
Activity at IHEP

Andrey Ryazantsev

on behalf of the NRC “Kurchatov Institute” – IHEP, Protvino, group

Milestone	Work Description	Prerequisites to start work/ procurement	Validation Criteria	Date
Pre-Series Slice				
1.6 M8	Final testing of Pre-Series slice	1.5	SAT Ab for mechanics of Pre-Series Slice	June 2021
Full System				
2.1 M6	Finalise technical specifications for Parts included in batch 2.1 of the Barrel EMC Mechanics (BEM-B2.1)	1.6	Technical specifications	July 2021
2.5 MX1	Production and delivery of batch 2.1 of the Barrel EMC Mechanics (BEM-B2.1)	2.2	SAT Aa for BEM-B2.1	Nov 2022
2.6 M9	Production and delivery of all remaining (batch 2.2) Barrel EMC Mechanics (BEM-B2.2)	2.2	SAT Aa for BEM-B2.2	Mar 2023
2.7 M10	Participation in the assembly of the Barrel EMC Mechanics	2.3	SAT Ba for complete Barrel EMC Mechanics	Dec 2023

From Addendum 8 to the Collaboration Contract which was signed in December 2020

In progress

Support structure and devices for Barrel assembling

Will it be the final ?

Collaboration Contract was signed in November 2013: SAT Ba → June 2018

Addendum 5 was signed in June 2017: SAT Ba → December 2020

- **BEM-B2.1**: two support rings, all support beams, support feet and module plates;

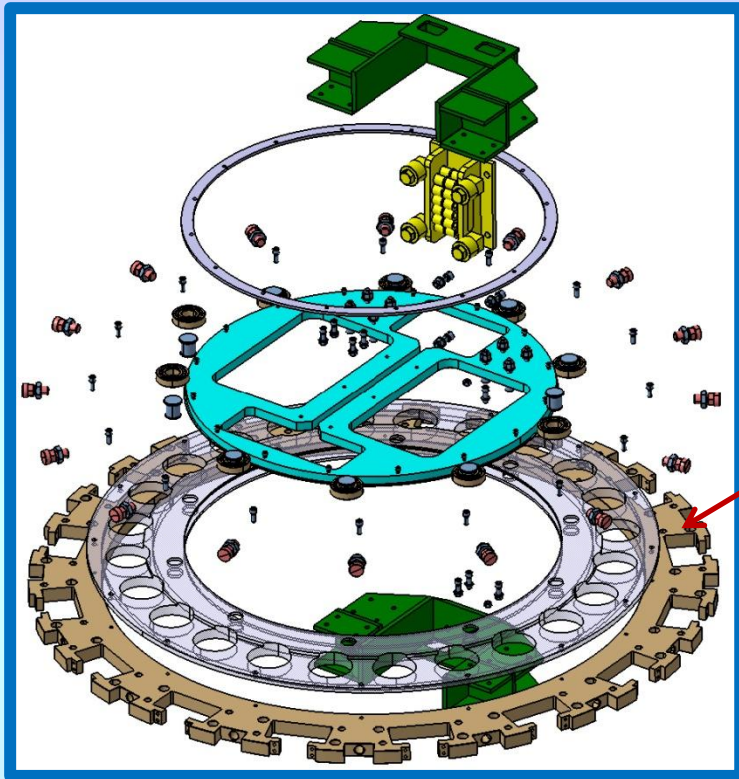
It became clear after assembling of the Pre-Series Slice and development of “Outside PCBs” as well as a concept of thermal insulation, that few modifications in the design of the support beam were necessary. This work is close to finish.

- **BEM-B2.2**: all technological beams and various devices which are necessary for the barrel assembling.

Main scenario of Barrel EMC assembly and integration was developed in general. Conceptual design of assembling devices is ready. These developments were presented at the CM 19/2 , MEC session.

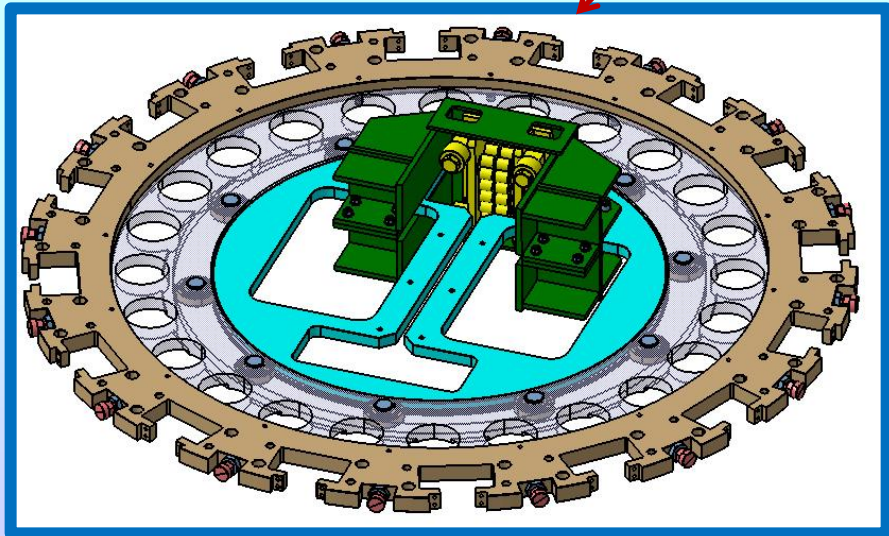
But... Test assembly of the whole support structure is necessary to issue a Factory acceptance protocol before delivery of BEM-B2.1

How to perform test assembling at IHEP (V. Ferapontov)



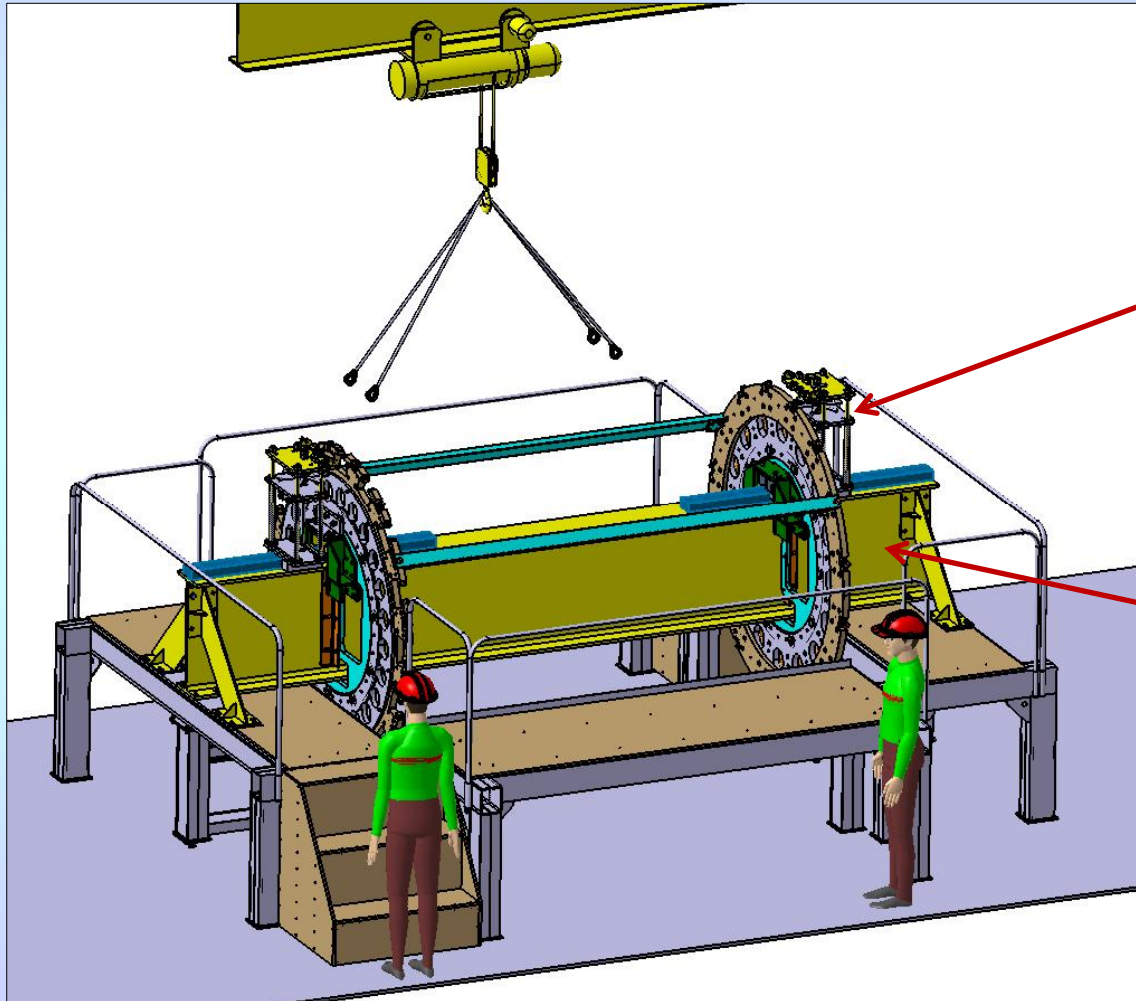
Support ring

Support ring assembled with all technological components necessary for the EMC barrel installation



How to perform test assembling at IHEP

(V. Ferapontov)

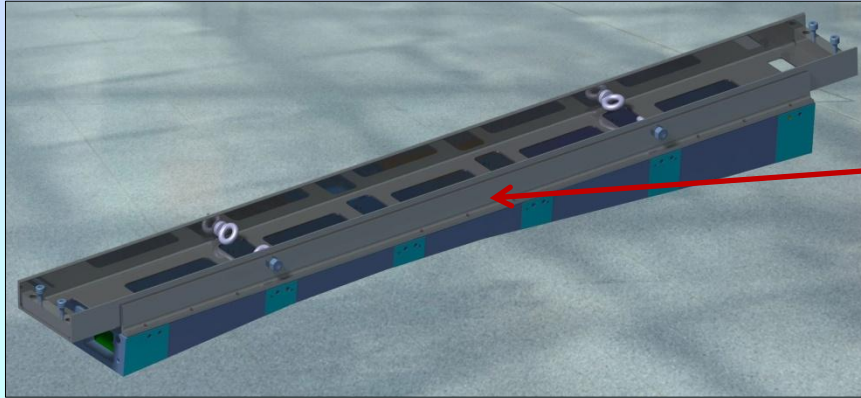


Two lifting devices

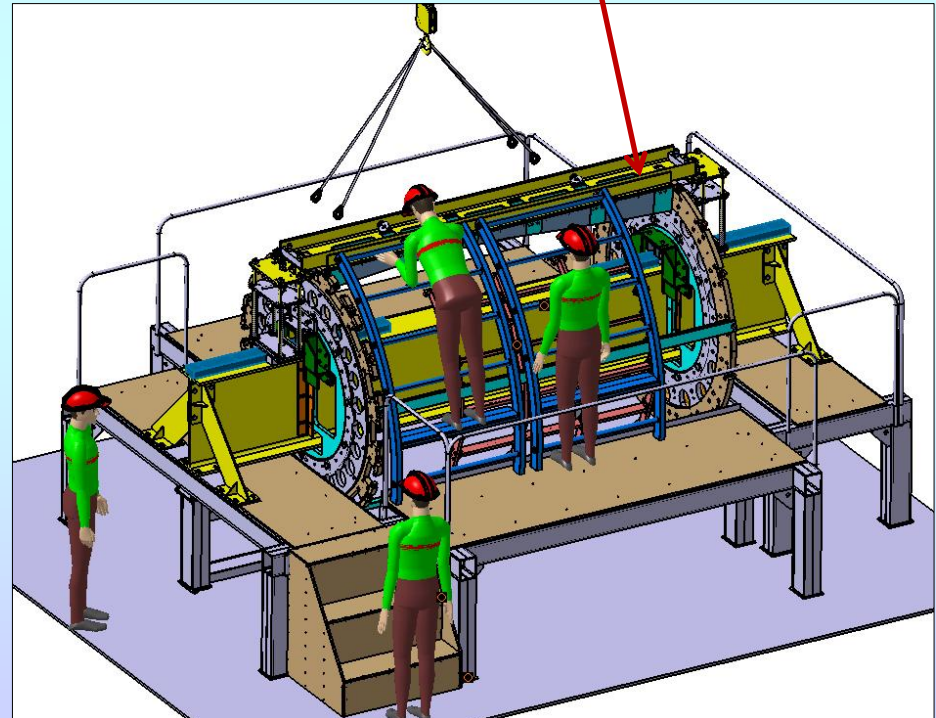
Beam of the same cross-section but shorter

How to perform test assembling at IHEP

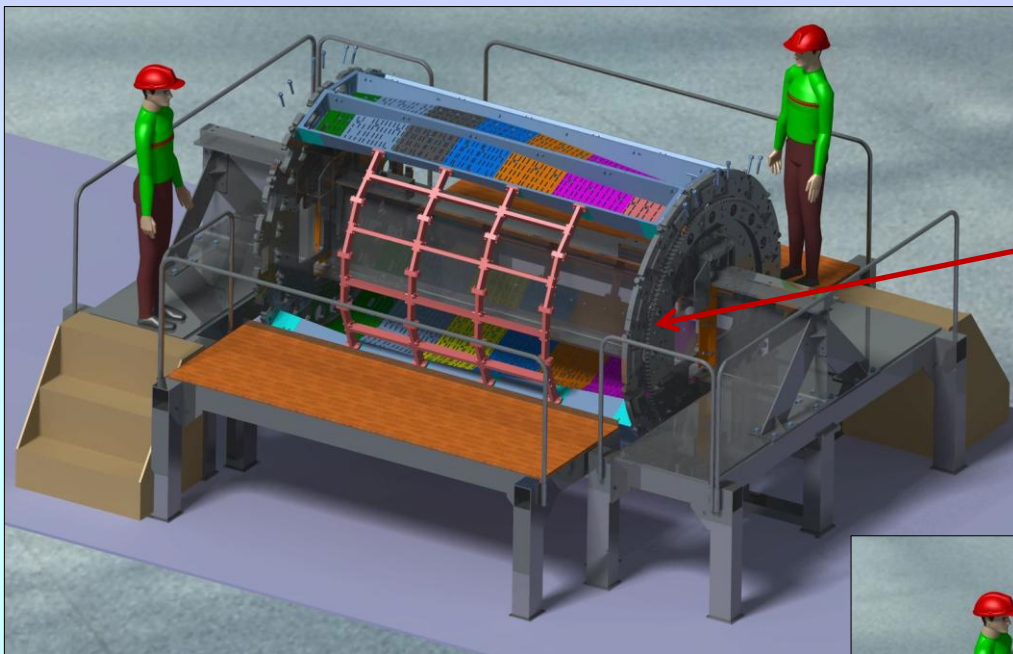
(V. Ferapontov)



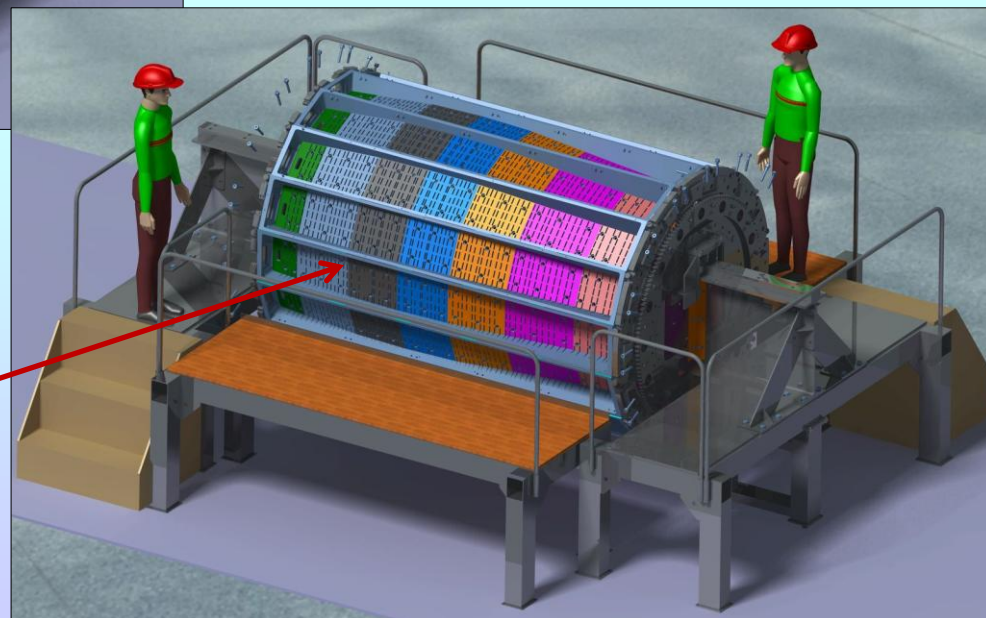
At least, one technological beam is necessary to mount support beams one-by-one



How to perform test assembling at IHEP (V. Ferapontov)

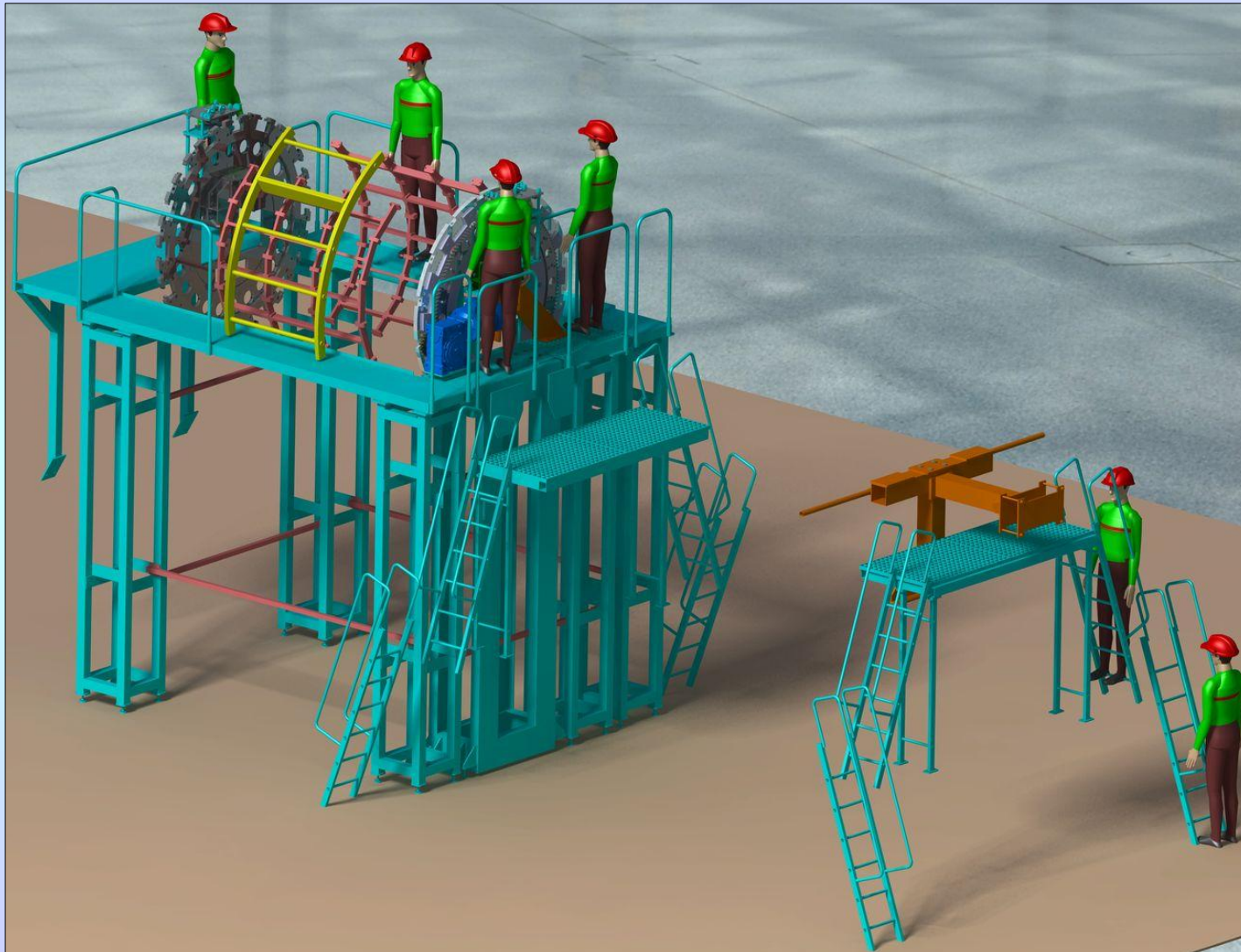


Barrel with ribs instead of slices for the first stage of the experiment



Complete barrel

How to perform final barrel assembling (V. Ferapontov)



- **Our engineers tightly-but-distantly work with colleagues from Giessen to prepare the first slice to the final reassembly and tests:**
 - **They need visas to travel – what is the situation in Germany with business trips?**
 - **Waiting for the finalization of technical specifications for complete Barrel EMC Mechanics to begin production of the components for the Barrel support structure and devices for the Barrel assembling.**
- **Development of test assembling procedure of the barrel at IHEP is in progress:**
 - **Open question – how many slices will barrel contain at the first stage?**
- **Detailed design of tools that are necessary for the final barrel assembling is in progress.**
- **FEA calculations of stresses and displacements in assembled barrel for a seismic event were made by A. Ryabov (requested by ECE for the updated TDR). There is some worry about possible displacement along Z-axis since there is no any fixation inside the cryostat in this direction:**
 - **Open question – should we find a solution for a such kind of risk?**