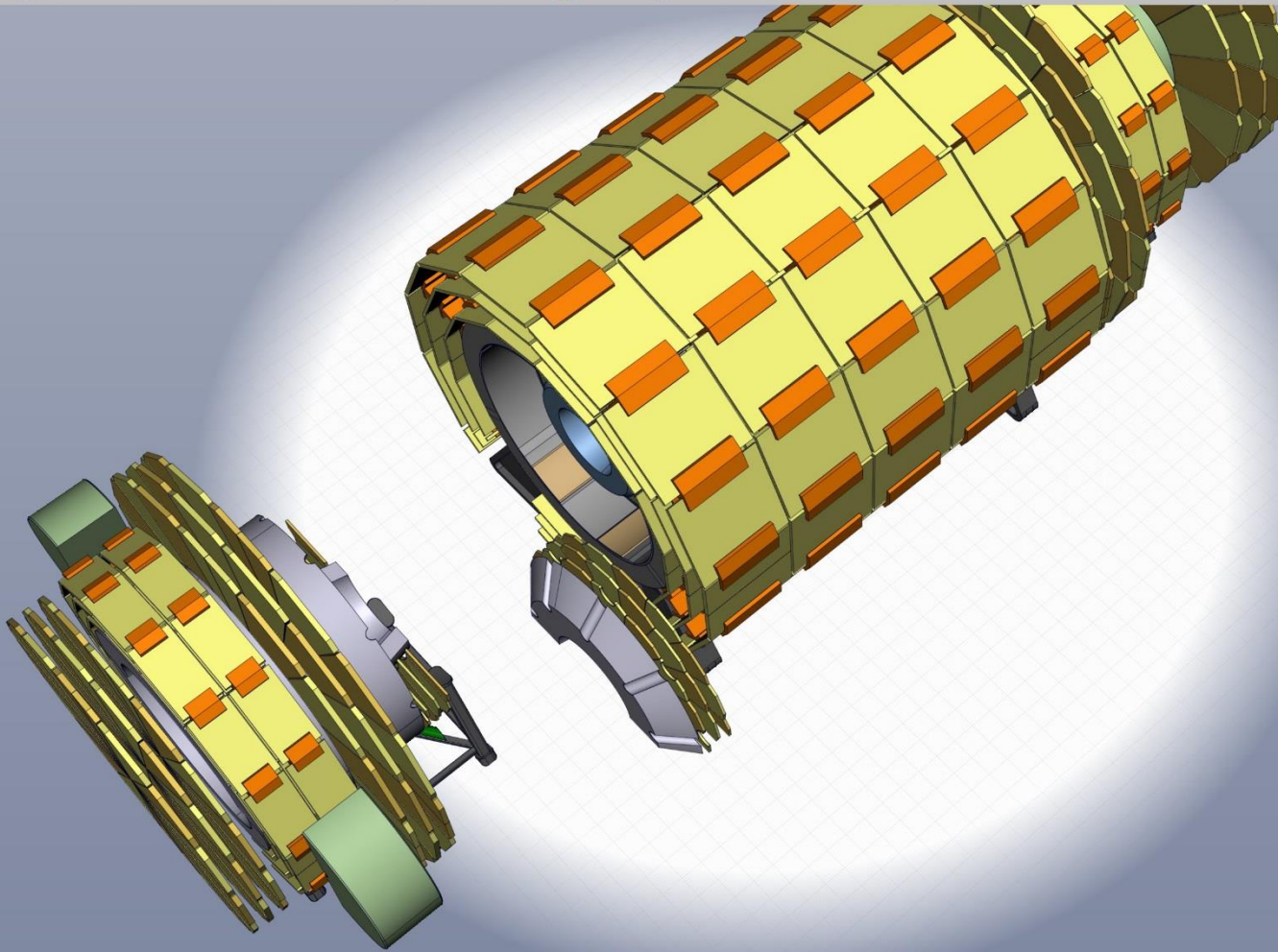
Move forward elements close to the muon wheels

Long shutdown opening layout



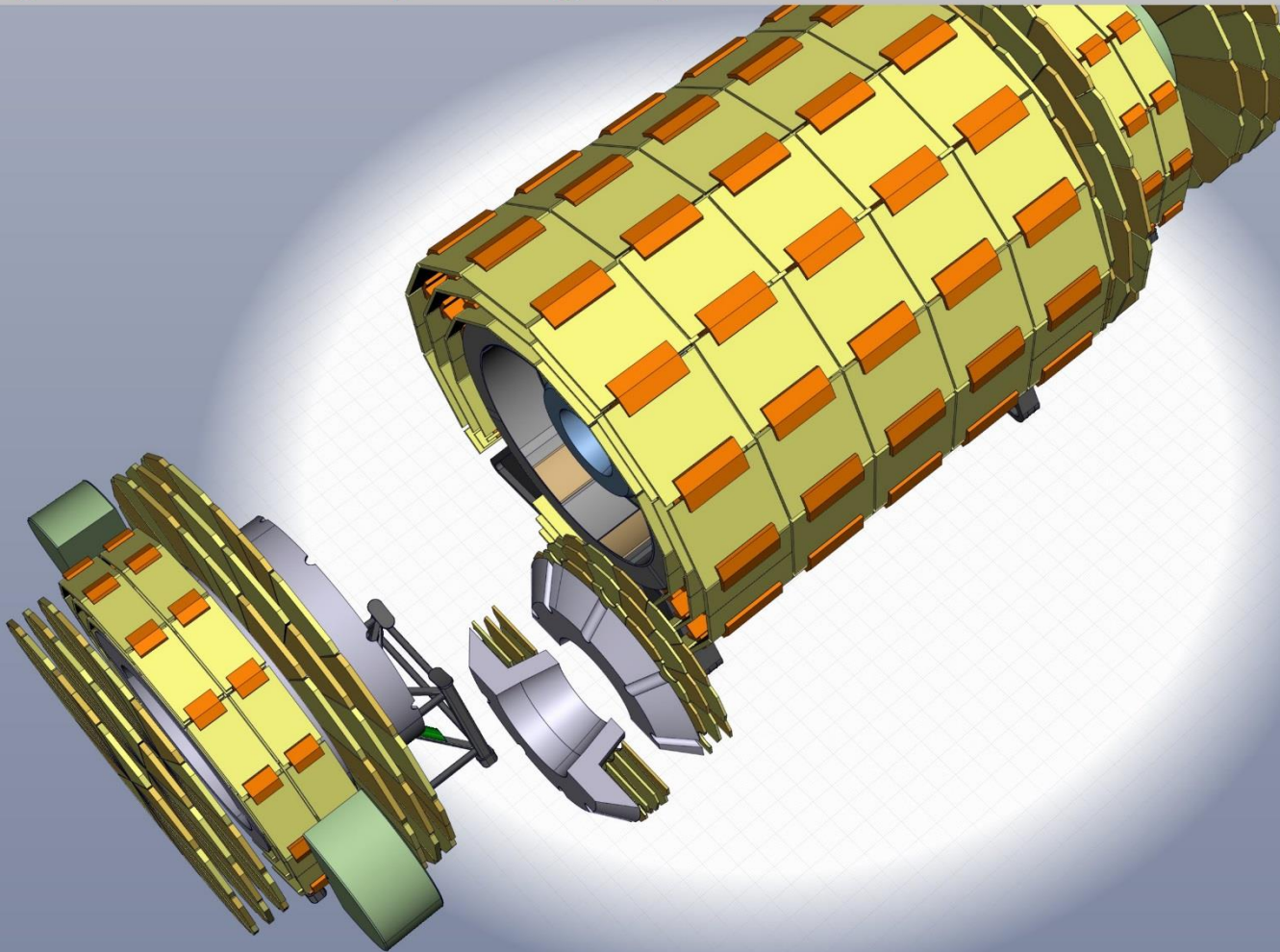
Remove the top half of the radiation shield "funnel"

Long shutdown opening layout



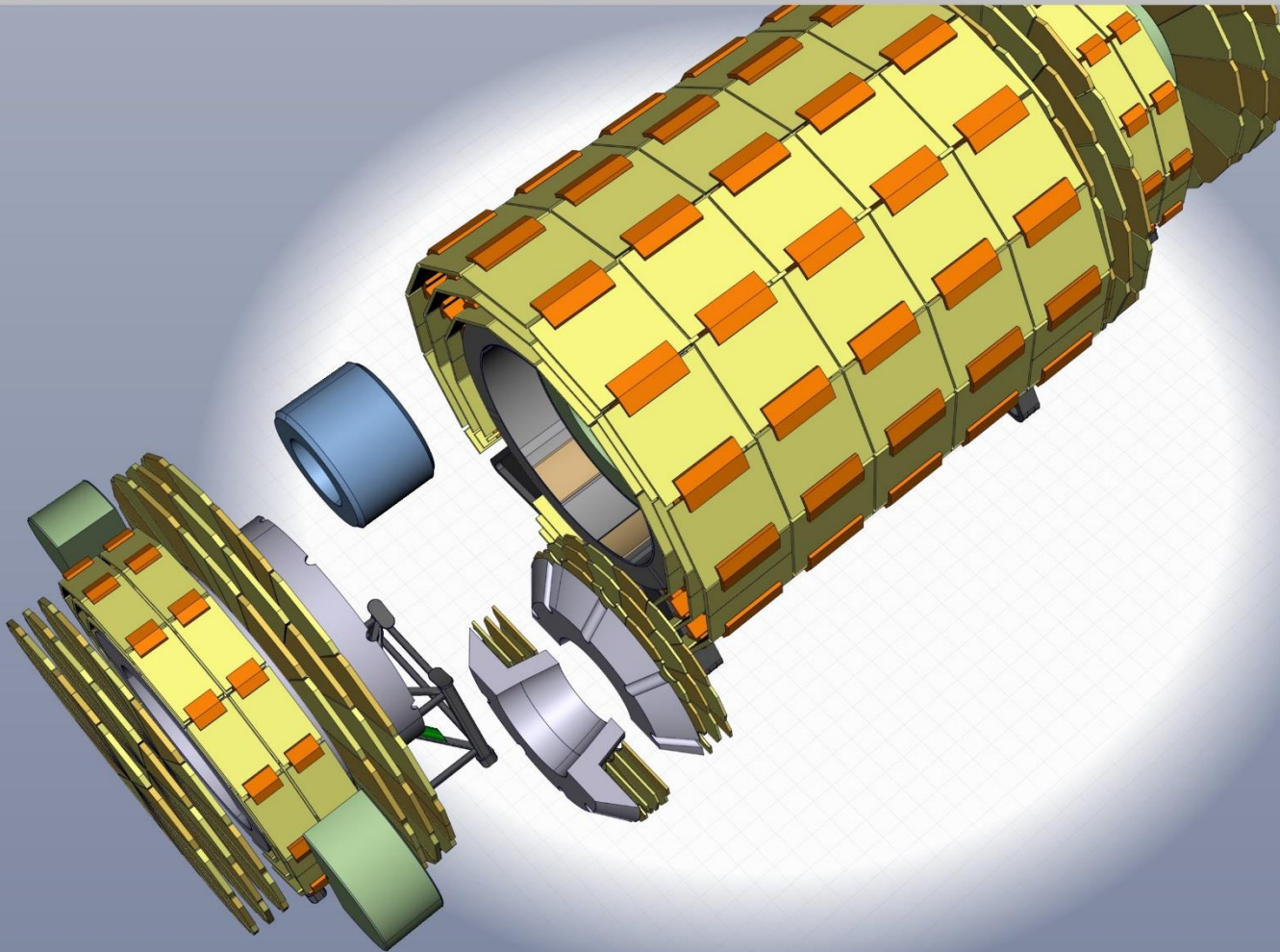
Remove half of the spokes

Long shutdown opening layout



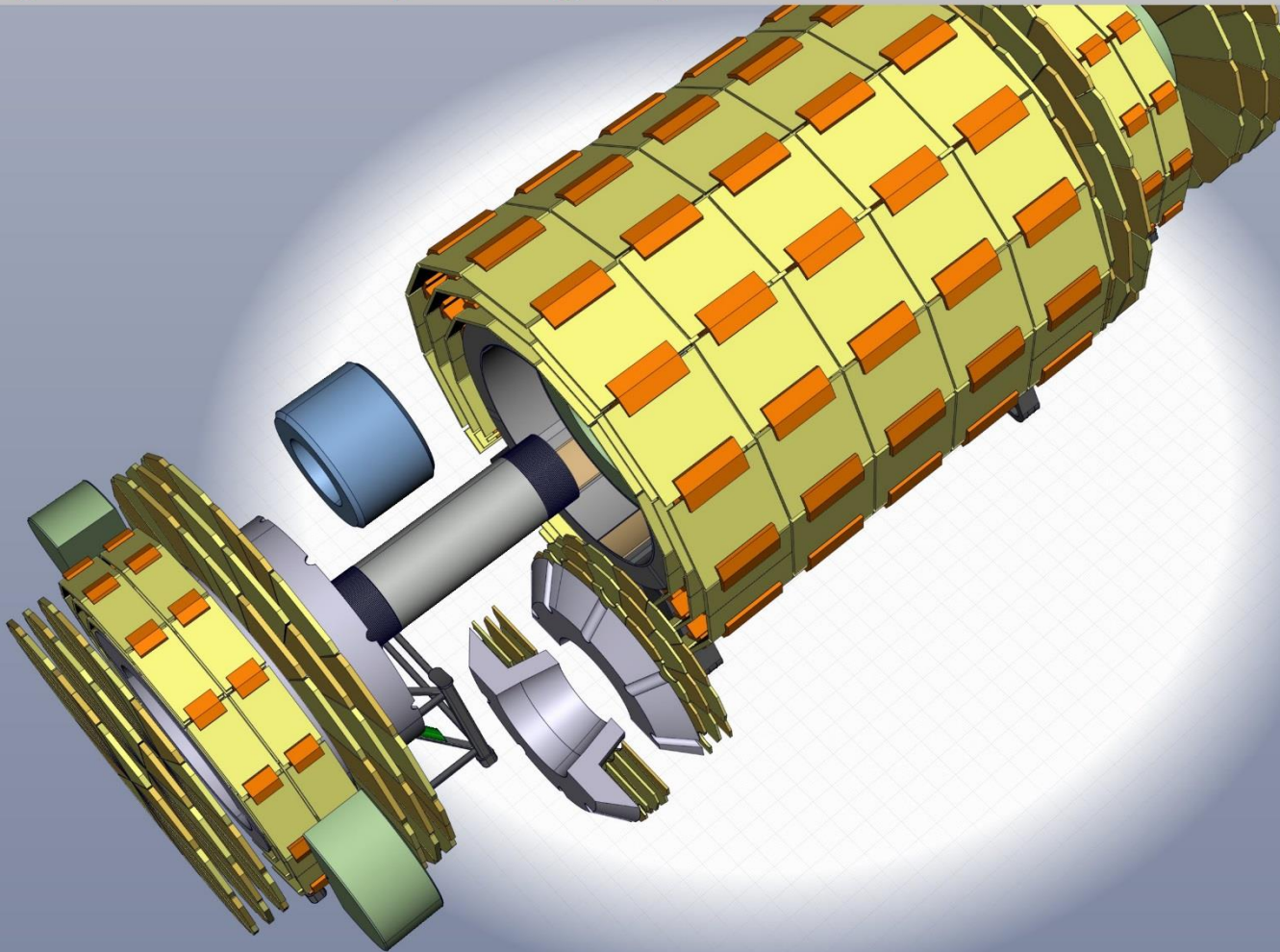
Remove bottom half of the radiation shield "funnel"

Long shutdown opening layout



Move out the ECal Module

Long shutdown opening layout



Move out the inner trackers

Cavern dimensions

Detector envelop: 56 x 26 x 26 m³

Size cavern: 70 x 30 x 35 m³

Diameter shafts: 15 m and 9 m

Large shaft maximum load: 2 kt

Small shaft maximum load: 0.25 kt

