

KAGRA detector status & Update of the KAGRA PEM from last meeting

Virgo-KAGRA PEM meeting

2021-01-22

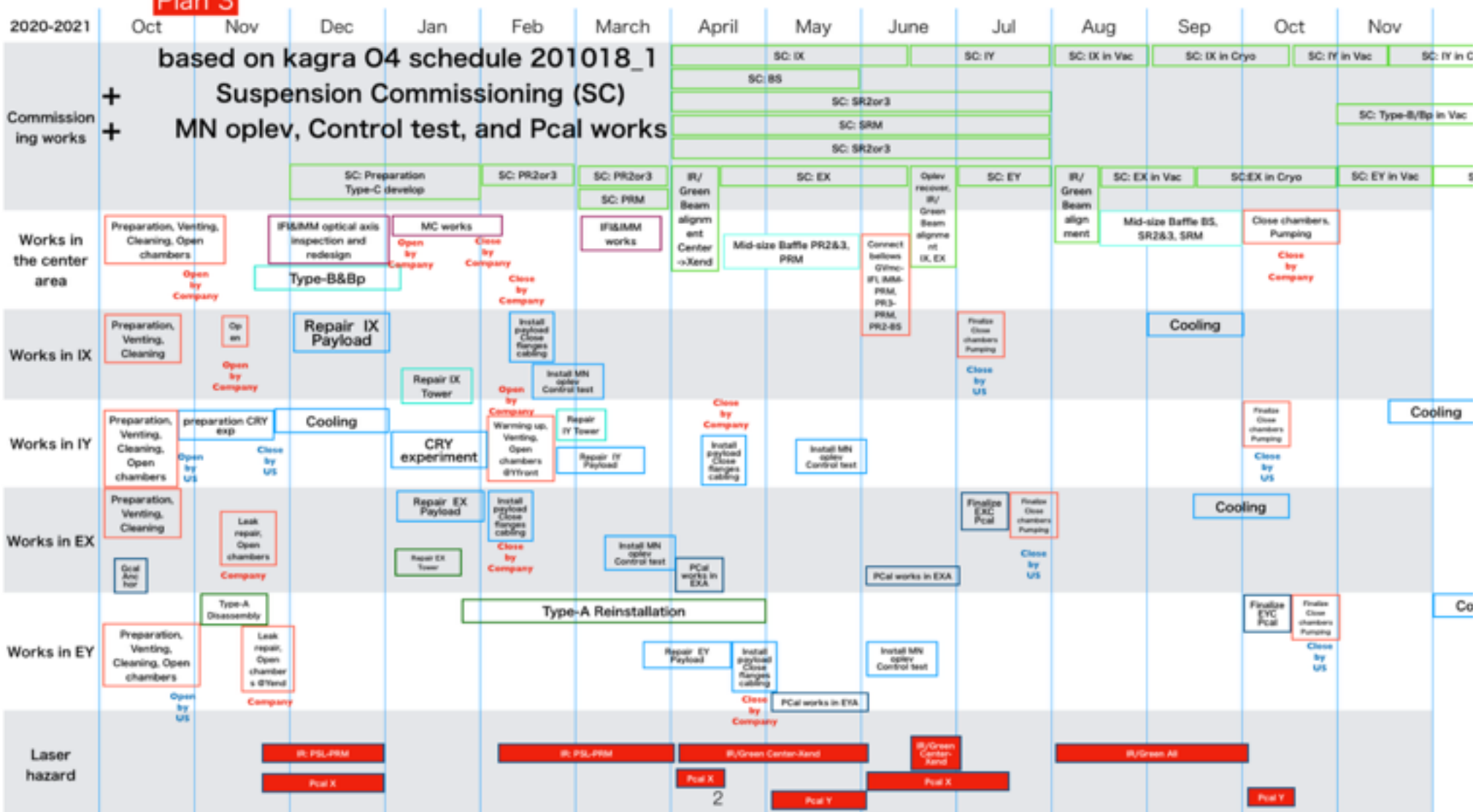
Takaaki Yokozawa

KAGRA detector status

- Suspension upgrade
 - Refurbishment of IXC cryopayload was mostly completed, EXC is ongoing
 - Tower part of the EYV is ongoing
 - BS/SRs refurbishment is ongoing, PRs will start soon
- Suspension commissioning
 - RealTimeModel upgrade, Guardian upgrade, Damping modeling, Damping with interferometer
 - Scheduling is to be upgrading

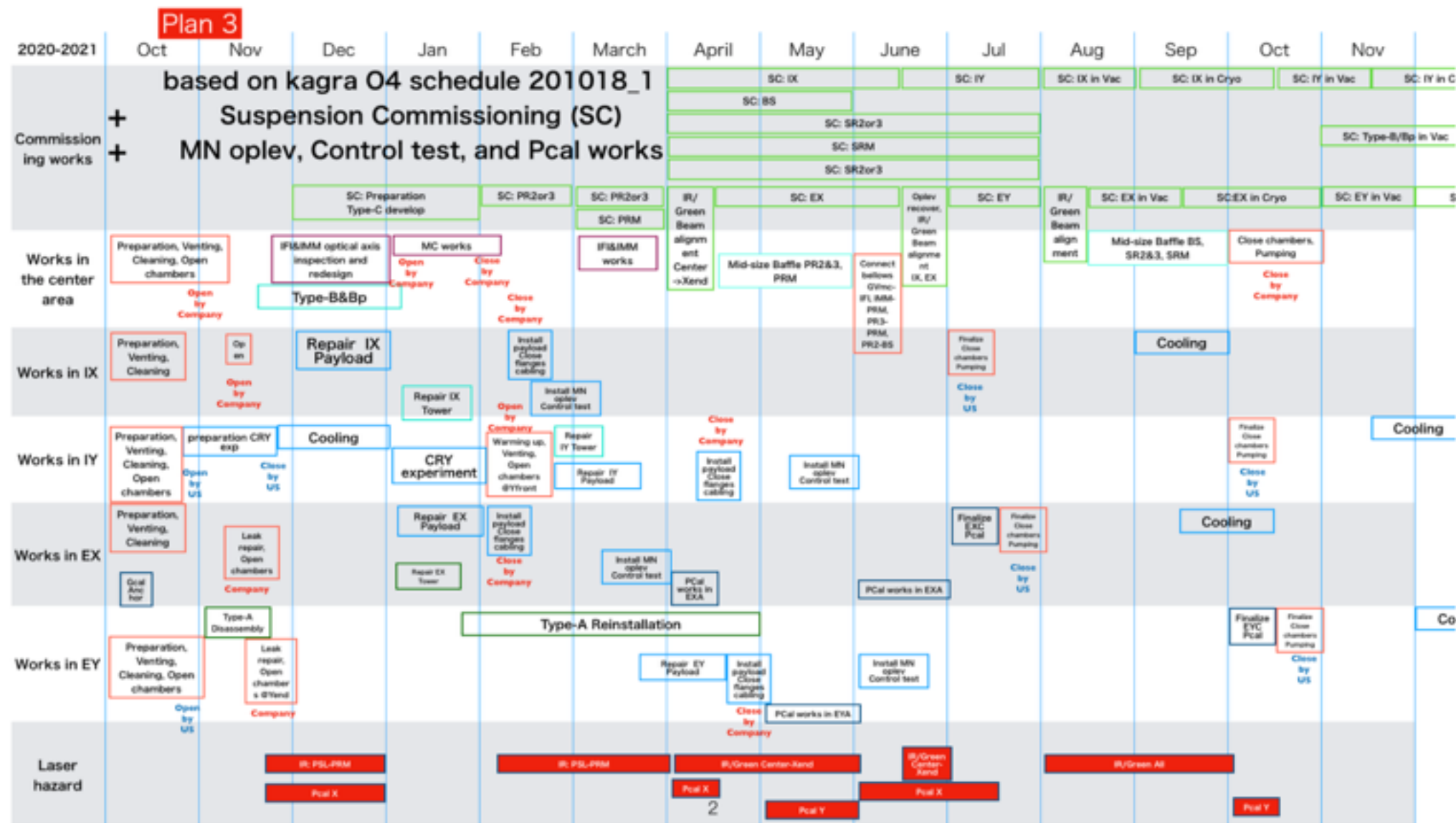
Plan 3

based on kagra O4 schedule 201018_1
 Suspension Commissioning (SC)
 MN oplev, Control test, and Pcal works



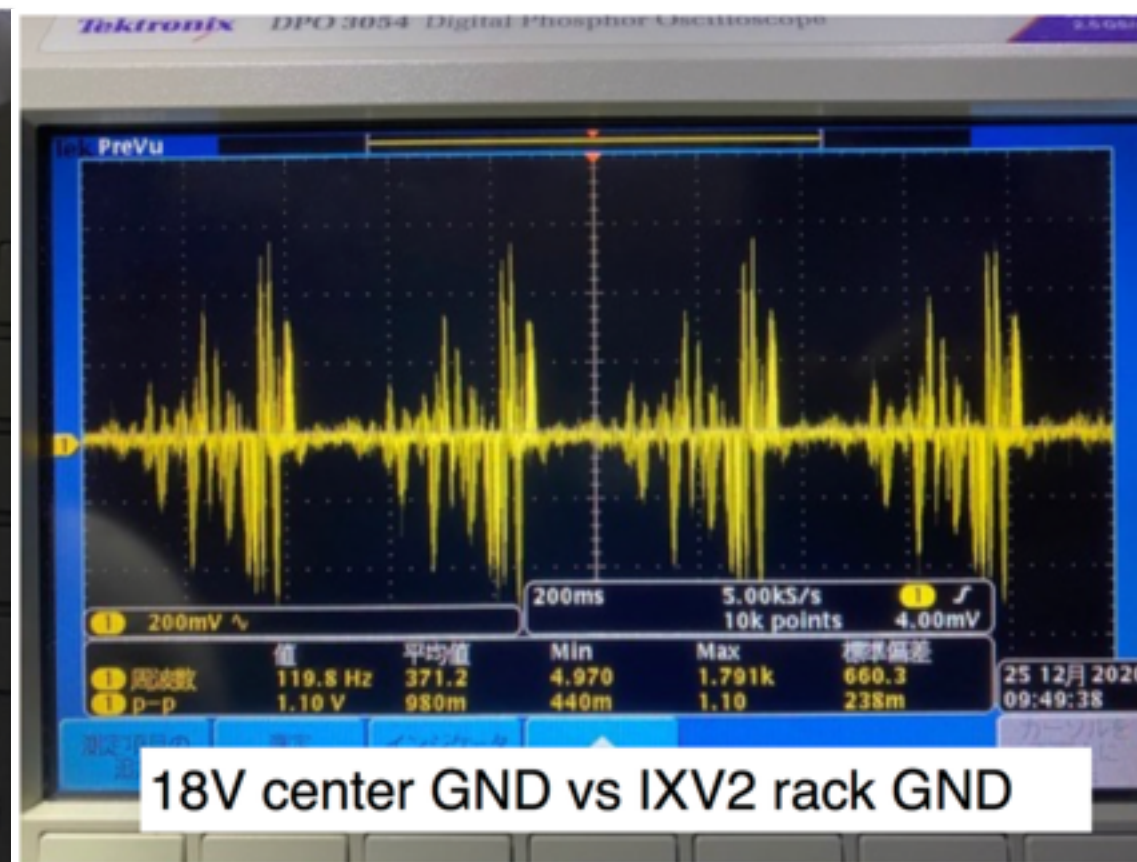
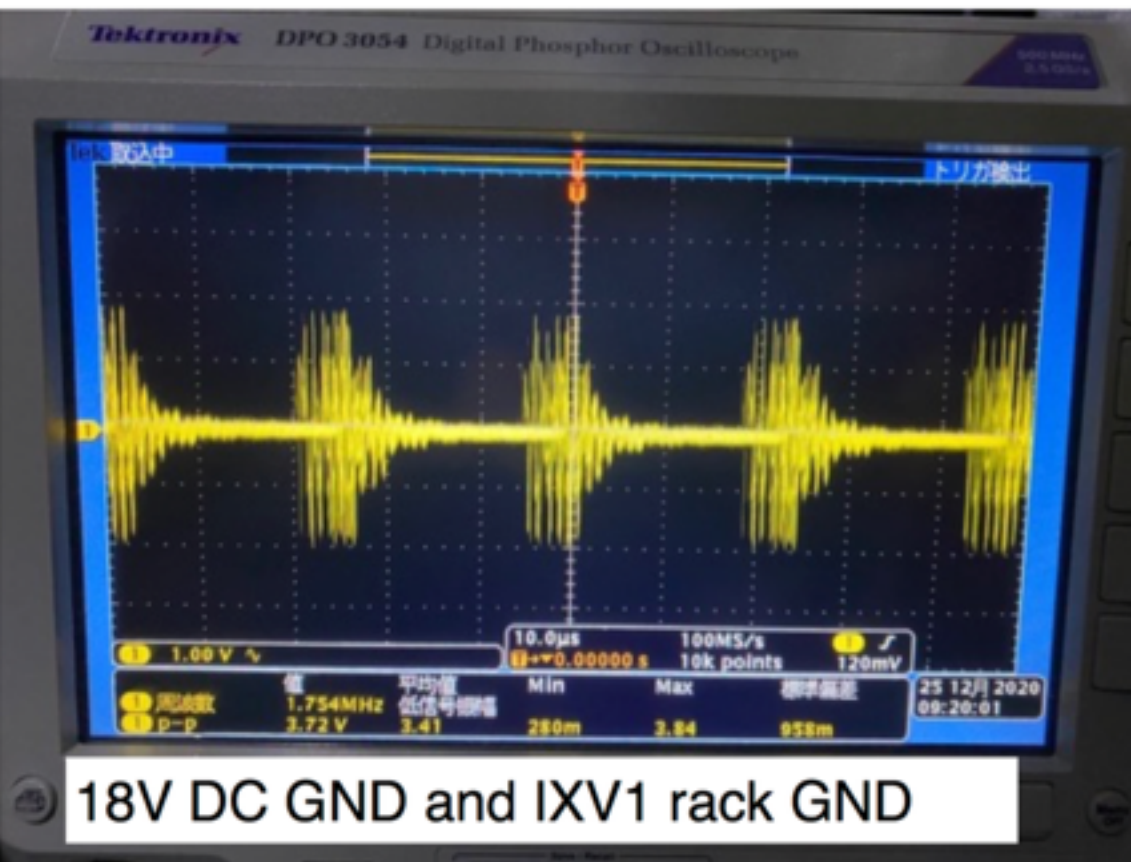
KAGRA detector status

- IYC experiment
 - Test Mass is about 100K now
 - Start the experiments (Vibration, new sensors, parameters with cryogenic, frosting, ...)
- IMM stray light treatment
 - Serious noise in O3GK
 - Baffle design is mostly fixed



KAGRA GND survey

- We are checking the potential difference between DC power supply($\pm 18\text{V}$), rack GND, circuit GND and chassis GND
- Some glitch (for example 40kHz glitch at IXV rack) -> One circuit output the signal
- GND distinguish between heavy elements
 - During the crane work, the GND became dirty
- Designing the cabling with better GND condition

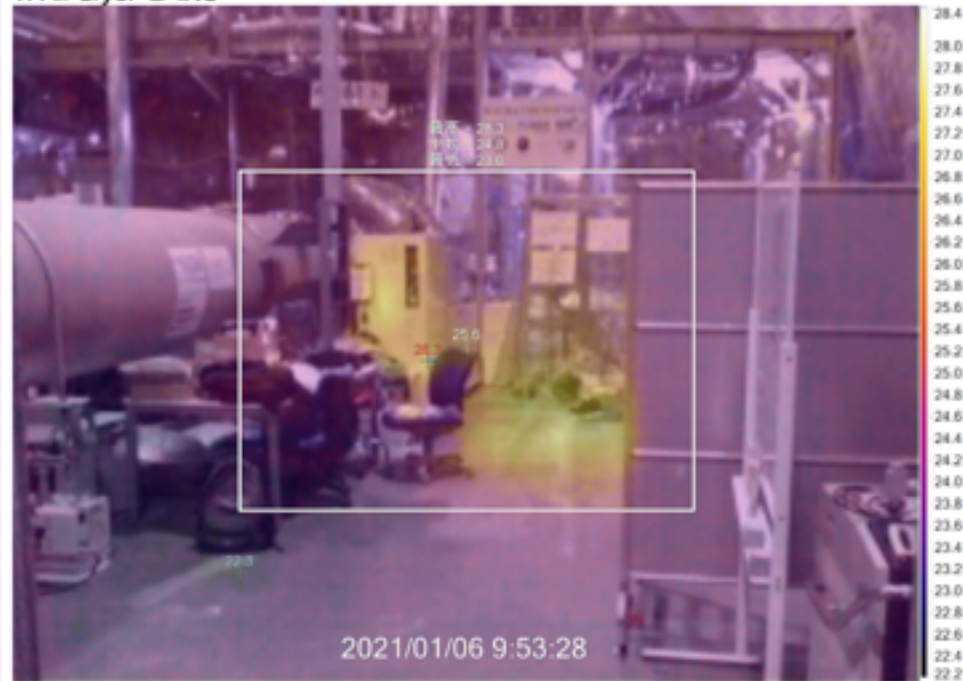


SRM (200121)	
42	M4100-24G-POE+ CAM
41	blank
40	blank
39	Binary In/Out Converter 5900
38	blank
37	blank
36	blank
35	whitening filter with DC 8656
34	GEOPHONE Distributer 6942
33	rail
32	blank
31	blank
30	LVDT Driver 3020
29	LVDT ACT Distributor 3676
28	rail
27	blank
26	HPCD PI 7809
25	HPCD GAS 7811
24	rail
23	LPCD CRY IMH 7390
22	blank
21	HPCD IMV 7814
20	HPCD TM 6253
19	rail
18	blank
17	AI chassis 8039
16	AI chassis 8040
15	rail
14	blank
13	blank
12	AA chassis 8036
11	rail
10	IO chassis 6930 (SN020)
9	
8	DC18V-10A
7	
6	rail
5	DC18V-10A
4	
3	DC18V-10A
2	
1	rail

KAGRA thermography

- The temperature of BS area was higher than expected, we tried to search the origin of thermal in KAGRA
 - Using the thermography bought by Washimi-san

1. Air dryer @ IXC



2. Volt slider @ BS +X, +Y side

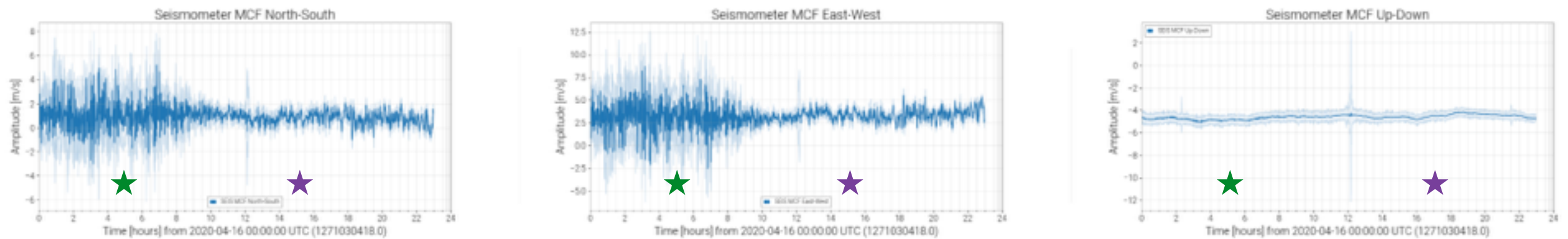


3. Air compressor @ IX0

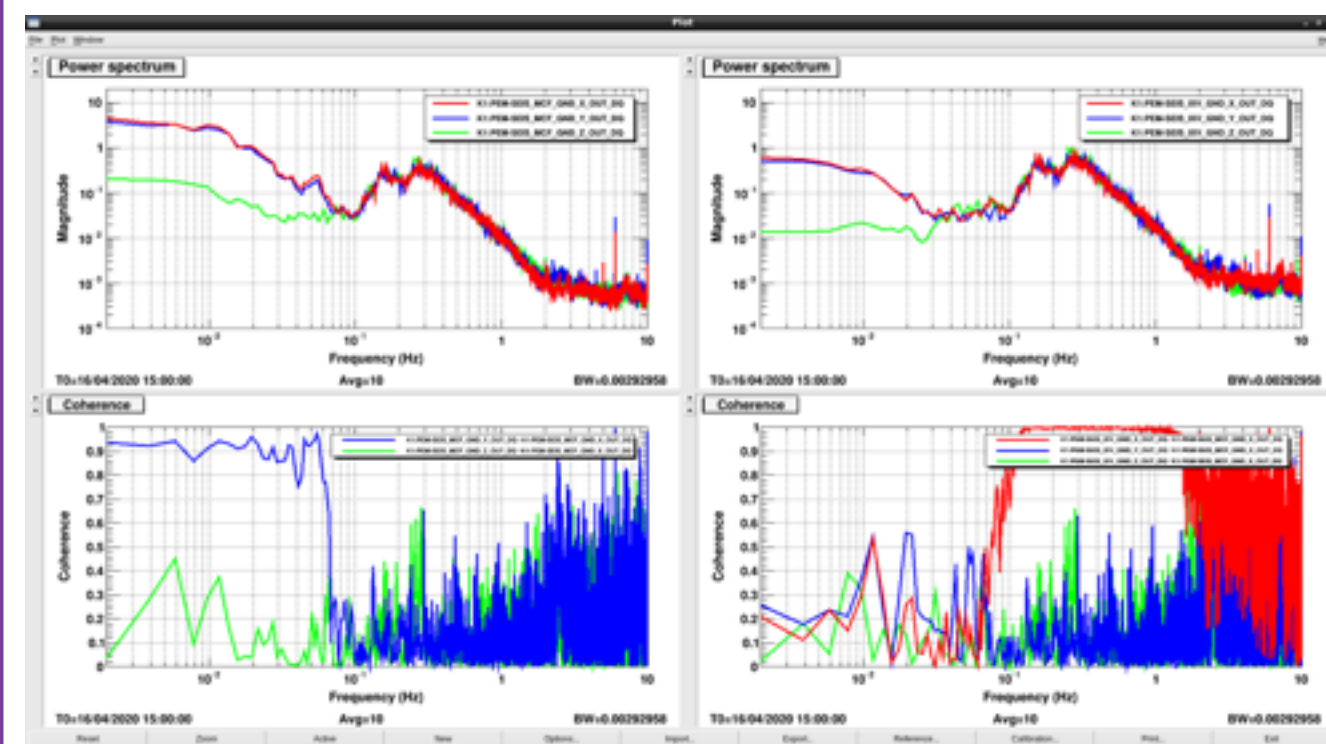
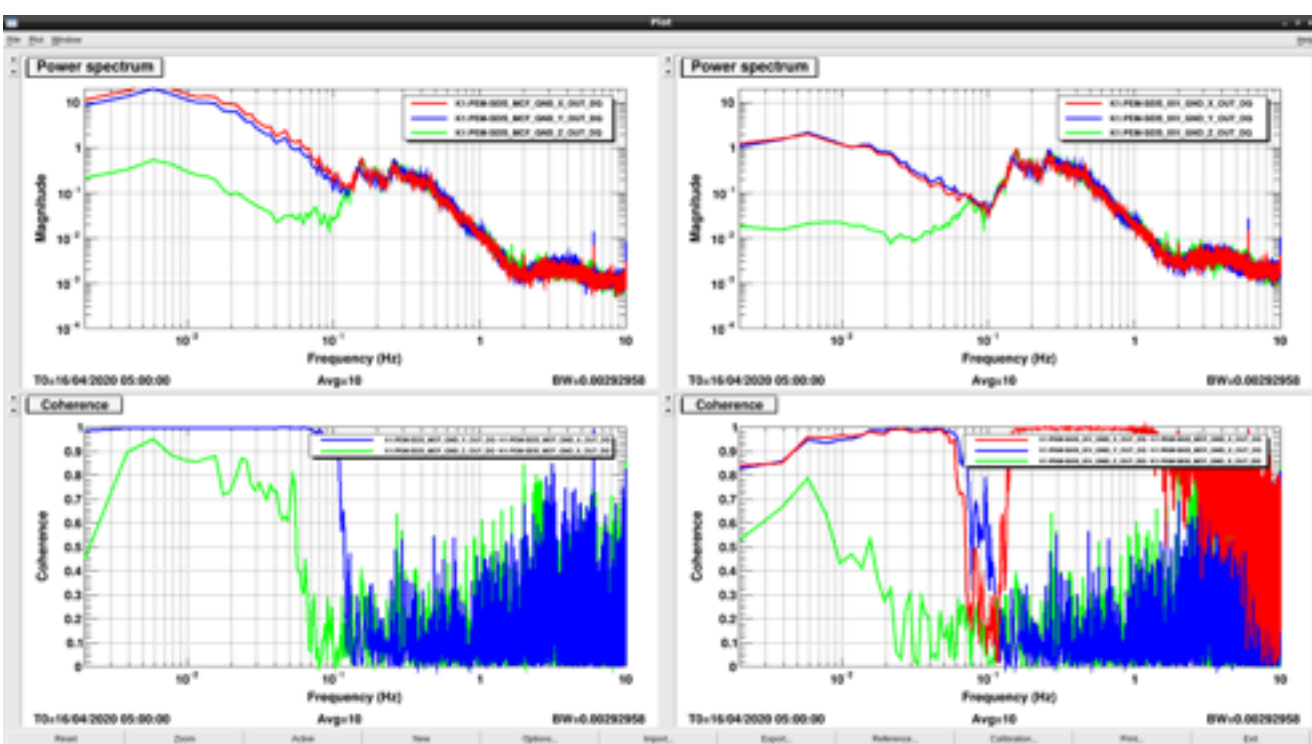


KAGRA seismometer analysis

- Main purpose is for lock loss study by Fujikawa-san(student of niigata U.)
 - But, this result is very interesting from the view of the seismic motion analysis
 - After finishing his master thesis, he or I will report the results
- I want to publish as “seismic motion during O3GK” with additional analysis
- Seismometer at MCF, the amplitude of XY axis are larger than Z axis, time variance



- ASD and coherence with MCF X axis (Left MCF, Right IXV seismometer)

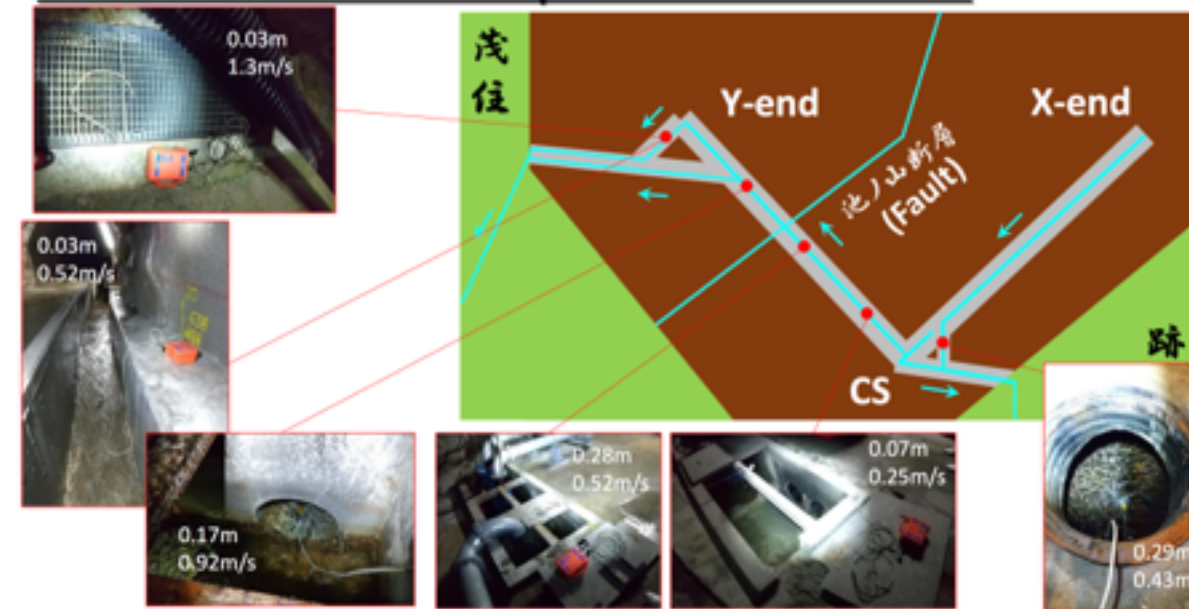


KAGRA new PEMs

- Water fluid monitor
- Four magnetometers (MFS-06e)



Measurements with a portable fluidmeter



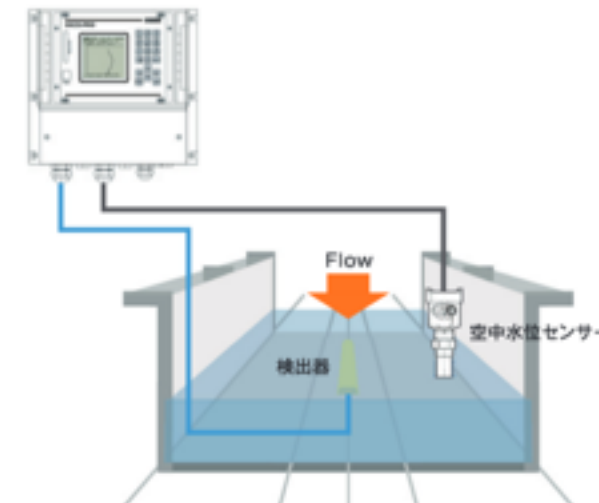
Requirements

- Low noise magnetometers (NS & EW or X & Y, ...)
- Quiet location:
 - Away from equipment, ...
 - Priority: 2 below ground to give an as realistic as possible magnetic background measurement
 - Ideally: 4 magnetometers – 2 above ground & 2 below ground
 - Enable us to understand impact of underground facilities

Presentation by Kamiel at last October

▶使用条件

- 変換器と検出器のケーブルは専用ケーブル使用で350mまで延長可能です
- 水位計は4~20mA出力可能なタイプを接続可能です
- 水路形状は左右対称でなければ流量表示をさせることができません



OCM Pro CF
流量タイプ



PX-PCM4
ポータブルタイプ

Presentation by Washimi-san at last December

KAGRA NN analysis projects

- We held the KAGRA newtonian noise evaluation meeting last December (Japanese)

Agenda

- Purpose of this meeting (Yokozawa)  [pdf](#) - Motivation, previous researches
 - Status of water NN simulation (Suzuki, Nishizawa, Somiya)  [pdf](#) - Simulation by UG student
 - Status of KAGRA water fluid measurement (Washimi)  [JGW-G2012380](#) - Reported by last VK PEM meeting
 - Status of KAGRA seismic NN analysis (Yokozawa)  [pdf](#) - Francesca analysis
 - Status of infrasound NN investigation (Washimi)  [JGW-G2012383](#) - Sound reverberation analysis
 - Status of TOBA as GG monitor (Ando)
 - Discussion of future plan
 - FY2021 ICRR joint usage
 - O4
 - KAGRA+, ET
-  [enaofpdgojingnmg.png](#)
- [Minutes](#)
- TOBA : Torsion-Bar Antenna
 - Developed and improved in Tokyo -> Move to Kamioka area in future
 - Measurement the NN

