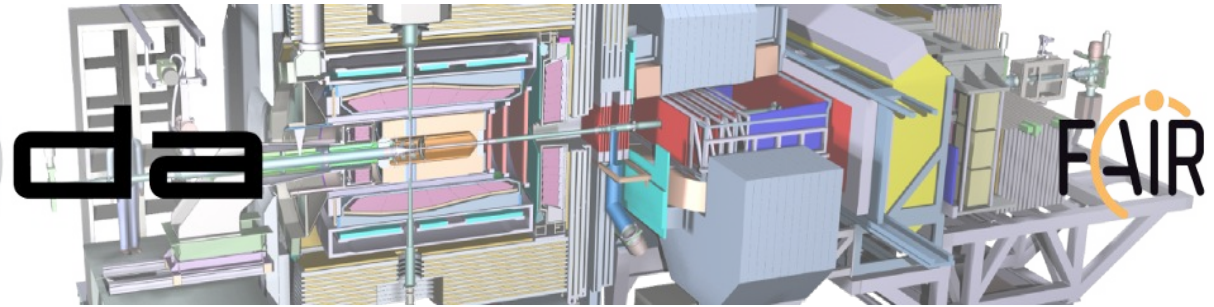


How to Proceed with the Slice Assembly?

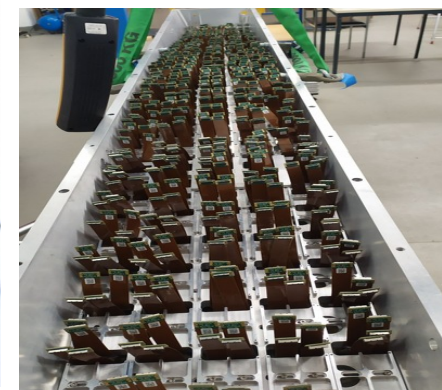
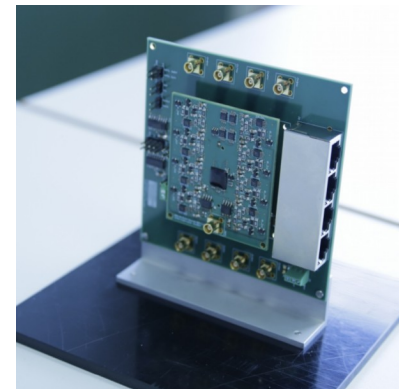
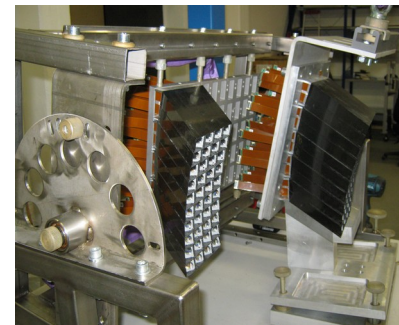


2nd Physics Institute, Giessen University, Germany

PANDA CM, October 2022

Envisaged milestone (M8): Assembly of 1st full Barrel EMC slice

- Infrastructure ✓
- Mechanics ✓
- 710 detectors (Crystals, APDs...) ✓
- Assembly of 18 modules ✓
- Assembly of Supermodules ✓
- 360 left and 360 right handed pre-series APFELs with flex PCBs ✓
- ASIC housing and fixtures ✓
- Assembly of full 1st slice X
- (Re-)design supportbeam ✓
- Mod. preseries supportbeam ✓
- Cooling & thermal insulation in progress
- Backplanes in progress
- Light pulser fiber coupling in progress
- ...

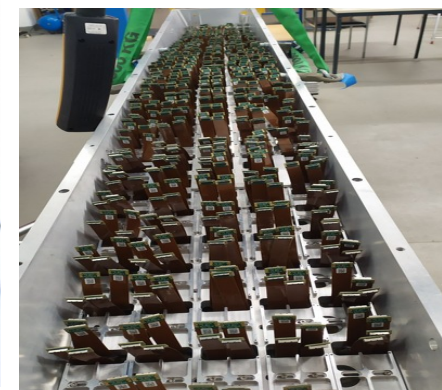
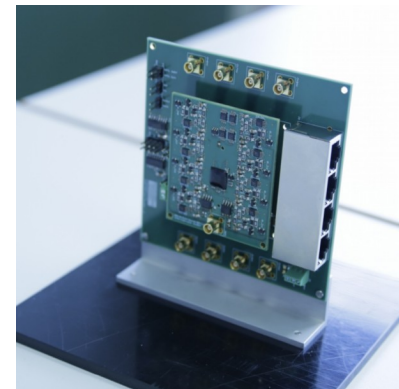
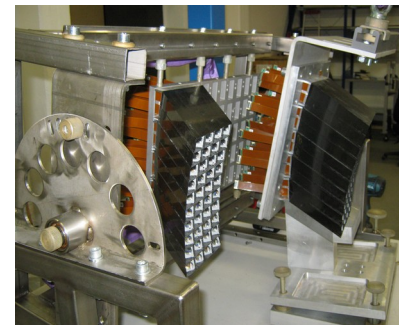


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- ...

see previous talks

in progress

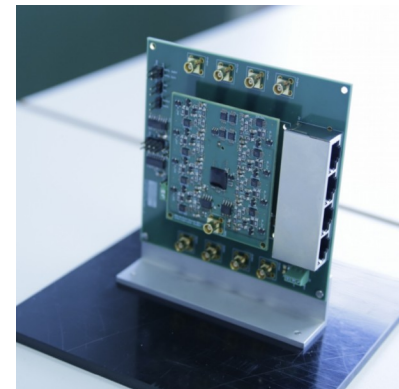
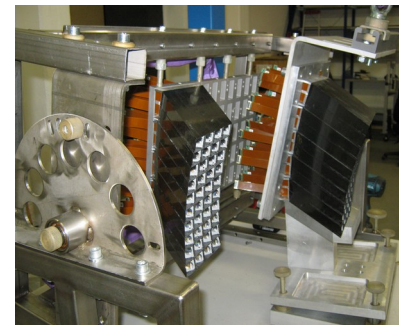


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- ASIC housing and fixtures ✓
- Assembly of full 1st slice X
- (Re-)design supportbeam ✓
- Mod. preseries supportbeam ✓
- Cooling & thermal insulation **see previous talks**
- Backplanes
- Light pulser fiber coupling in progress
- **Exchange APFELs to series version**



disassembly down to modules necessary



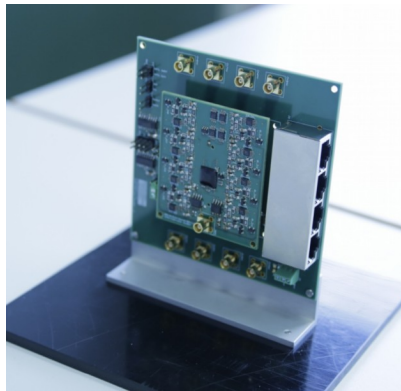
Envisaged milestone (M8): Assembly of 1st full Barrel EMC slice

- Infrastructure ✓
- Mechanics
- 710 detectors (Cry)
- Assembly of 18 m
- Assembly of Super
- 360 left and 360
- pre-series APFEL
- ASIC housing and
- Assembly of full 1
- (Re-)design supportbeam ✓
- Mod. preseries supportbeam ✓
- Cooling & thermal insulation see previous talks
- Backplanes
- Light pulser fiber coupling in progress
- **Exchange APFELs to series version**

There has been almost no transfer of knowledge about mechanical assembly before the communication cut-off with Russia



disassembly down to modules necessary



Inside EDMS:

“PANDA EMC BARREL ASSEMBLY (PROCESS DESCRIPTION AND PRACTICAL GUIDE)”

EDMS interface showing document details for **PANDA EMC BARREL ASSEMBLY TOOLS v.1 OCTOBER 2021.docx**. The document size is 41.4 MB and the last modified date is 2021-10-18 06:41:30. A red circle highlights the last modified date. The status is marked as **DRAFT ONLY**. The document is displayed on page 1 of 1.

EDMS- Document Number 1421085/1

EDMS- Document Number 1421085/1

I. Slice Assembly

Contents

- I. Slice Assembly**
 - 1. Modules Assembly
 - 2. Super-Modules Assembly
 - 3. Mounting of Super-Modules to the Support Beam
- II. Barrel Assembly**
 - 1. Technological Device Assembly
 - 2. Barrel Assembly Step by step Procedure
- III. Equipment and materials**
- IV. Annex**

1. Modules Assembly

A 3D-model explaining the principles of module Assembly is shown in **Figures 1 - 8**.

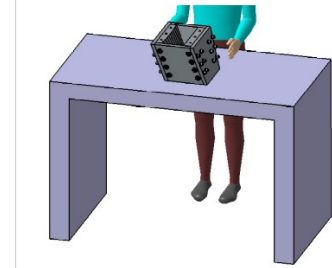
To assemble Module **Type 3(+)** must be prepare the Tool for the Module Type 3(+) Assembly (Document **1420575 v.1, 9371-00-00-00**) and the following parts of the mechanical structure (see. Document **1419362 v.1, 9310-00-00-00_AD_eng.pdf** and **9310-00-00-00_SP_eng.pdf**):

- Alycolj pack 4x10 cells Type 3(+) - pos. 3, **9310-00-00-00_AD_eng.pdf, (9310-03-00-00-AD.pdf)**;
- Five sets of rear inserts - pos. (42 ... 49), **9310-00-00-00_AD_eng.pdf, (9310-00-00-32.pdf ... 9310-00-00-40.pdf)**;
- Set of intermediate plates - pos. (21 ... 25), **9310-00-00-00_AD_eng.pdf - (9310-00-00-11.pdf ... 9310-00-00-15.pdf)**;
- 40 screws - pos. 71, **9310-00-00-00_AD_eng.pdf**;
- 40 front inserts – Document **1418282 v.1, 9439-00-00-01.pdf**;
- 2 aluminum boxes for ASIC board fixation.

Rear inserts will be glued inside alycolj cells with glue **ARALDITE 2031**. Front inserts will be glued inside alycolj cells with glue **ARALDITE 2031**.

20 crystals of type 3R and 20 crystals of type 3L with glued APDs and APD capsules have to be wrapped with reflecting material (Mylar).

40 ASIC boards and thermal sensors have to be prepared.



Inside EDMS:

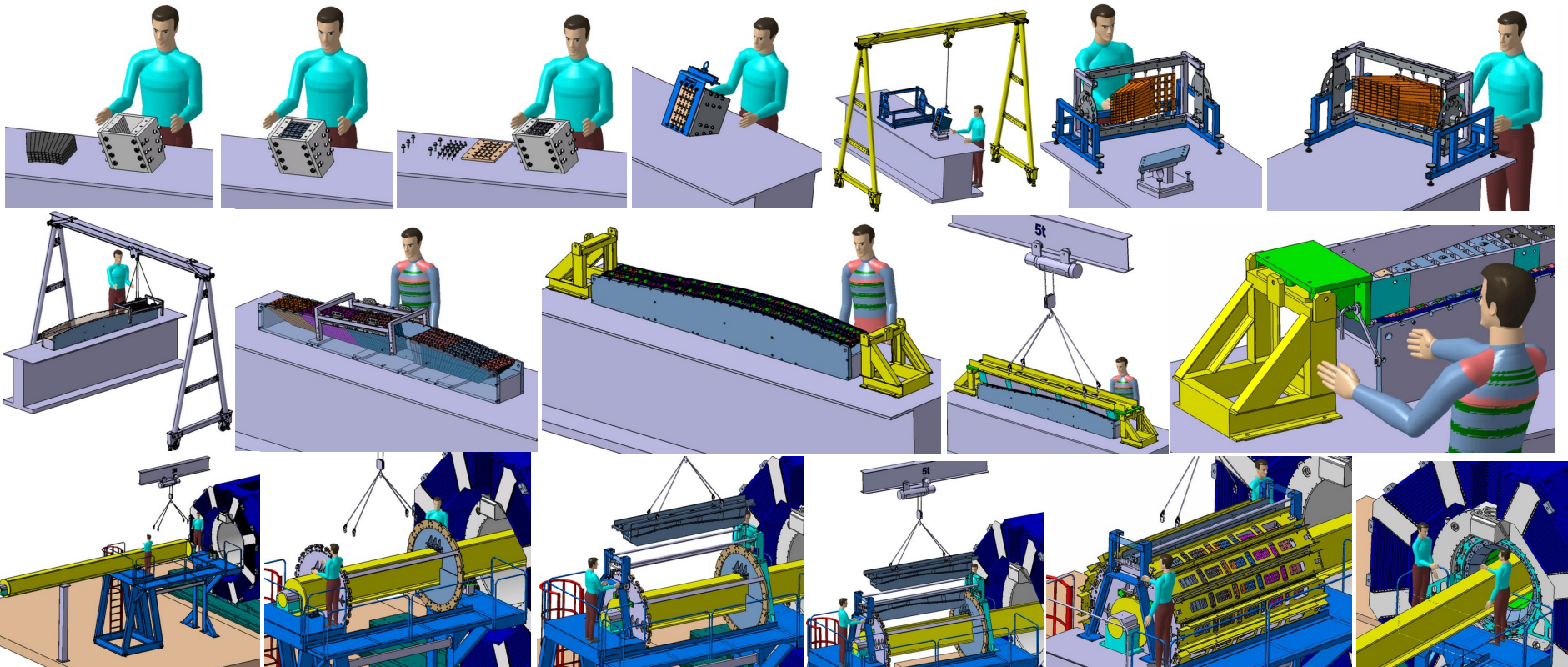
“PANDA EMC BARREL ASSEMBLY (PROCESS DESCRIPTION AND PRACTICAL GUIDE)”

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Page 1 of 1

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“PANDA EMC BARREL ASSEMBLY (PROCESS DESCRIPTION AND PRACTICAL GUIDE)”

Per page 10 View mode: [List View] [Grid View] [Download]

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Page 1 of 1

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Total: 1 (displaying 1 - 1)



- APFELS inside first Slice needs replacement
 - Slice disassembly down to modules necessary
 - No knowledge transfer from IHEP concerning mechanics
 - Was planned for the next slice
 - Gießen could try alone, high risk of expensive damages
 - Assembly manual was written by IHEP
 - All technical drawings seems available
- Missing Manpower
 - 3 people from IHEP, few times per year, for at least 2 weeks
 - → Full position missing in Gießen
- Funding for support beams and supermoduleplates not resolved
 - Only new modules can be build
 - Enough crystals for modules for another slice and some more.
- Barrel assembly terra incognita



Should we start after cooling tests and take the risk of damages or better wait?