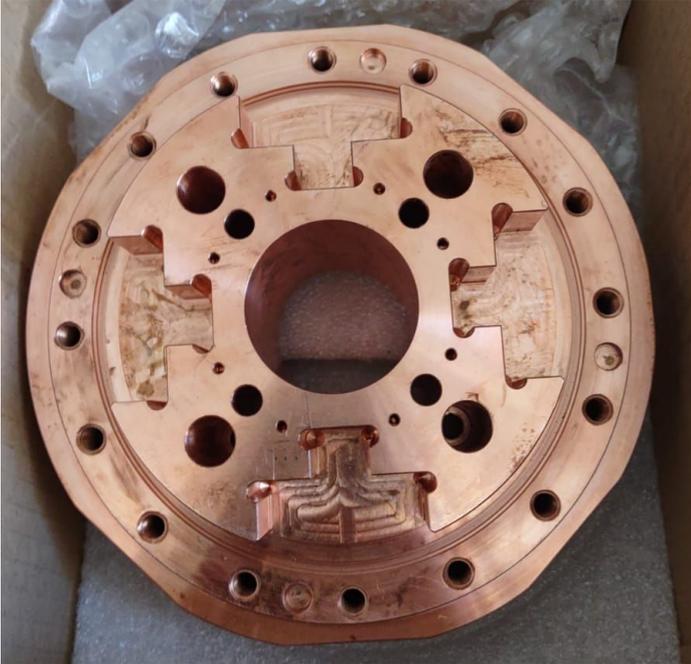


**ASACUSA@SMI**

**25/5/2021**

Andi, Eric, Volkhard and Dan

# Cold bore parts arriving

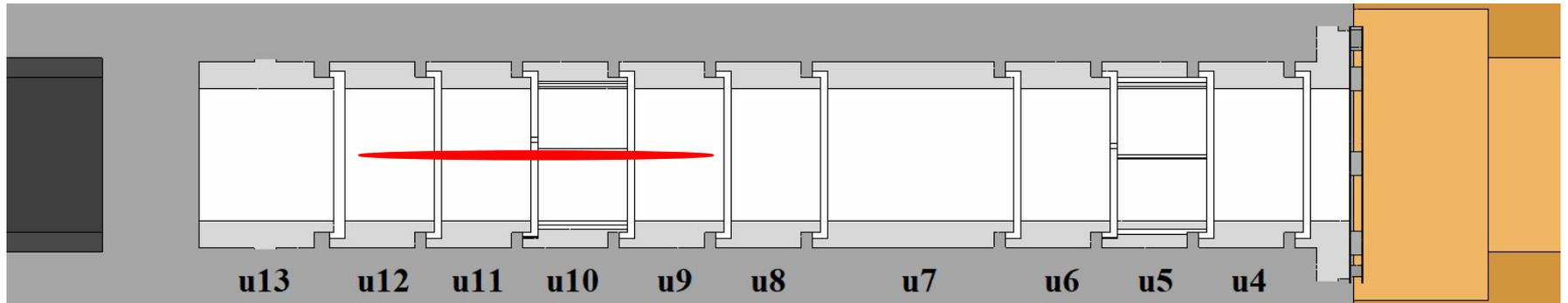
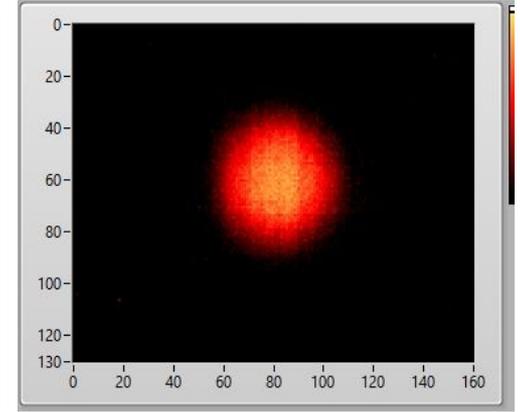
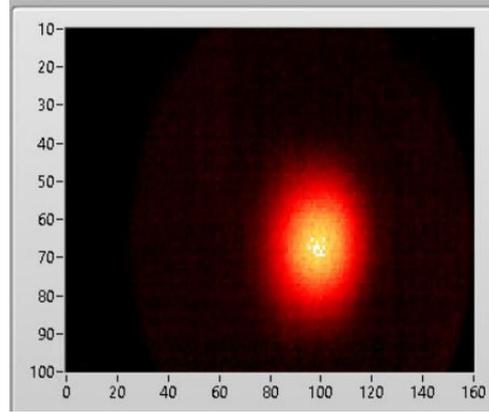


The delivery of the electrodes, main copper coupling part and Al cooling bars arrived at SMI, we will be checking that important parts fit together

# Plasma Development

Compression at high frequency  
(10 MHz) using a short well  
(u11-u10)

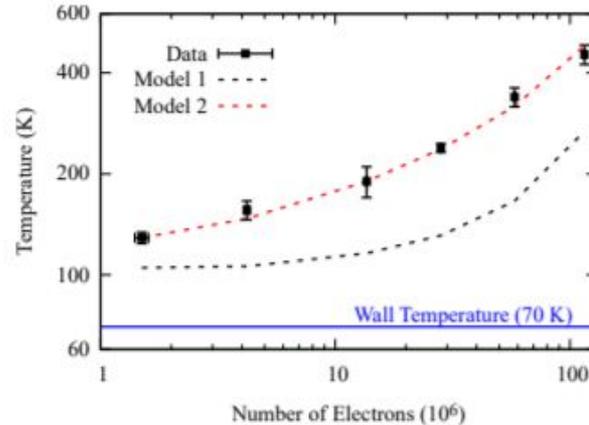
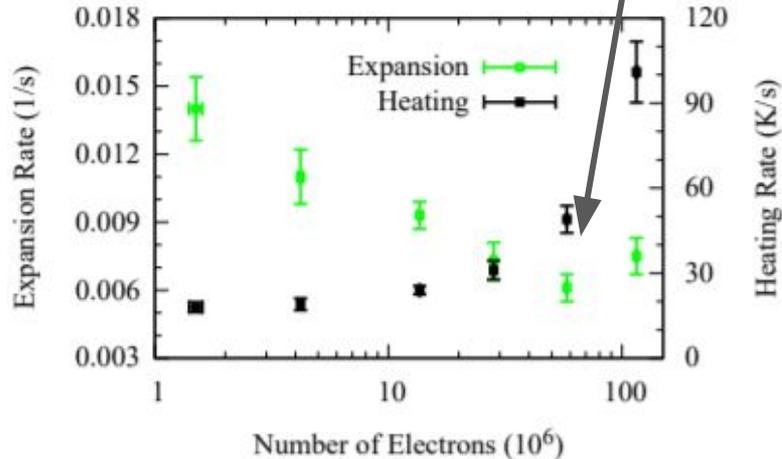
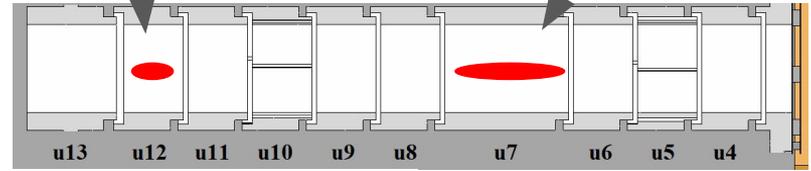
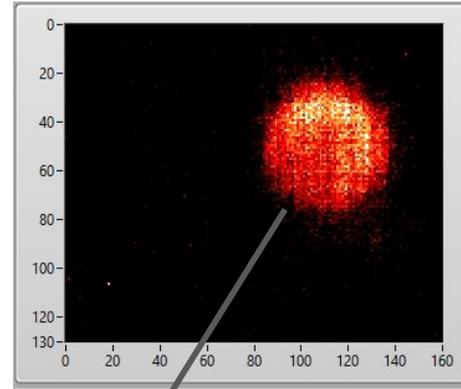
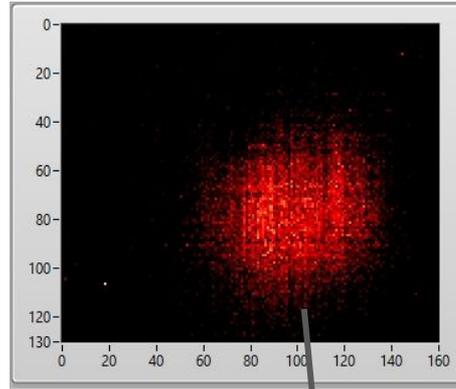
Compression at lower frequency  
( $<1$  MHz) using a long well  
(u12-u9)



# Plasma Development

Misalignment measured:  
roughly 30 mrad (that's a lot)

Expansion rate measured:  
>0.02 s<sup>-1</sup> (much higher than in 2020)



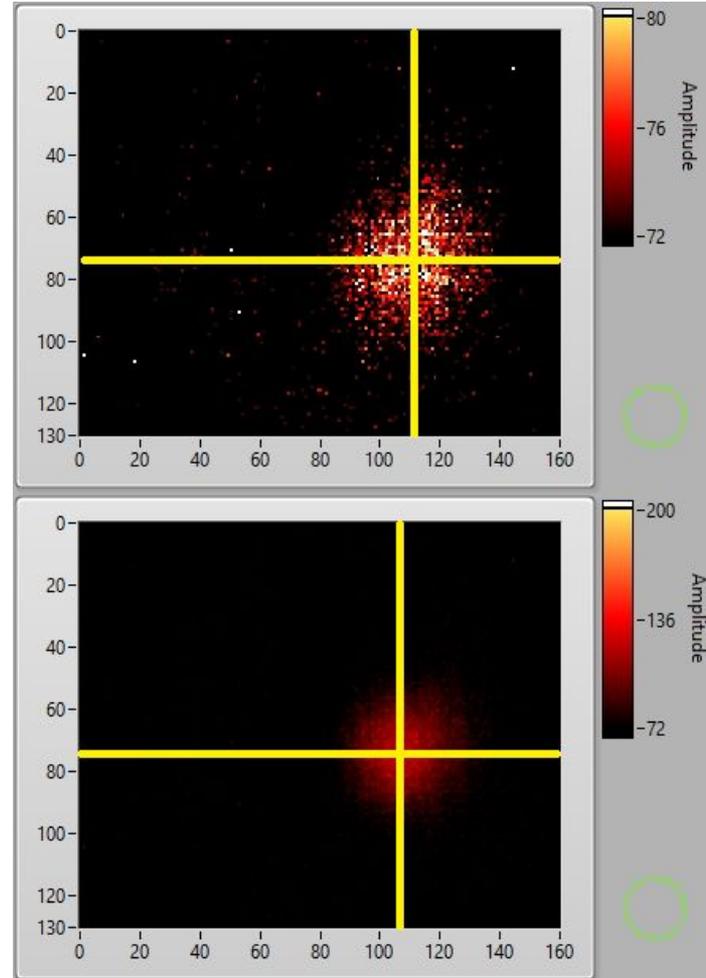
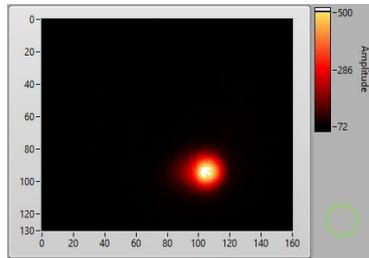
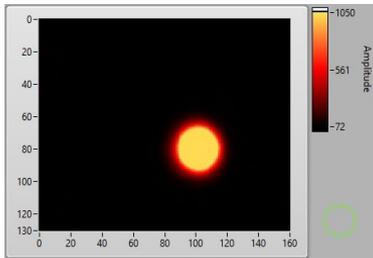
# Plasma Development

Adjust alignment knobs towards 'easy'.

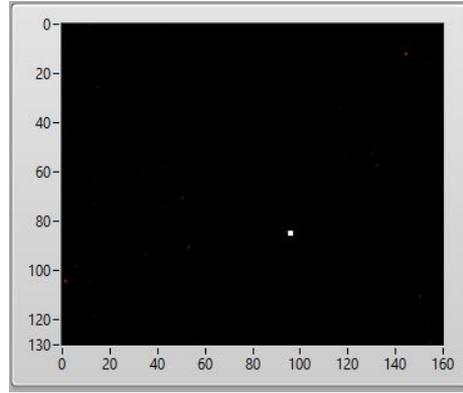
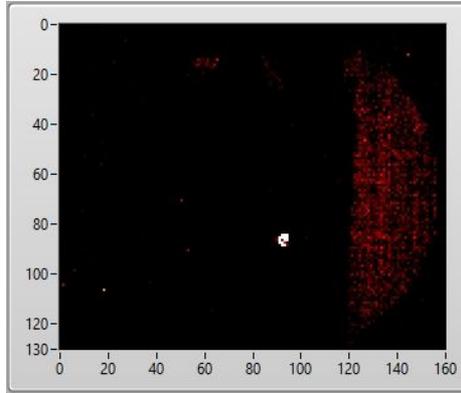
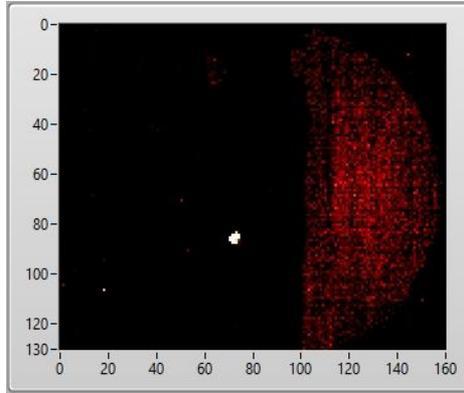
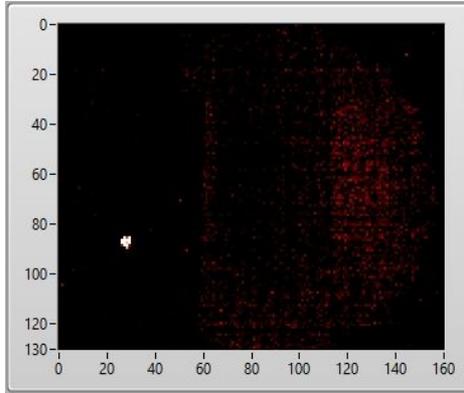
Cold bore temperature starts falling,  
eventually settles at 33 K (was 35 K)

Misalignment reduced by roughly 10x

Observed marked improvement in RW  
compression while tuning near  $dx, dy = 0, 0$   
→ some very dense plasmas



While we were tuning the trap alignment, the MCP started sparking.  
Soon after, the e-source shorted to ground. It could no longer be biased.  
Visual inspection showed that the e-source and MCP, normally inserted one at a time into the beamline, were now overlapping.



# Disaster

Somehow the MCP  
and the e-source  
overlapped and got stuck together

Confusing because

1 This should be impossible (interlocks)

2 They did not fail simultaneously

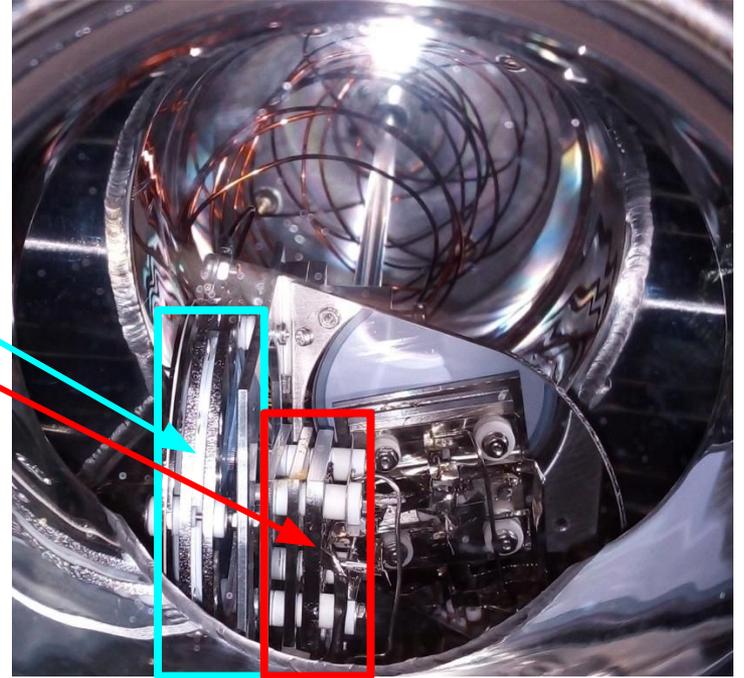
--MCP sparking got progressively worse over several cycles, then e-source failed

3 The MCP stick appears to be hyperextended

--raising the actuator does not raise the detector

→ Stop plasma work, warm up cold bore

→ Work on proton source and transfer line

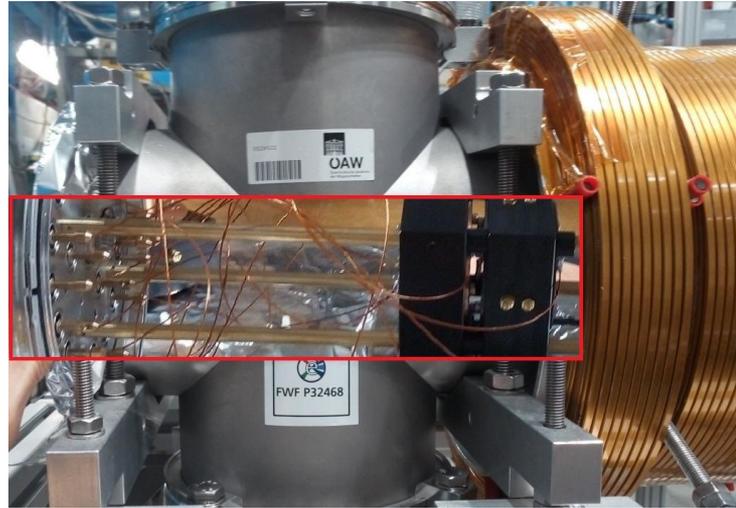
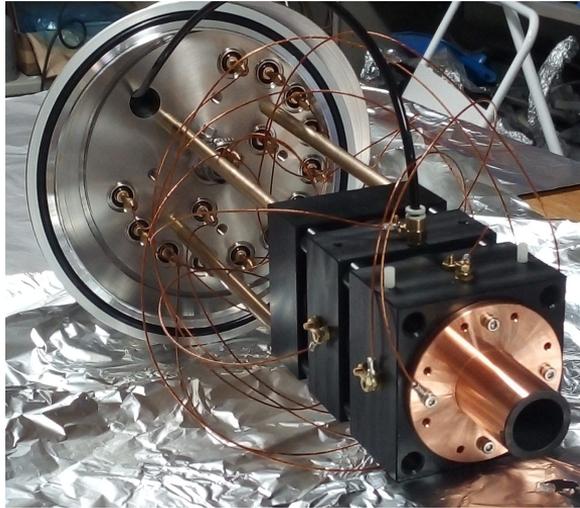


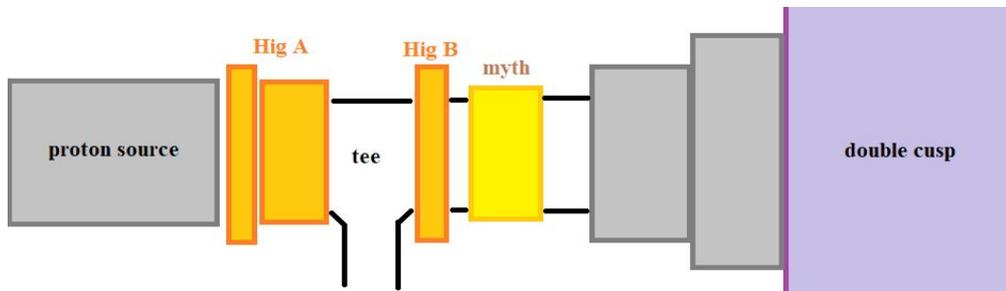
# Proton source and transfer line

The electrodes were painted with colloidal graphite and reassembled

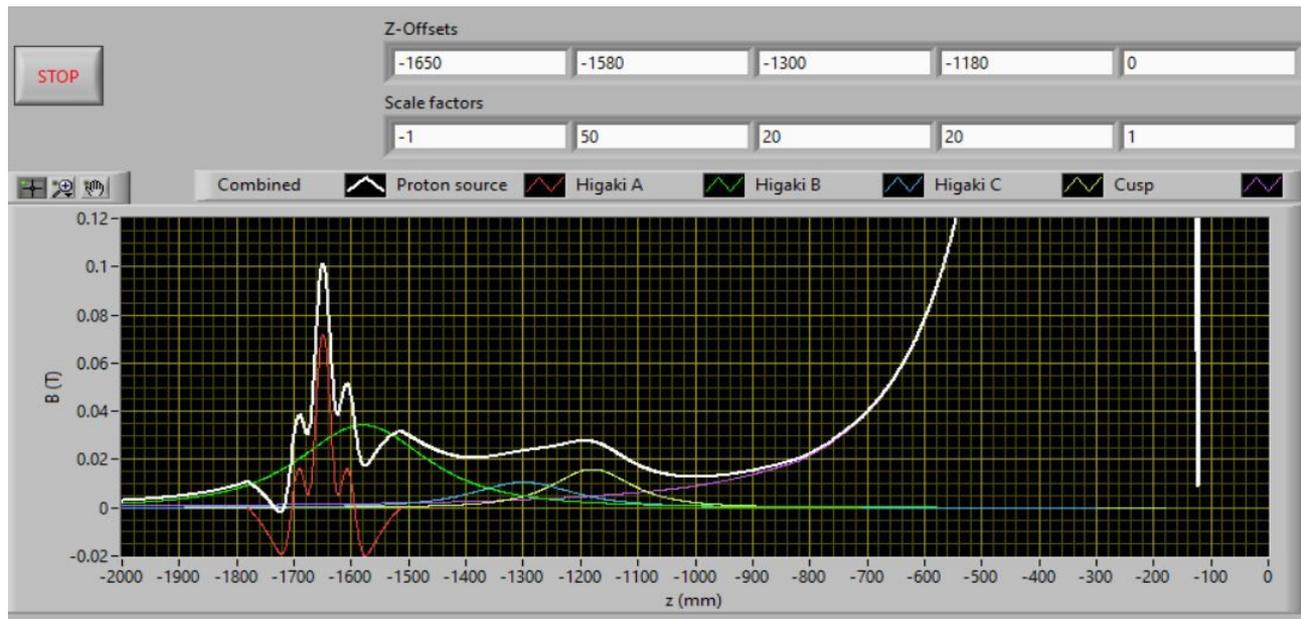
The orientation of the magnetic field was checked (same as the Cusp Magnet)

Moved forward to the end of its mount, the proton source can benefit from the  $\sim 300$  G field of the Higaki A coil, which may improve lifetime and transport



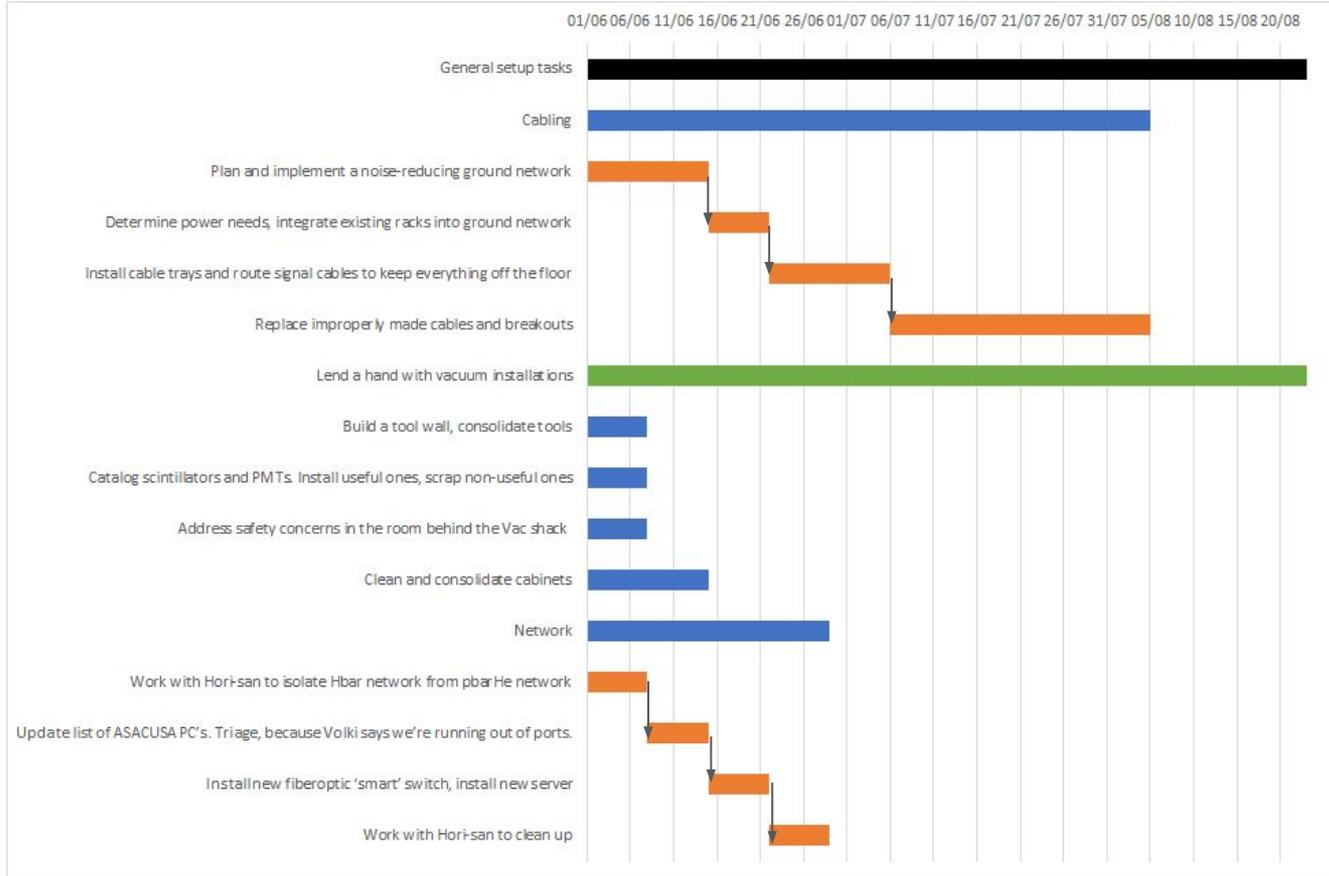


transfer line



magnetic field

# General tasks



- Who?
- How long?
- Which task?

# General tasks

Task ID	Task Name	Start Date	Duration	End Date	Dependence	Priority
<b>4</b>	<b>General setup tasks</b>	<b>01/06/2021</b>	<b>83</b>	<b>23/08/2021</b>		
4.1	Cabling	01/06/2021	65	05/08/2021		High
4.1.1	Plan and implement a noise-reducing ground network	01/06/2021	14	15/06/2021		
4.1.2	Determine power needs, integrate existing racks into ground network	15/06/2021	7	22/06/2021	4.1.1	
4.1.3	Install cable trays and route signal cables to keep everything off the floor	22/06/2021	14	06/07/2021	4.1.2	
4.1.4	Replace improperly made cables and breakouts	06/07/2021	30	05/08/2021	4.1.3	
4.5	Lend a hand with vacuum installations	01/06/2021	83	23/08/2021		Medium
4.6	Build a tool wall, consolidate tools	01/06/2021	7	08/06/2021		Low
4.7	Catalog scintillators and PMTs. Install useful ones, scrap non-useful ones	01/06/2021	7	08/06/2021		Low
4.8	Address safety concerns in the room behind the Vac shack	01/06/2021	7	08/06/2021		Medium
4.9	Clean and consolidate cabinets	01/06/2021	14	15/06/2021		High
4.10	Network	01/06/2021	28	29/06/2021		High
4.10.1	Work with Hori-san to isolate Hbar network from pbarHe network	01/06/2021	7	08/06/2021		
4.10.2	Update list of ASACUSA PC's. Triage, because Volki says we're running out of	08/06/2021	7	15/06/2021		
4.10.3	Install new fiberoptic 'smart' switch, install new server	15/06/2021	7	22/06/2021		
4.10.4	Work with Hori-san to clean up	22/06/2021	7	29/06/2021		