

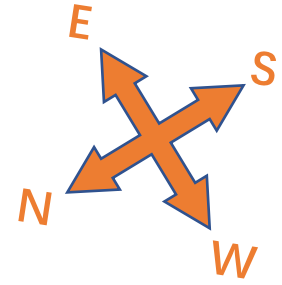
2021 Tianlai Collaboration Meeting

Tianlai Hardware Status

Jixia Li

2021/10/27

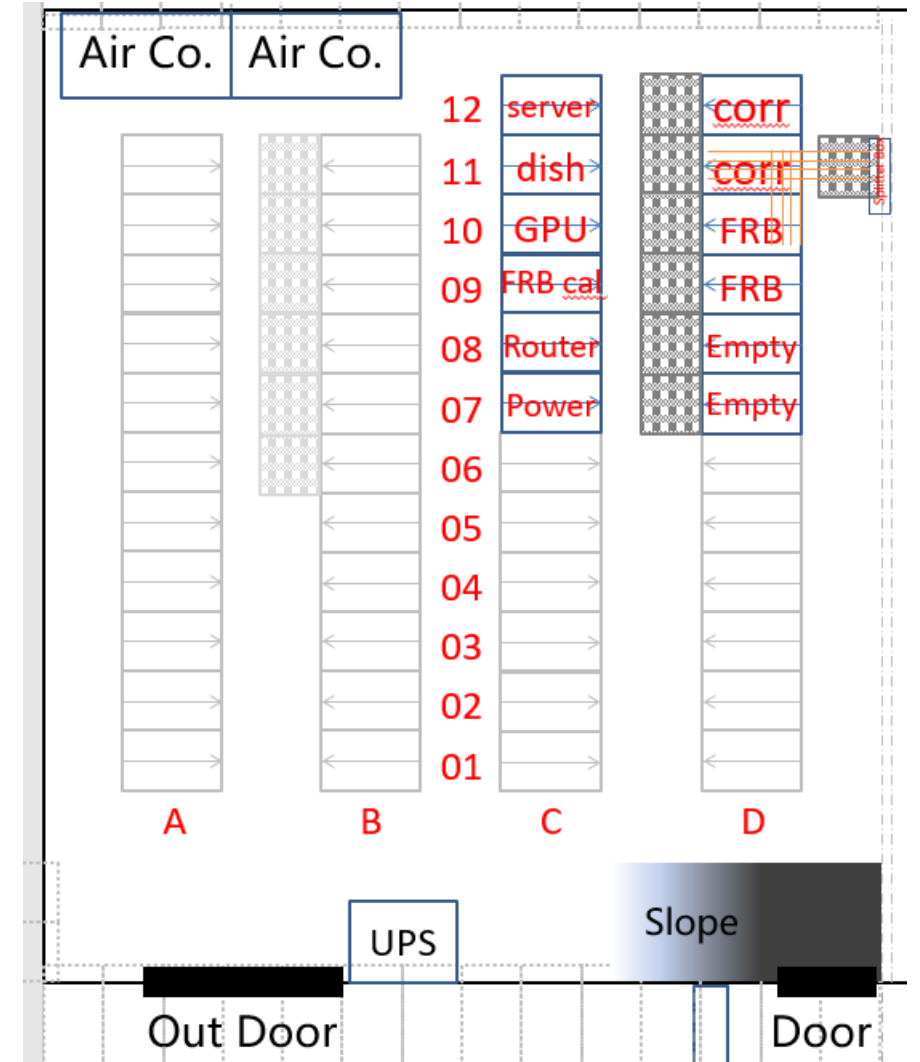
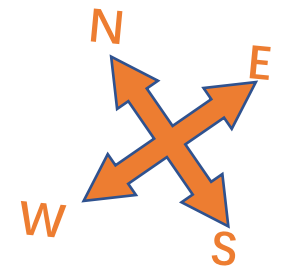
The New Server Room



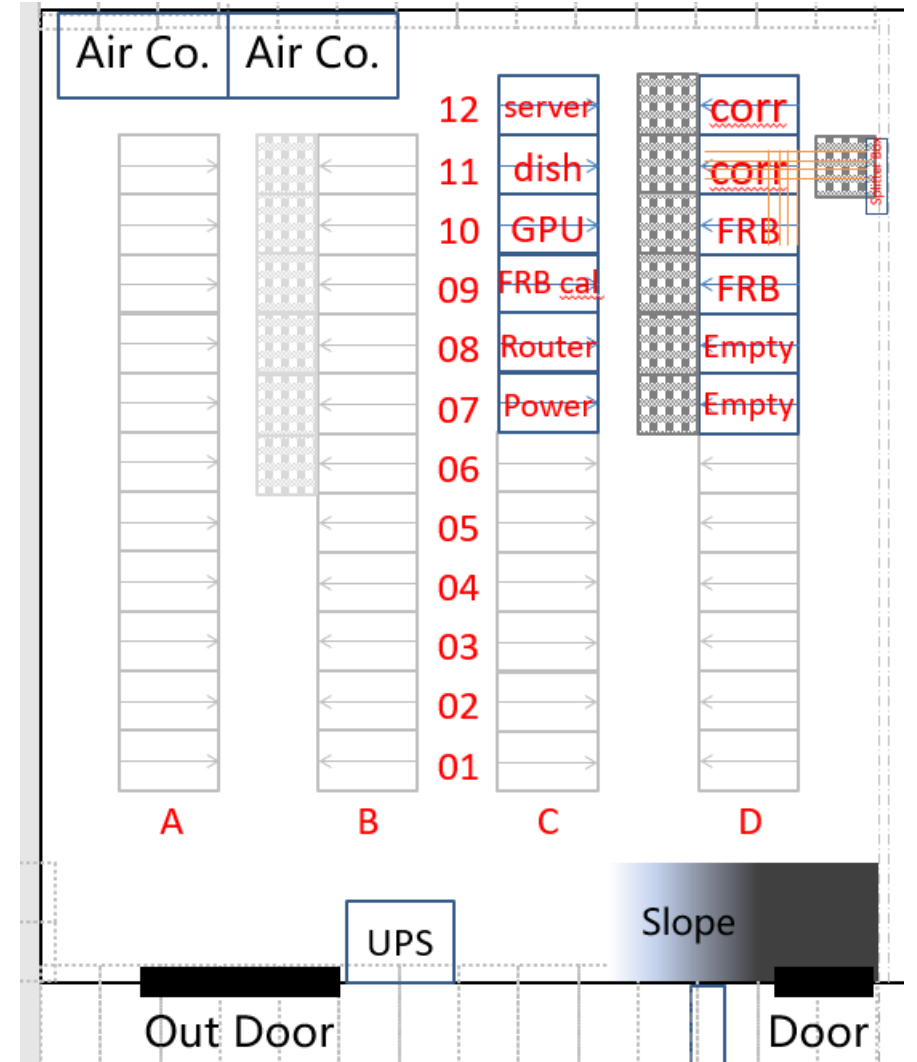
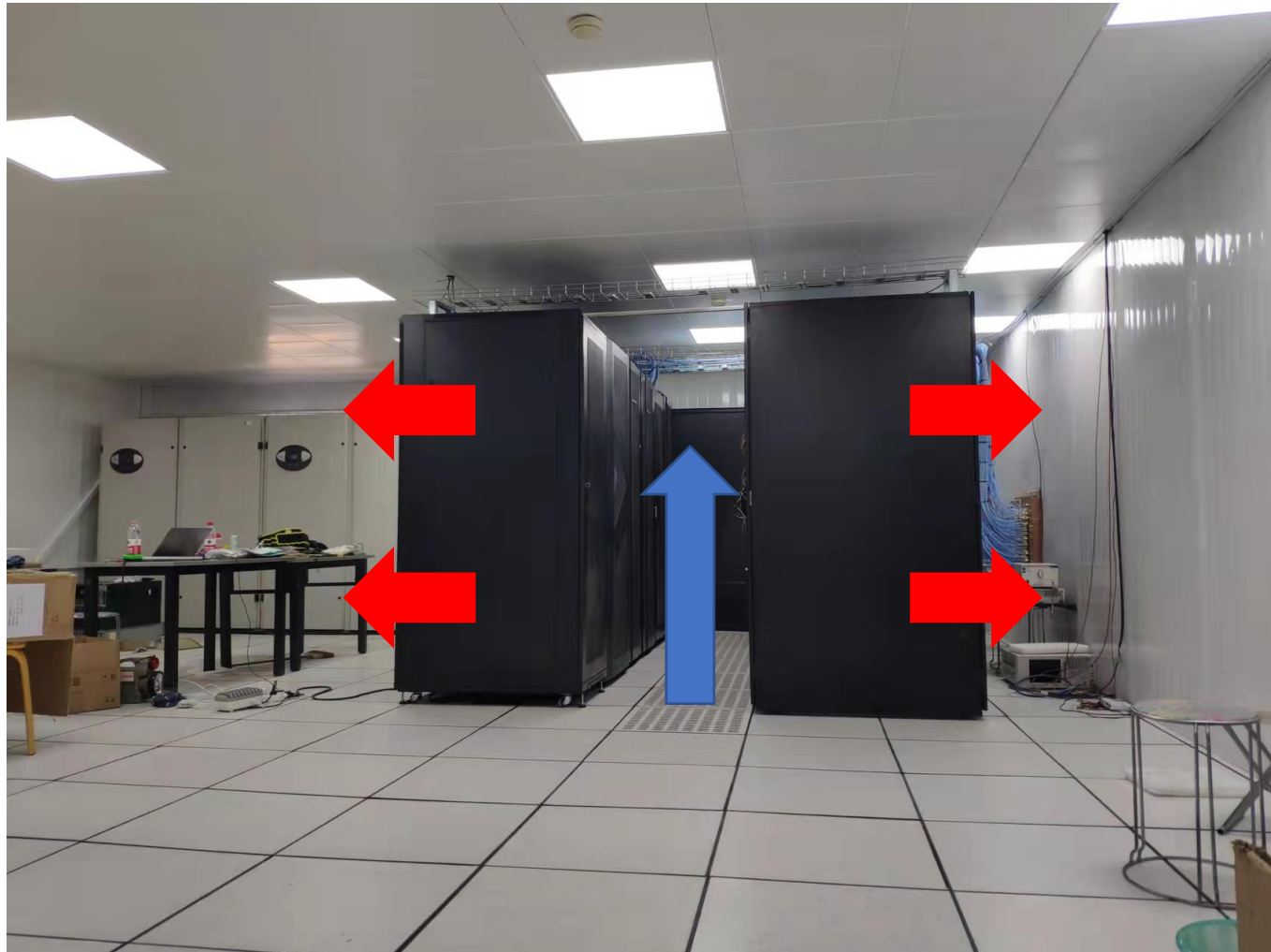
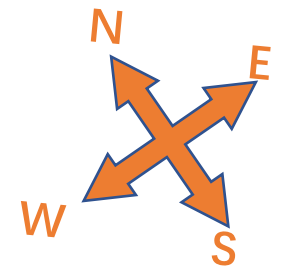
- 2020 Nov.: built house.
- 2021 Jun.: interior decoration; layout design.
- 2021 Jul. : device disassembling and move; analog device room (optical fibers and mixers) reinstall; dish correlator and FRB setup.
- 2021 Sept.: cylinder FRB system setup;
- 2021 Oct. to date: all-system setup and debug.
 - 1 week or so to finish most of the work.



The New Server Room

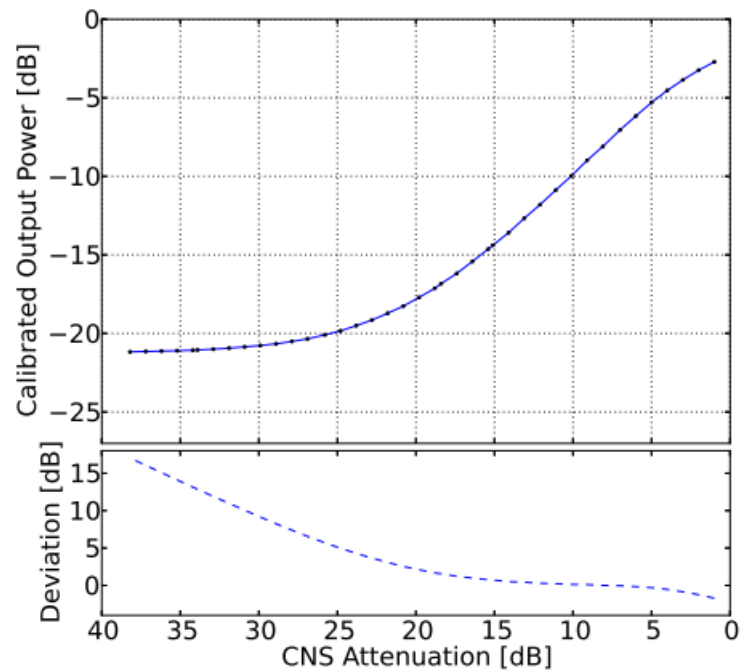


The New Server Room

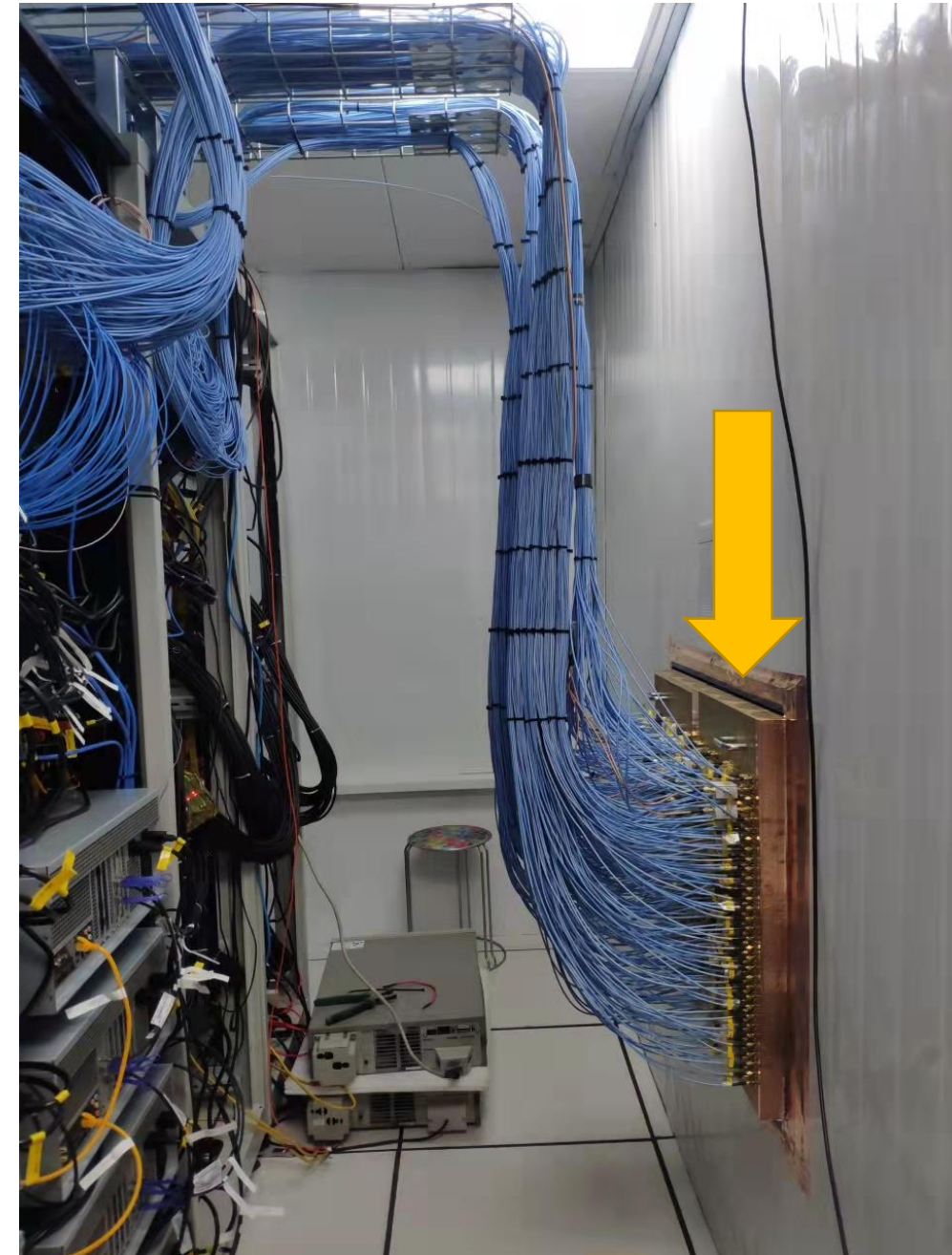


The New Server Room

- Splitter and Amplifier Box
 - Amplifier gain: 20dB

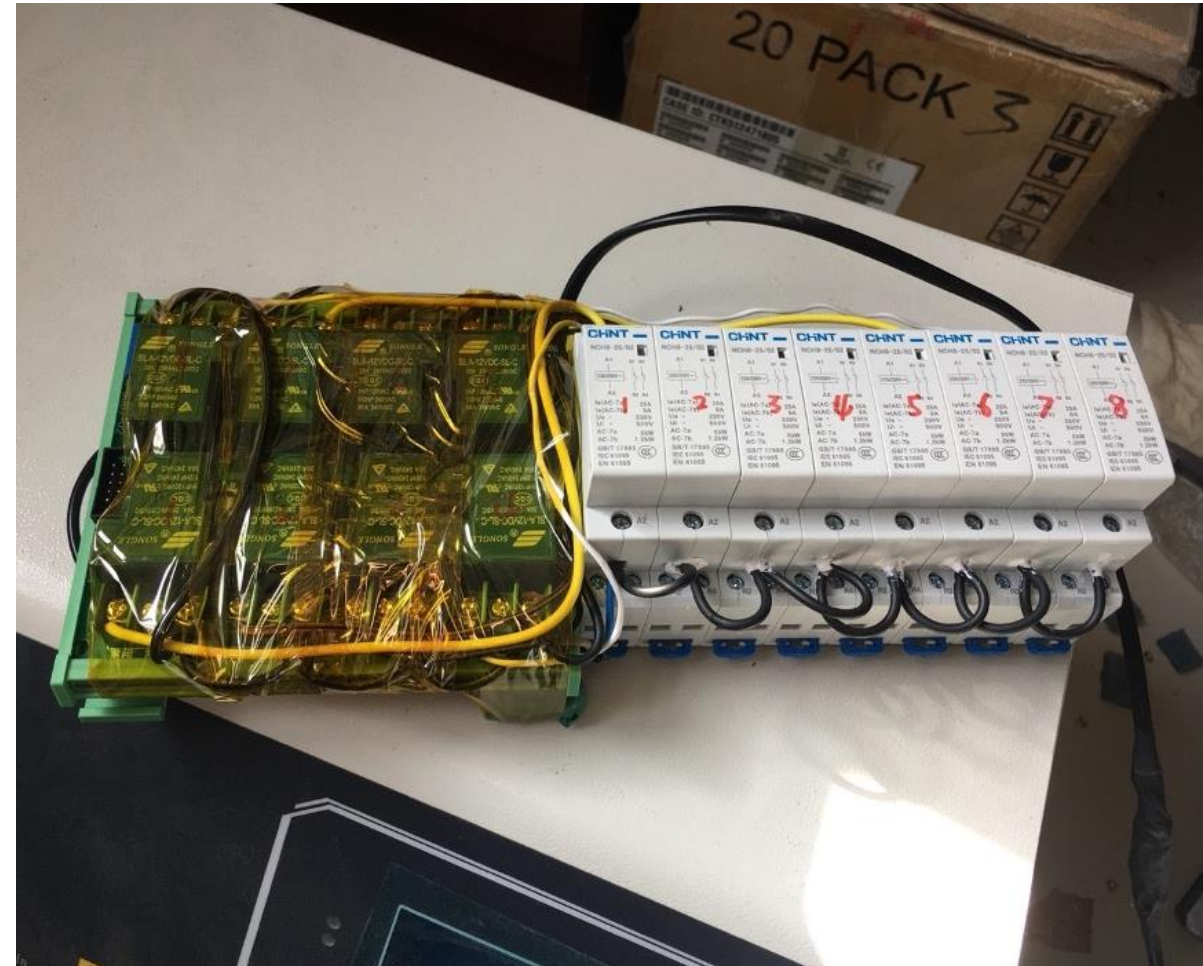
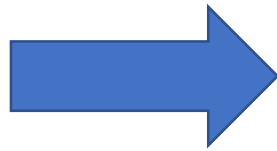


Current IF output level: $\sim -13\text{dBm}@750\pm 50\text{MHz}$



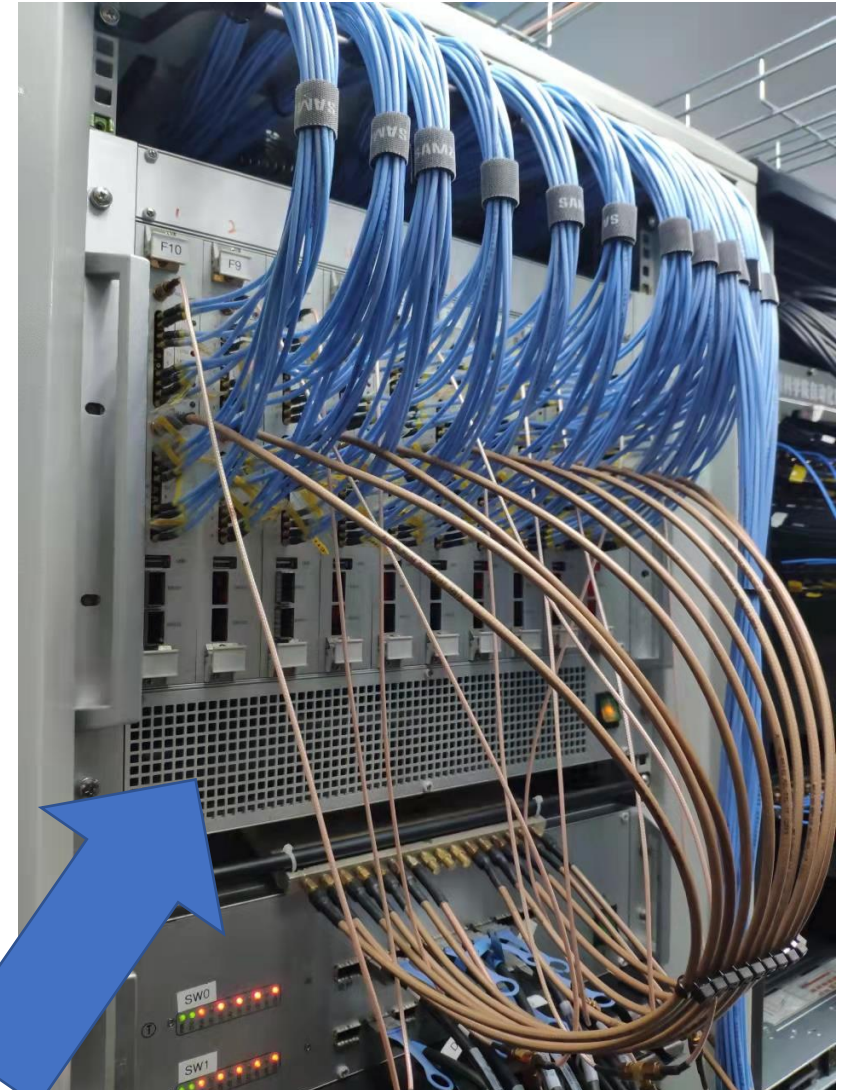
Cylinder Correlator Maintenance

- DSP board malfunction easily, why?
 - Current can be as high as 12 ampere
- Power switch for booting is necessary.
- Previously: DC relay
 - 30A current
 - Weak magnetic force, non negligible contact resistance.
 - Instable voltage, especially for long-term use.
- Now: AC Contactor
 - Stronger magnetic force, less contact resistance.



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- Initial running test proves to be effective.
- Next to consider data exchange cables
 - Vibration from cooling fans?



Cooling fans

Cylinder FRB Setup



10Gb Optic fibers
4 per server
6 servers in total



- AD, FFT, Beam forming

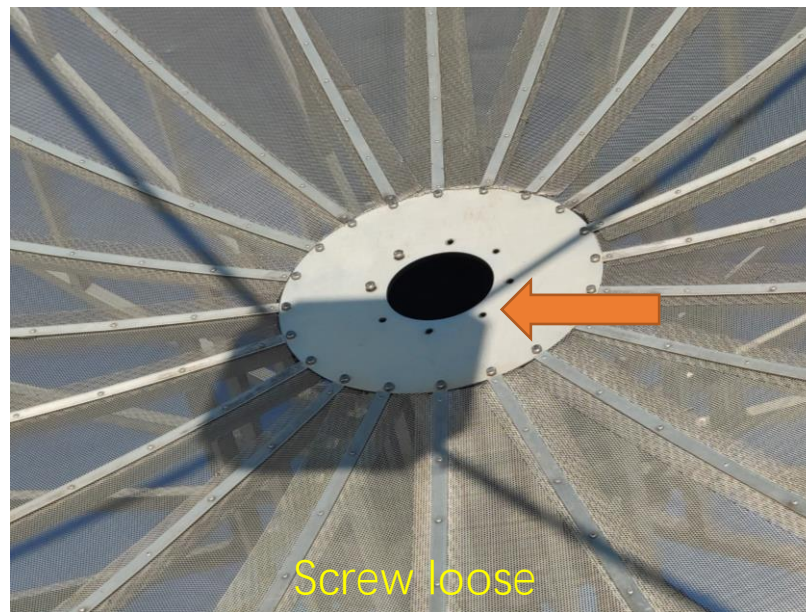
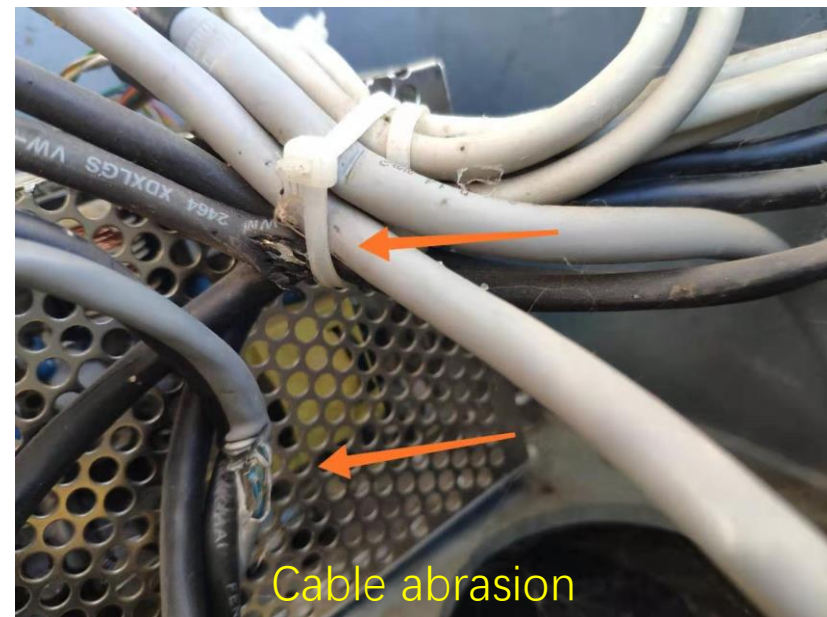
- Dedispersion (NVIDIA RTX3080) and save FRB candidates

Dish System – correlator and FRB

- Running well.
 - But observation ended in June
 - Due to new server room construction, air conditioner is removed.
 - Observation can be resumed soon.
- Problems:
 - Dish 9 rotating problem
 - Dish 7 angle reading error problem
 - Probably calibration error, to be checked.
 - Dish 14 hard to boot up in winter problem
 - Planned solution: heating tape to make the circuits warm, but need a standalone power line to be laid.
 - Others.

Dish System – correlator and FRB

- Comprehensive maintenance needed
 - Over 6 years since initially built in 2015.
- Change array configuration?
 - Only possible when soil is soft in summer.



Remaining Work and Conclusion

- Cylinder Correlator
 - Cooling fans replacement.
 - Check RapidIO cable thoroughly.
- Cylinder FRB
 - Calibration servers configuration.
 - Storage server configuration.
- Cylinder channels tune
 - Last long term running in summer 2018, over 3 years.
 - ~3 days
- Dish FRB and correlation system
 - Ready to resume observation.
 - Cables need to be put in order.
 - A few dish antenna problems.
- Server room installation
 - Cold-hot air isolation.
 - Weather station, UPS, surveillance camera, Air condition communication, etc.