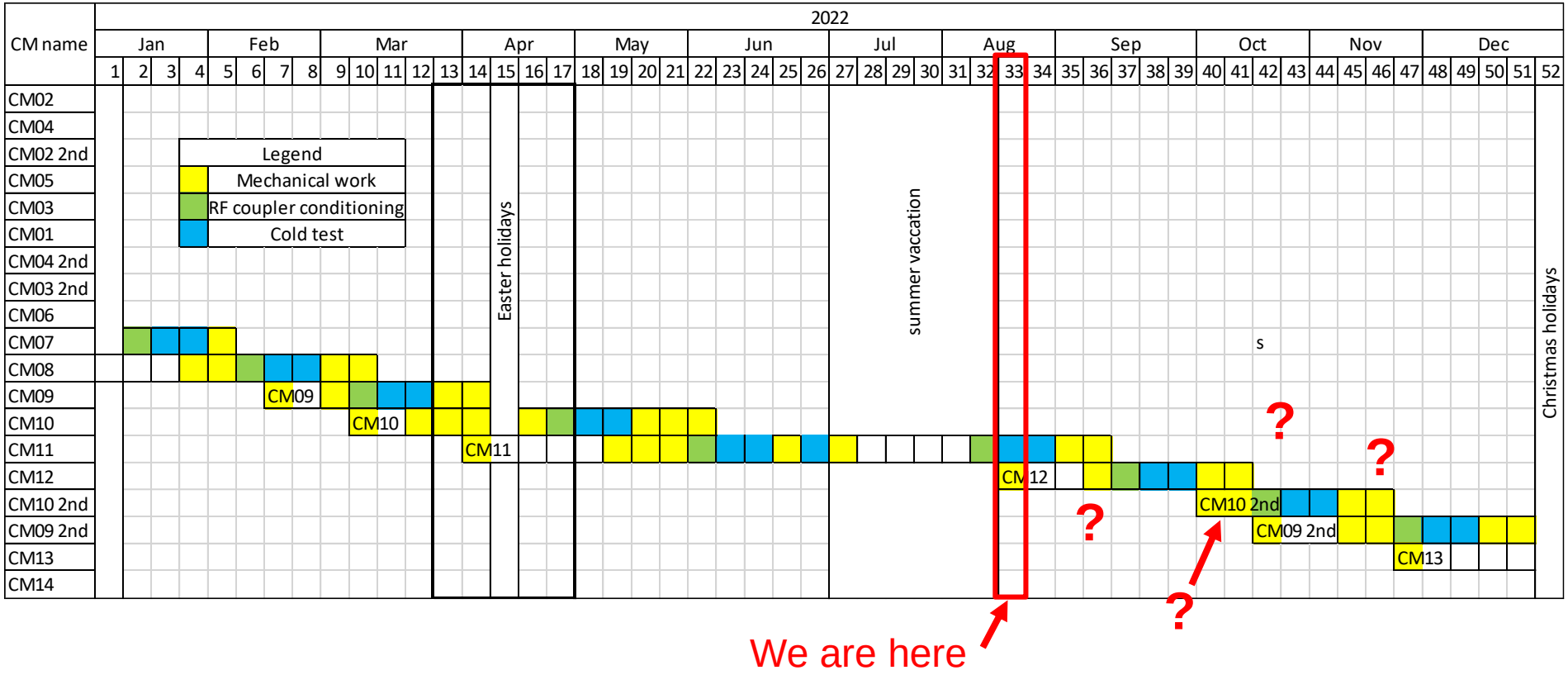
UPPSALA
UNIVERSITET

ESS weekly meeting (2022 W33)

A. Miyazaki, et al

Global planning updated (preliminary)



- ESS wants to process CM11's field emission and to try stress tests of stepper motor(s)
- CM12 is coming to FREIA on August 19th (W33)
- CM10's stepper motor was fixed and will be ready for shipping soon (when?)
- CM09 should be disassembled at IJCLab → Update (?)
- CM13's cavities were tested at IJCLab (?)
- FREIA will start HL-LHC magnet testing in 2023 while will do at least two module testing (CM13 and CM14)

Progress of W32&W33, and planning of W34&W35

week		W32													
date		MON		TUE		WED		THU		FRI		SAT	SUN		
		08-aug		09-aug		10-aug		11-aug		12-aug		13-aug	14-aug		
		m	a	m	a	m	a	m		m	a				
previous CM	**CM11**	vacuum pumping, power station restarted				warm coupler conditioning		requifier restarted		requifier restarted	N2 shield cooling				
present CM	**CM12**	preparation at Orsay													

Issue in pressure gauges in Kaessor skipped by higher set point

week		W33													
date		MON		TUE		WED		THU		FRI		SAT	SUN		
		15-aug		16-aug		17-aug		18-aug		19-aug		20-aug	21-aug		
		m	a	m	a	m	a	m	a	m	a				
previous CM	**CM11**	start LHe cooling		4K filling	2 K pumping	calibration and interlock setup		Try to process field emission							
present CM	**CM12**	preparation at Orsay		departure from IJCLab		transport from France to Sweden				reception at FREIA					

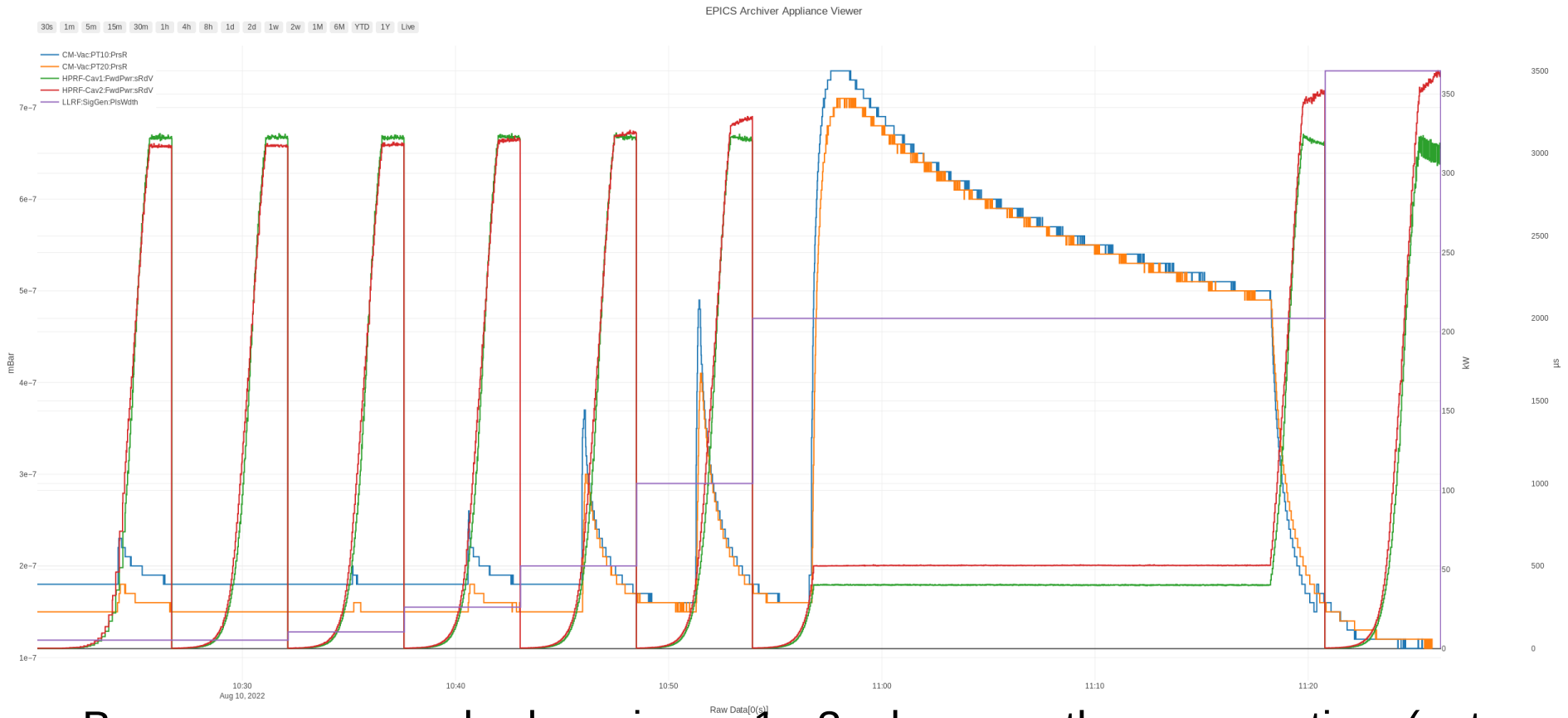
We are here

week		W34													
date		MON		TUE		WED		THU		FRI		SAT	SUN		
		22-aug		23-aug		24-aug		25-aug		26-aug		27-aug	28-aug		
		m	a	m	a	m	a	m	a	m	a				
previous CM	**CM11**	FE processing continued				motor stress test					start warming up	break insulation vacuum			
present CM	**CM12**	reception test				doornob mounting / water leak check									

Depending on the progress of W34

week		W35													
date		MON		TUE		WED		THU		FRI		SAT	SUN		
		29-aug		30-aug		31-aug		01-sep		02-sep		03-sep	04-sep		
		m	a	m	a	m	a	m	a	m	a				
previous CM	**CM11**	warm up completed	disconnect vacuuum	disconnect cryogenics	swapp the modules	N2 filling	doorknob dismounting	out-going test							
present CM	**CM12**					waveguide connection		connect cryo lines	connect vacuum	pumping vacuum					

CM11: re-conditioning of FPCs at warm



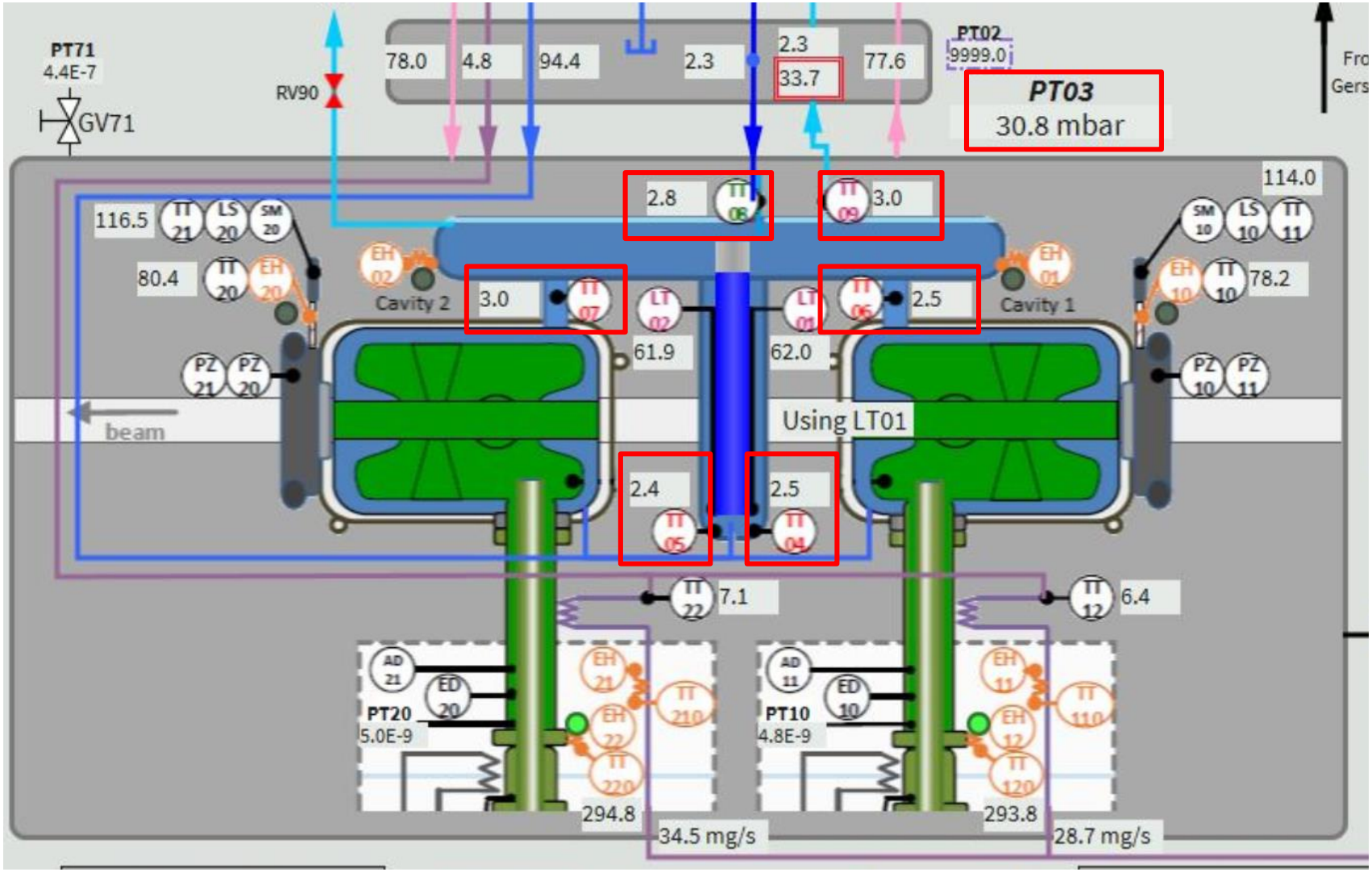
- Beam vacuum reached maximum 1e-3 mbar over the summer time (gate-valves were closed and pumping stations were OFF)
- Once the pumping was restarted, beam vacuum got back and the coupler conditioning was also quick → no special contamination in static vacuum

Turbo in Inter Connection Box was dead

This turbo for insulation vacuum was broken in the past
→ any specific reason?

The turbo is bypassed and the insulation vacuum is only pumped by the roughing pump. This was the same before summer.

CM11: strange CERNOX reading (recalled)



- IJCLab found TT04 and TT05 started to deviate since CM08
- Rocio polished electrical contacts of TT04 → no change
- TT08 and TT09's T vs R disagrees with IJCLab > Konrad sent calibration file back to IJCLab

CM11: RF conditioning (before summer)

- 10 MV/m with the nominal duty cycle of 4.5% was at the limit of cryogenics (2K pump @ 90 W)

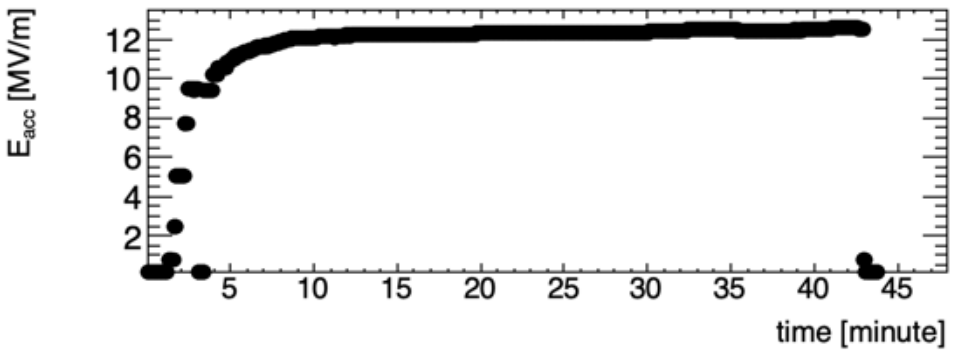
→ Duty cycle was reduced by shorter pulse length and smaller repetition rate

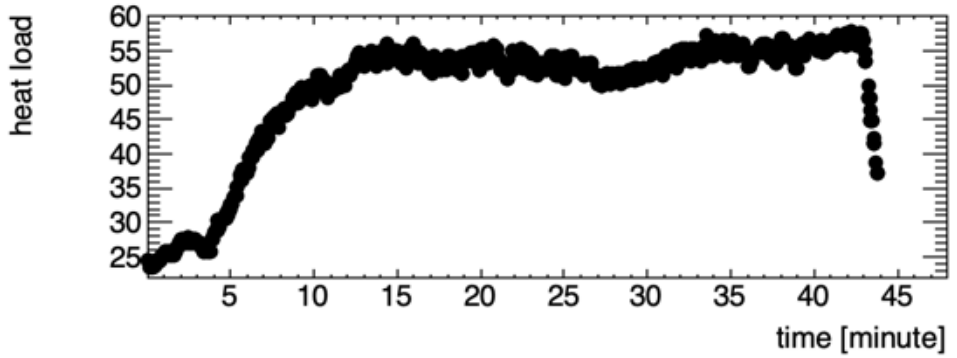
- For unknown reason
  - Min 1.5 ms due to high reflection power measured at tubes in the DB station
  - DB stations' control grid voltage (pulsed between operative and blancking) was not synchronized at 1 Hz

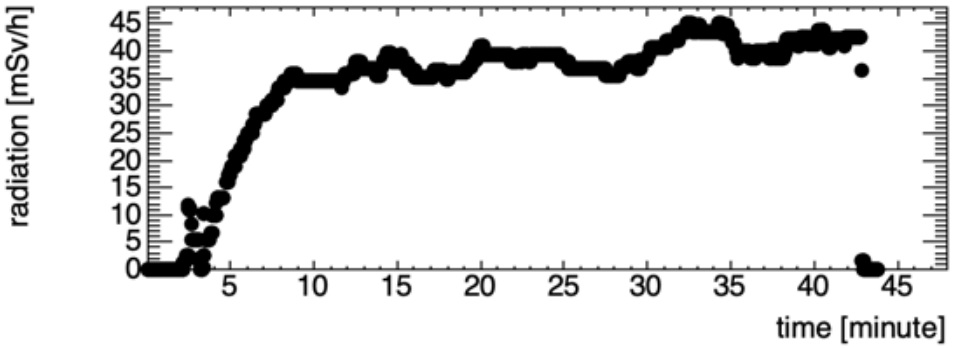
→ RF conditioning with duty cycle of 1.5 ms x 7 Hz = 1.05%

→ Cryogenics limited the field at 12 MV/m

What can be the strategy this and next week?







CM11: motor stress test

- IJCLab showed doubt in motors even without mechanical load
- Request by Guillaume:
- We decided to start a dedicated test campaign in our specific cryostat with 4 tuners equipped with different motors (spare one provided by ESS, the one which was in CM10, the prototype motor used for ages here at Orsay and one used in the elliptical cryomodule). The goal is to run the motors to get a minimum of 500 000 turns for the spoke motors (and ... A lot for the one of the elliptical cavity). This is one test...
  ...and we have a request to you. We think that it will be good to have some extra days during the test of CM11 in August dedicated to the test the motors. This could be good to have, at least, several tens of thousand turns (50 000? **100 000**?) in a cryomodule configuration.
- Typical turns to reach target 5,000 (1 hour)
  - 10,000 turns per day (2 hours round-trip)
  - 10 cycles to reach 100,000 turns (20 hours)
  - Do we need to cool down the motor from time to time?