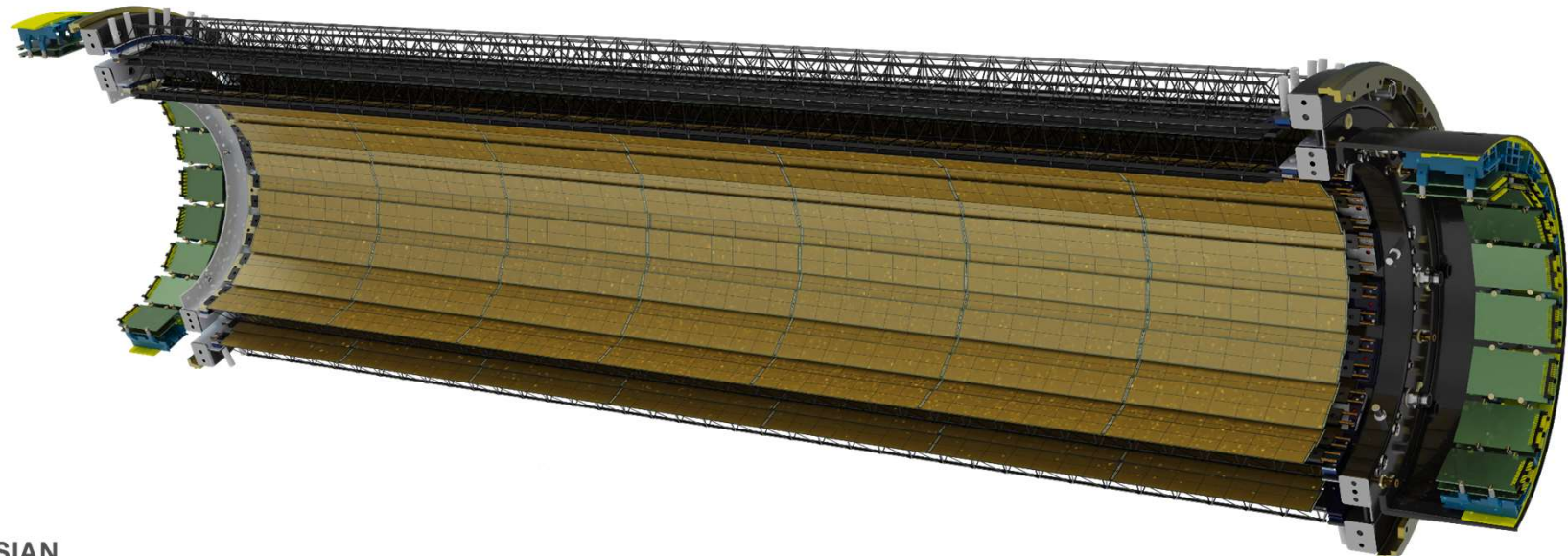


Status of mechanics for the Beampipe, FFD and ITS

Yuri Murin, JINR





Outline

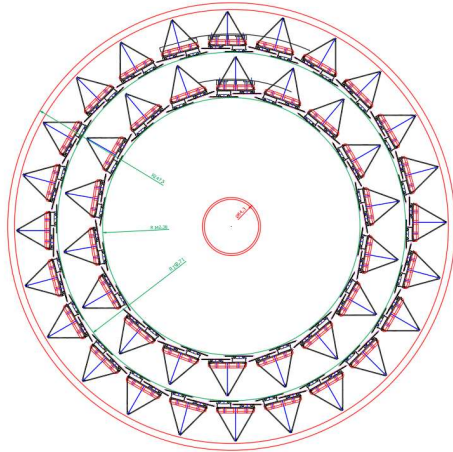
"All that glitters is not gold", AEsop, 600 B.C.

- The MPD ITS structure in a nutshell
- Problems with installation and the IC solution to those
- Scenario of integration of the IC with the TPC with the help of the Interceptor
- Some 3D pictures beloved by the funding agencies
- Current status of design and production
- Reserved promises on timelines for completion



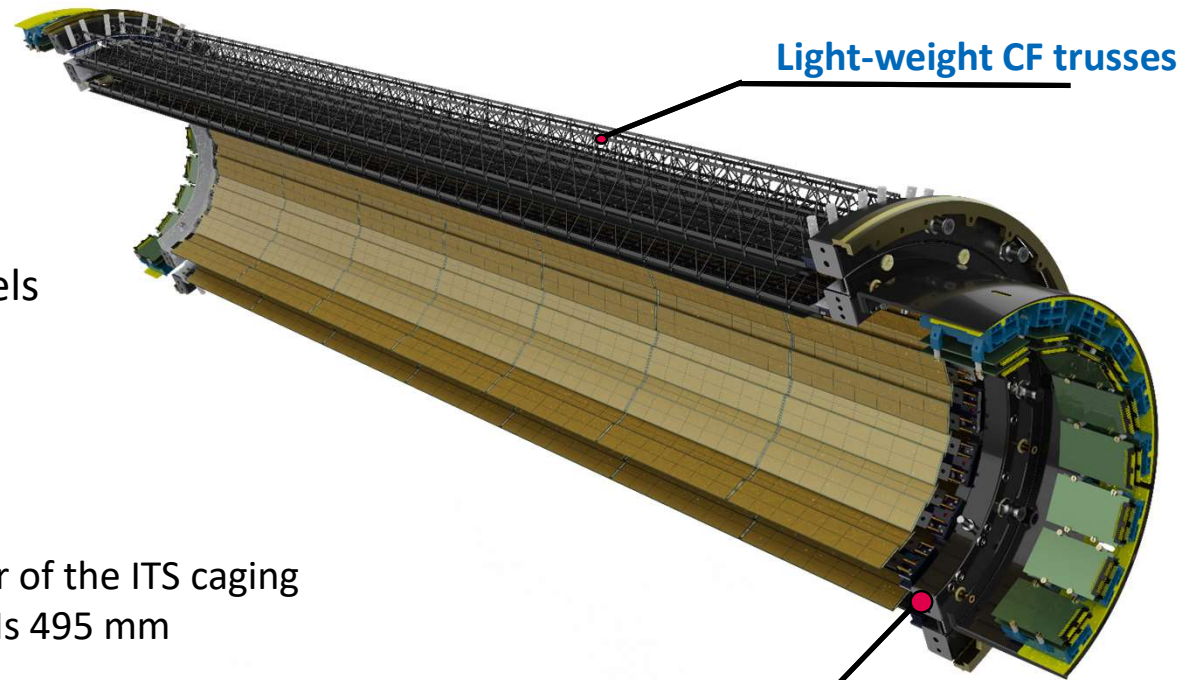
The OB as the goal of the first stage of the ITS project

- Two Outer Barrel 2 layers composed of 42 staves each carrying 196 ALTAI chips of 15x30 mm² size
- Radial position (mm): 145, 195;
- Length in Z: 1475 mm;
- Layer 4: 18 STAVEs / Layer 5: 24 STAVEs
- 8232 MAPS cover 3,7 m² with 4'316B pixels



Light-weight caging

Diameter of the ITS caging
Is 495 mm



Light-weight CF trusses

Hollow CF end-wheels



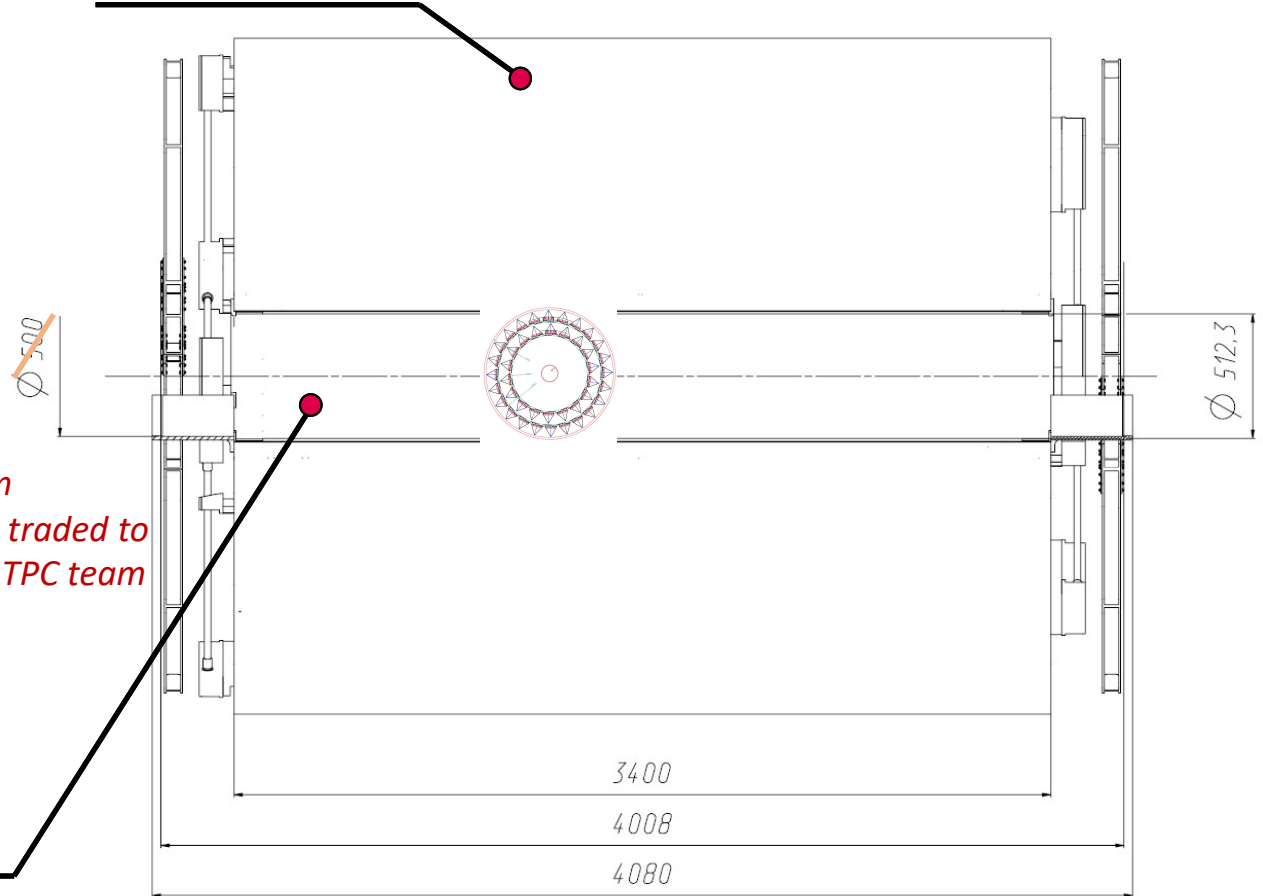
ITS and Beampipe installation challenge

The **clearance** between the ITS installation container in the TPC detector is **only 4.5 mm !**

Initial 500 mm diameter was traded to 504 mm with TPC team

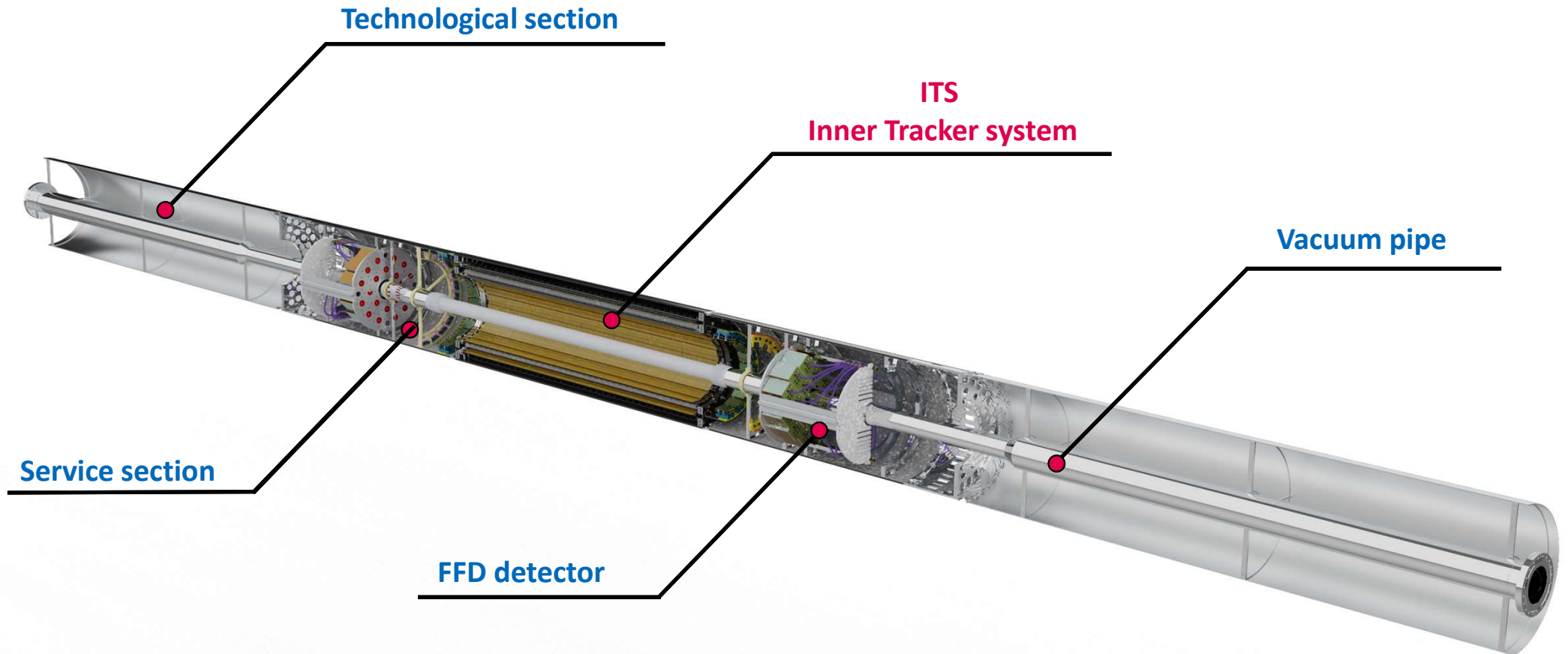
TPC bore

The TPC sensitive volume



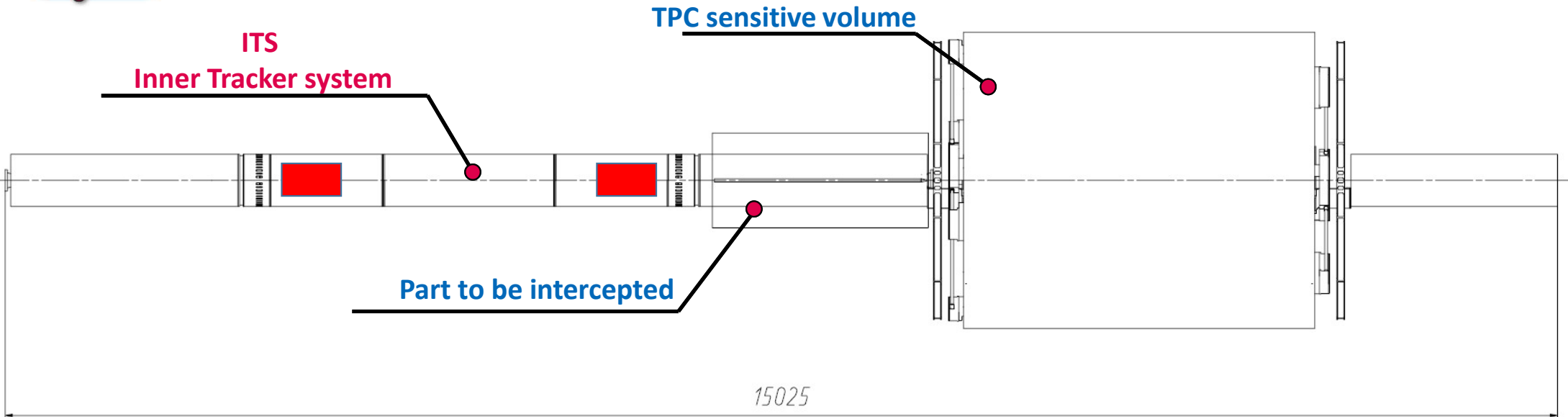


MPD ITS structure





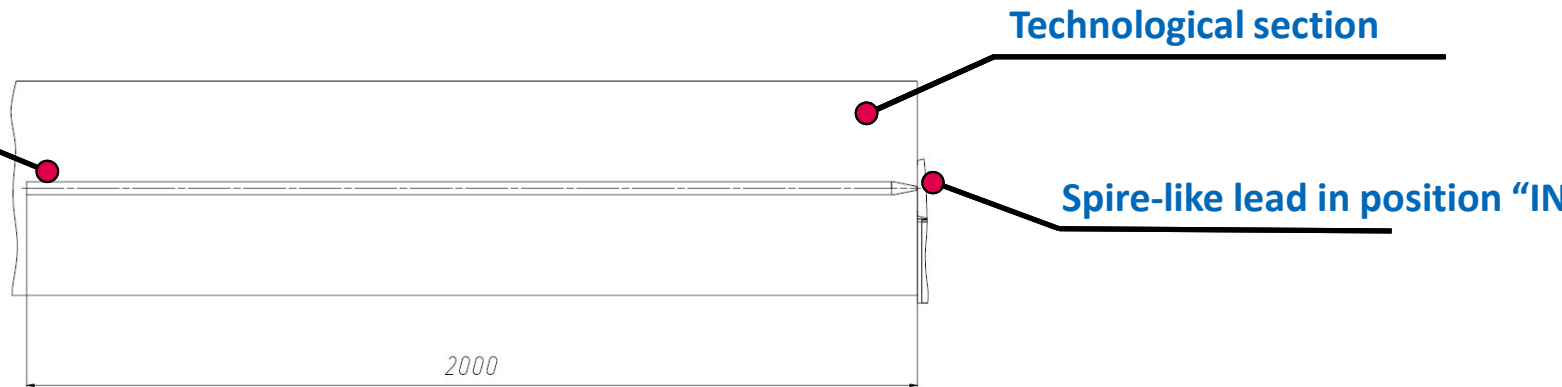
ITS and Beampipe installation process "Step 1"



The part of the IC first to go in

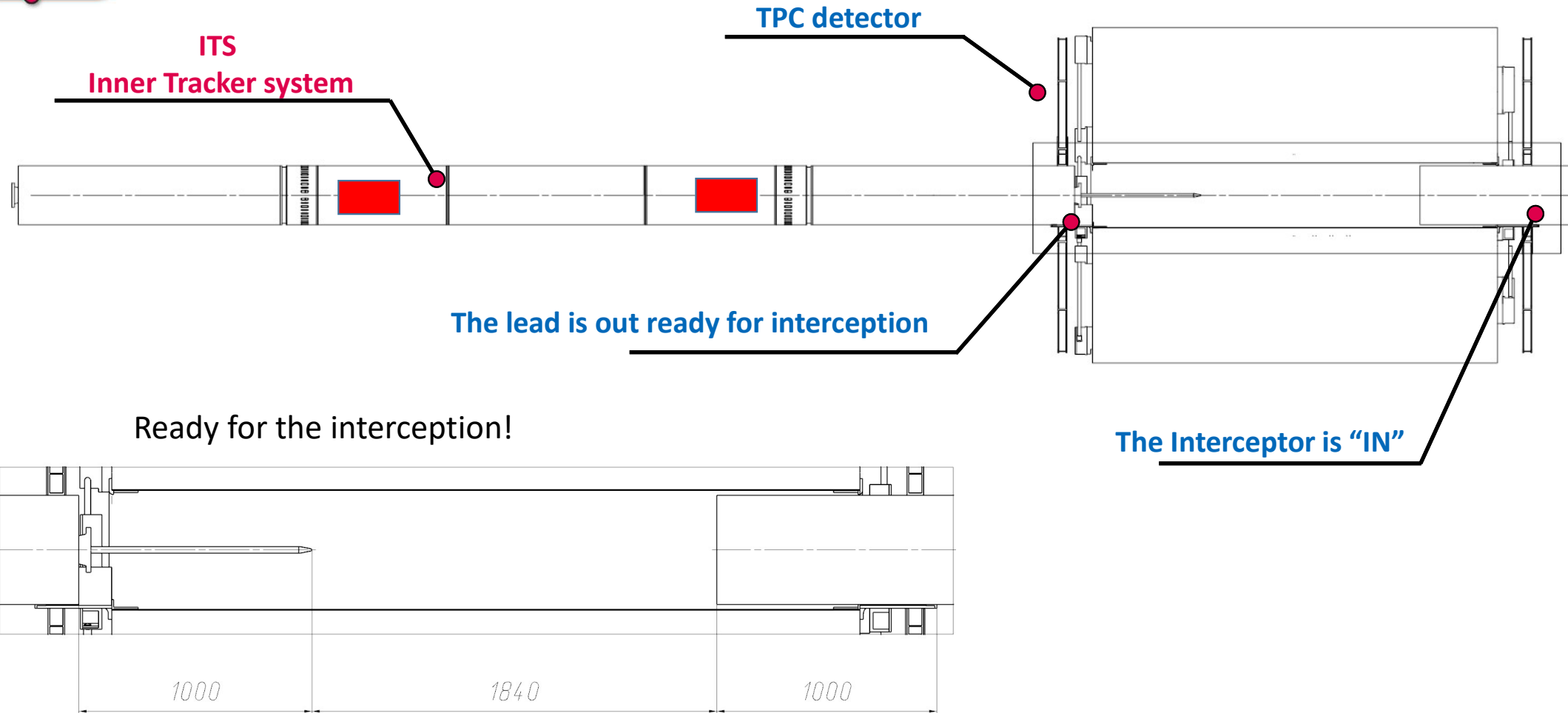
The carbon fiber support pin

50kg of FFD



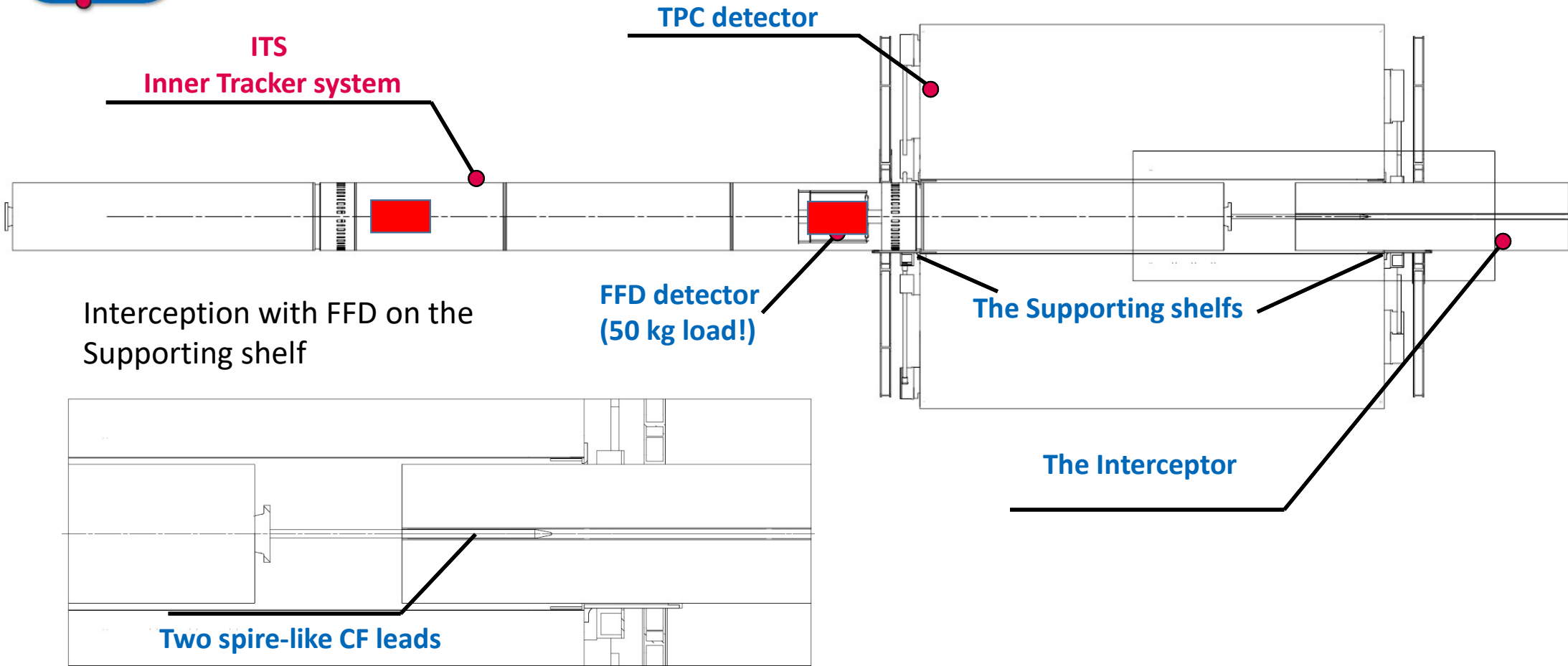


ITS and Beampipe installation process "Step 2"



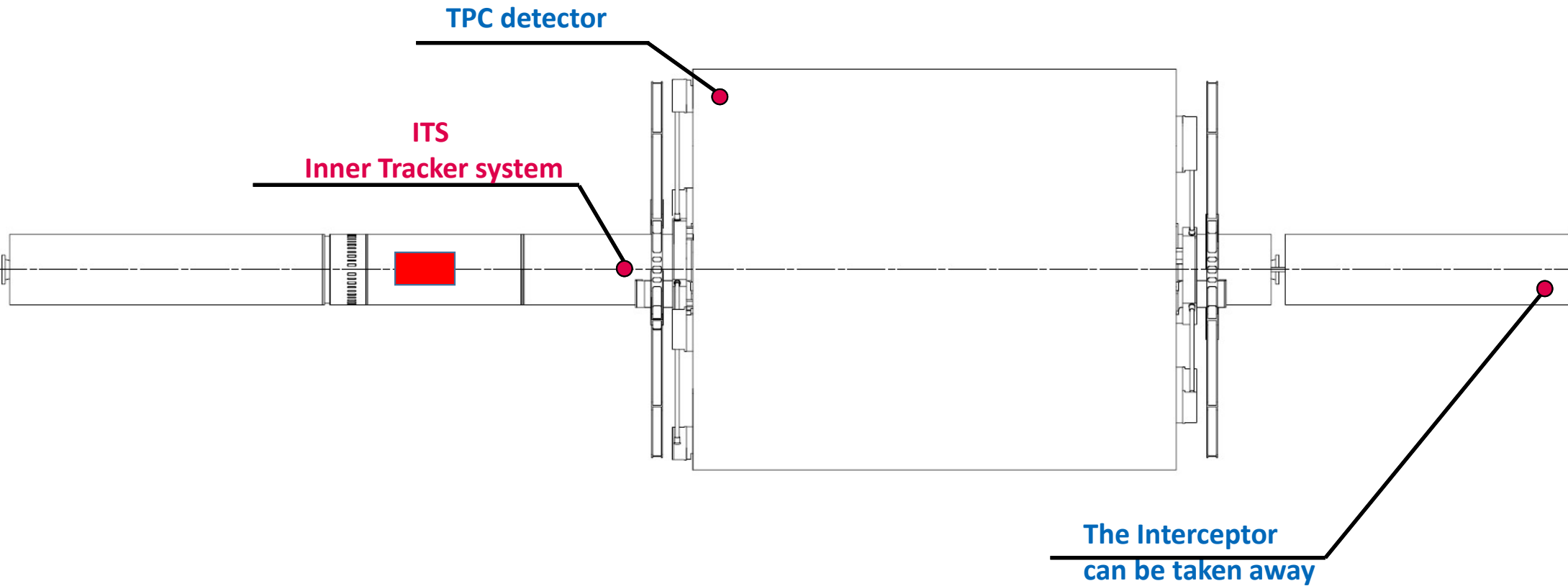


ITS and Beampipe installation process "Step 3"



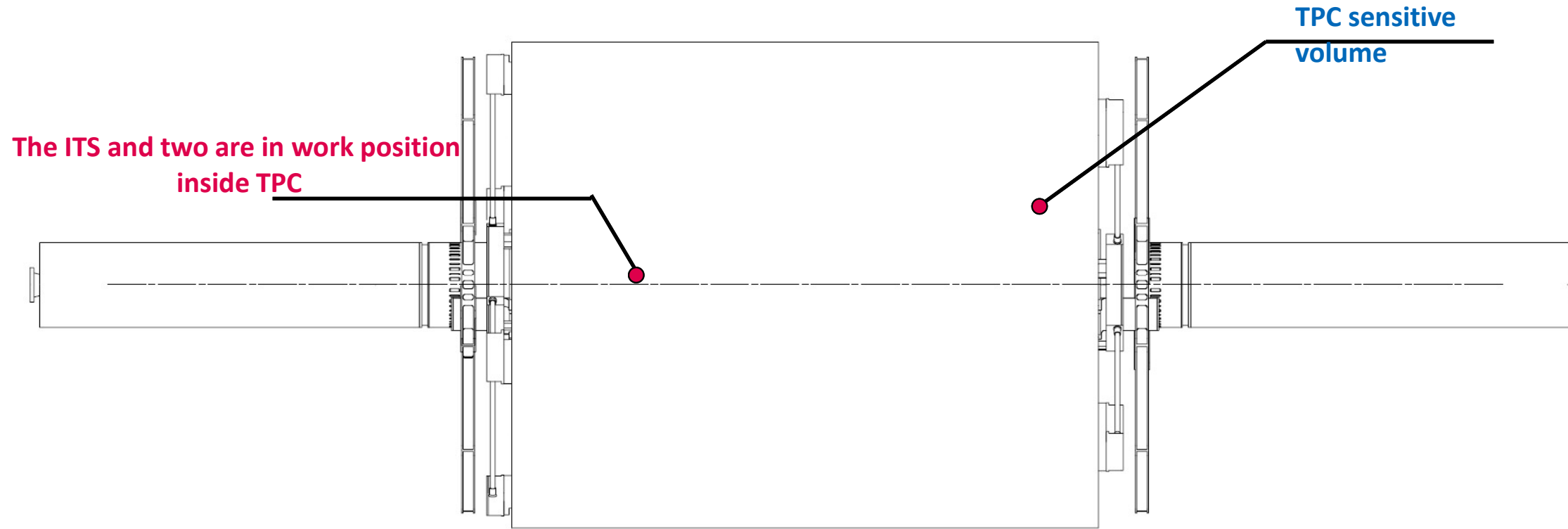


ITS and Beampipe installation process "Step 4"



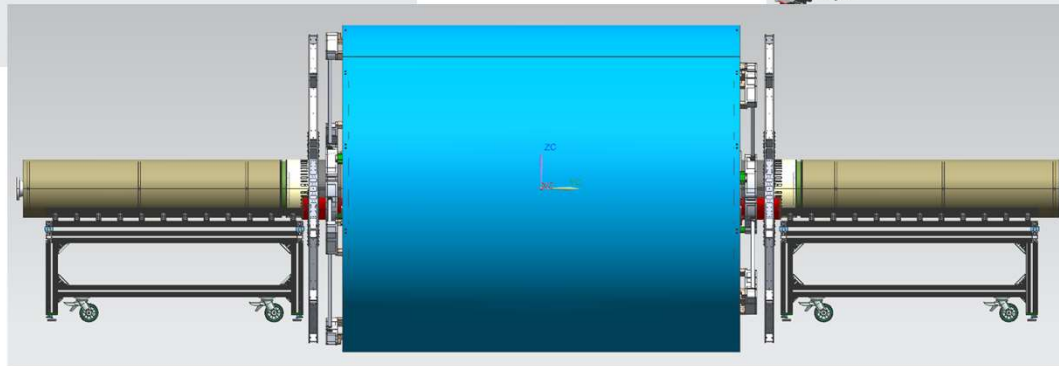
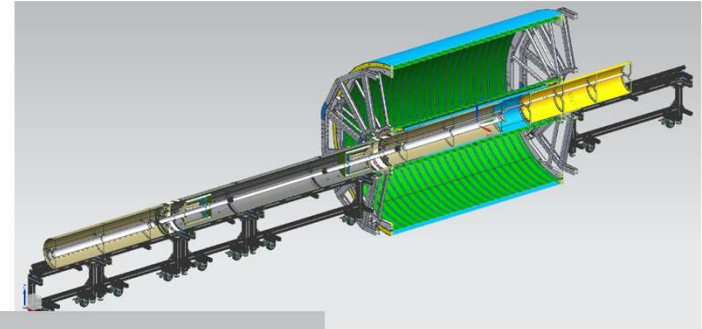
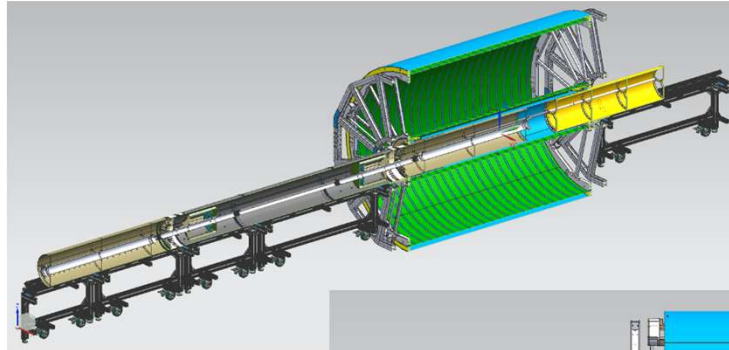
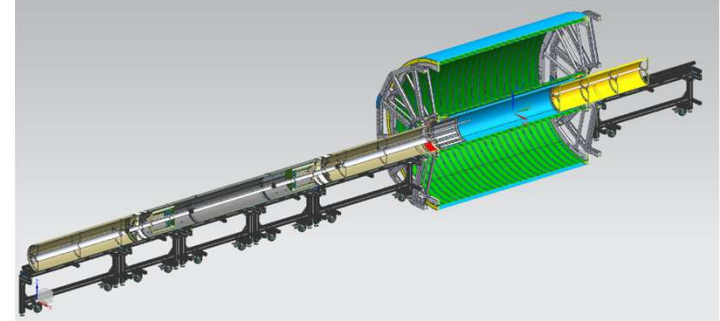
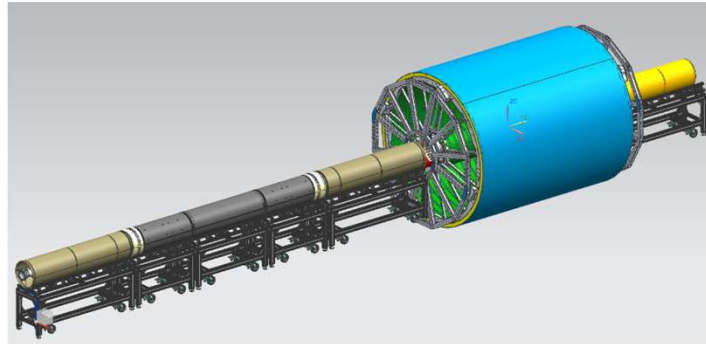


ITS and Beampipe installation process "Step 5"



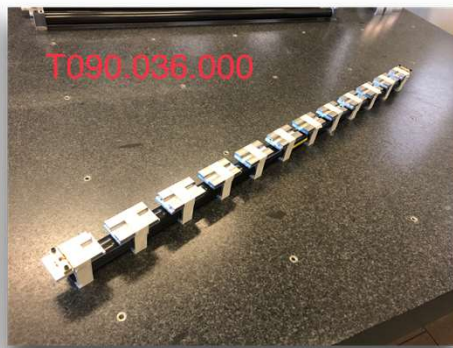
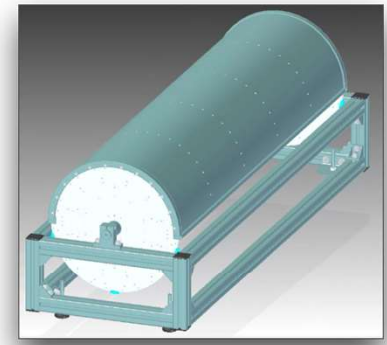
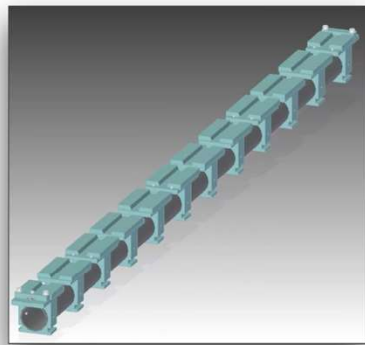
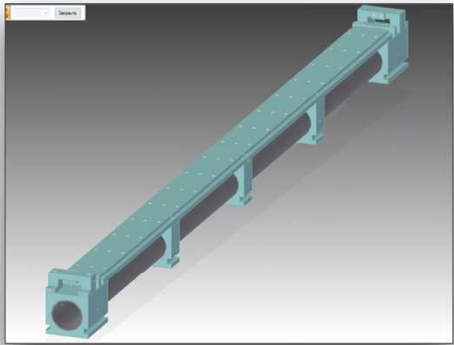


3D models before the final drawings with specifications





Manufactured in Italy – jigs and fixtures for stave and tracker assembly

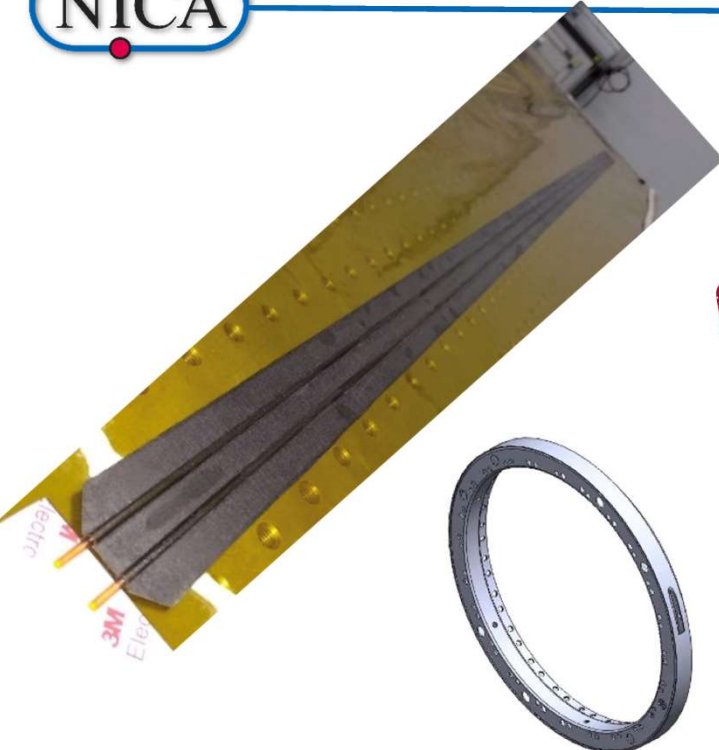




Manufactured in Russia – cooling plates, trusses, end-wheels

Сделано в СПбГУ

Сделано в ОИЯИ



Matrix produced by Meson, Ltd, SPb





Parts **already designed** & Parts of **on-going design** with production in the house and outside

- **The installation tables** (*production in the house*)
- **The CF casings and connectors** (production in the house and outside)
- **Hollow CF End-Wheels** (*production in the house*)

- **The metallic casing for the technological sections** (*production outside*)
- **BP support carriers** (*design after delivery of the BP prototype*)
- **The IC flip-latch jigs and fixtures** (*not yet started*)

- **Metrology issues** (*Contract with “Industrial measurements, ltd”*)



Try tests of the IC integration and installation – Q1, 2023



VIII-th Collaboration Meeting of the MPD Experiment at the
NICA Facility 13.10.2021 Murin@jinr.ru



Backup slide

