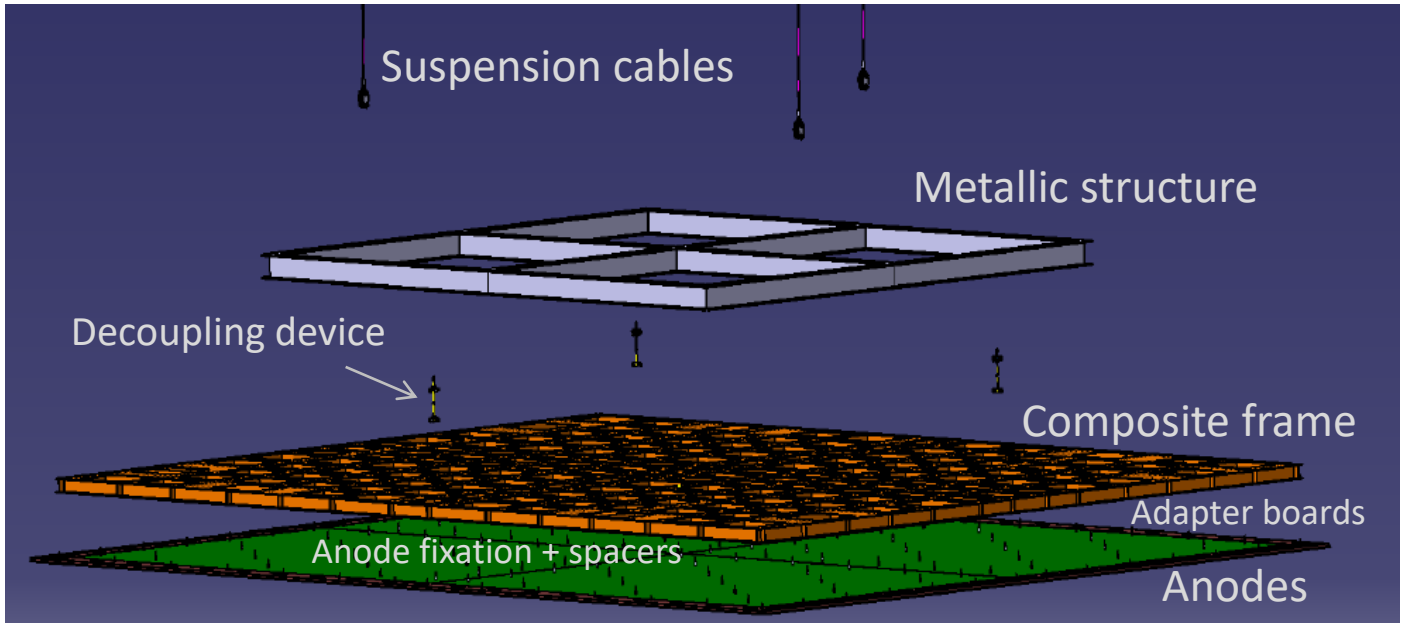
CRP consortium meeting: 10/02/2021

Agenda:

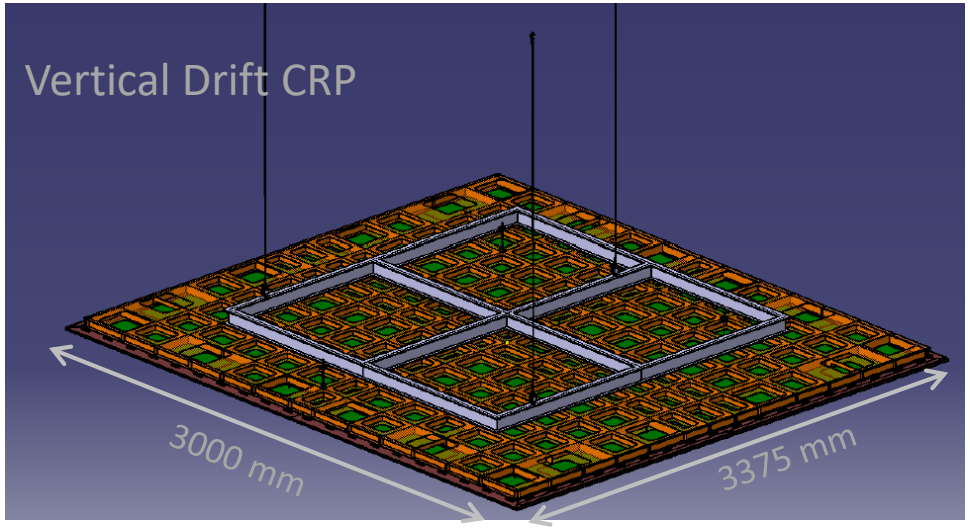
- Brief point on activities and responsibilities for preparing CRP of cold box tests
- Anode design, PCB process and plan for production
- Anode support frame design status: options and material characterization program
- Electronics for bottom CRP setup: implementation of CE boxes and discussion about the cabling

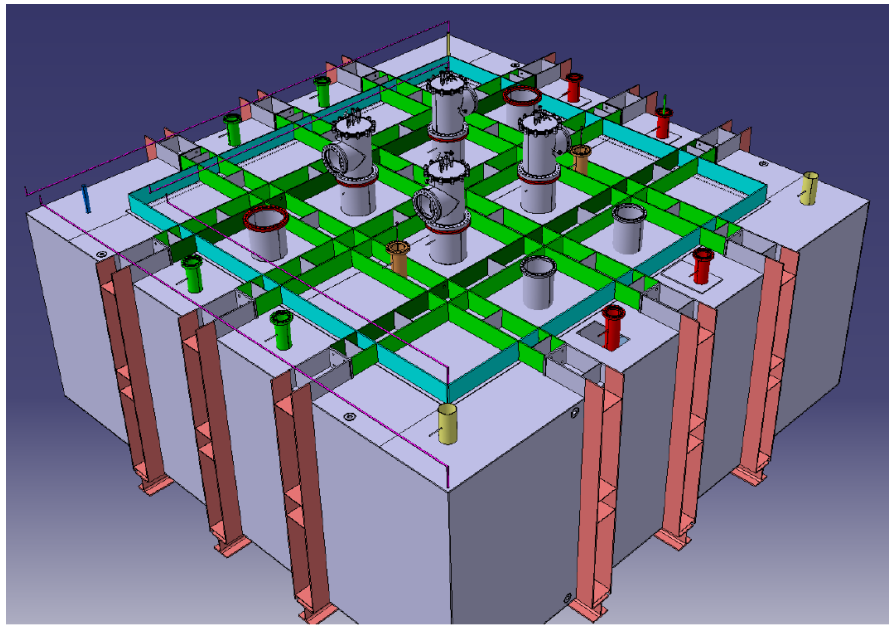
CRP for test in cold box

+ suspension mechanism and manual control



+ electronics: bottom and top
+ bias voltage connection
+ CRP monitoring instrumentation





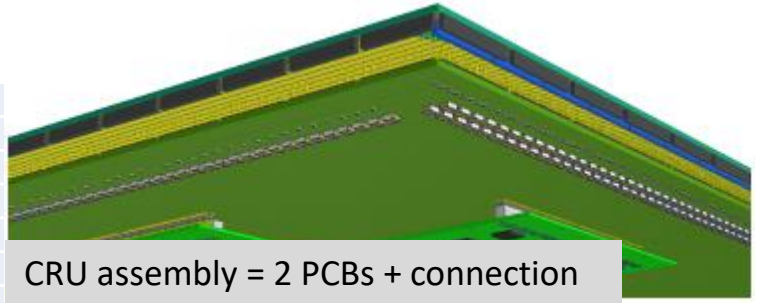
Preparing CRP for cold box tests

schedule and responsibilities to complete

Steps are similar to the ones described in the FD WBS draft

ANODES

01.	CRU	01.	Anode PCBs	01.	Anode PCB design
				02.	Anode PCB fabrication
				03.	Anode PCB drilling
				04.	Anode gluing
		02.	Adapter boards top	01.	Interface cards top design
				02.	Interface cards top fabrication
				03.	Interface cards top assembly
		03.	Adapter boards bottom	01.	Interface cards bottom design
				02.	Interface cards bottom fabrication
				03.	Interface cards bottom assembly
		04.	CRU	01.	CRU assembly
				02.	CRP top assembly
		04.	CRU bottom	01.	CRU assembly
				02.	CRP bottom assembly



CRU assembly = 2 PCBs + connection

Add the connector and pin installation

Anode support frame and mechanics

05.	CRP structure	01.	Anode support structure frame	01.	Design
				02.	Part procurement
				03.	Assembly
		05.	metallic structure	01.	Design
				04.	Procurement
				05.	Fabrication
		06.	Coupling system of CRP metallic structures	01.	Design
				02.	Part procurement
				03.	Assembly
		07.	CRP Suspension feedthrough (SPFT)	01.	Design
				02.	Part procurement
				03.	Assembly

Cold electronics: FE cards + mechanics on CRP frame

Top electronics: cables and connections on CRP frame

The actual proposal would be 1 CRP produced in 2021
=> It requires to be read out with the 2 types of electronics

CRP Assembly for 2021 tests

- **Place**: clean room of 185 (same as for DP CRP)
- Develop a complete description of the assembly procedure: from the CRU components to the full CRP
- Develop the tooling:

  Toolings to manipulate large PCB boards: CRU size (1.5x 1.68m): needed at the time of PCB anode production

  Toolings to manipulate support frame and anodes in the clean room:
  can benefit from some existing pieces used for DP but new ones are needed.

  It includes also the development of a transport structure to move to EHN1

  Define the manipulation steps and environment criteria between CR185 and Cold Box in EHN1

Group in charge should get the requirements on transport, cleanliness etc…

Define tests needed during and after assembly

Continuity and noise at least at warm….
Before cold box => should we test in a cold bath or equivalent all the chain?

To be prepared : Schedule with all steps and details for each main item:

=> To be included in an MS Project

- Anodes (BNL, CERN,…)
- Adapter boards (BNL, CERN…)
- Anode support frame and mechanics (LAPP…)
- Cold electronics (BNL…)
- Top electronics (Lyon)
- Assembly in CR185 (CERN, LAPP, ….)
- Cold box preparation (CERN)
  - Feedthroughs for cold box
    - Signal FT (IJCLab Orsay)
    - Suspension FT (LAPP)

+ ….

Groups

It is important to get people involved in the different activities foreseen for the CRP assembly and tests

In the coming meeting there will be a more detailed list of activities but we will need additional people.

Hope Covid situation will not interfere too much

The End

CRP consortium organisation and topics

D. Duchesneau
S. Tufanli

Scope:

- Design, tests, validation of all components (**demonstration phase**)
- Component production
- CRP assembly, control, delivery
- Installation and cabling
- Cost and schedule

} Both for prototypes and DUNE FD

- ❑ Components:
  - Anodes,
  - adapter boards for electronics,
  - Instrumentation and cabling (HV, sensors),
  - CRP mechanical frames,
  - Superstructure for top detector,
  - Suspension system and position control,
  - Support systems for bottom detector

- ❑ Tests and design validations (sequential process)
  - Small scale (50L)
  - Cold box
  - NP02-module 0

} Includes CRP simulation and analysis