

Environment channel monitoring in Kamioka mine

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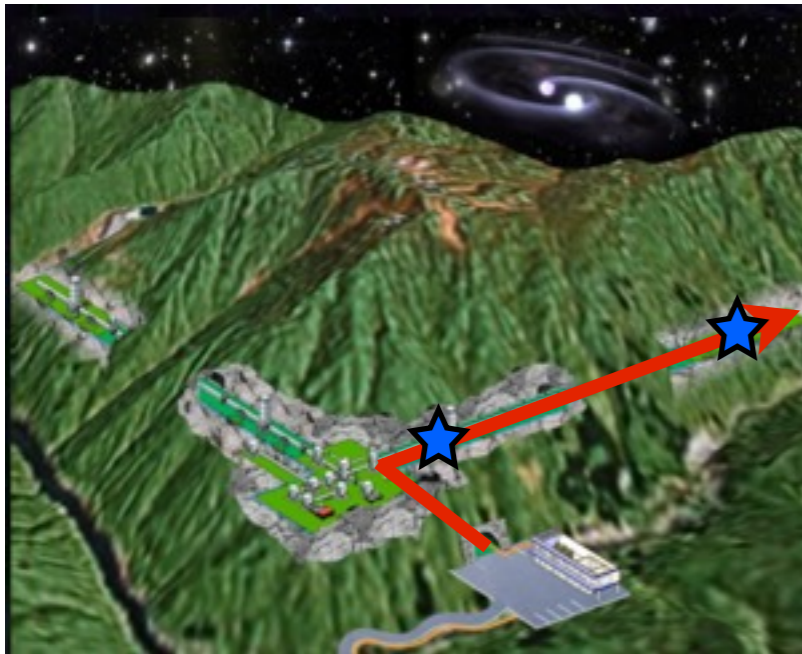


Kamioka cherry blossom 14th Apr.

purpose

- Monitoring long period seismic motion change in Kamioka mine
 - Already monitored in CLIO site, and so on
 - But, never done in X-end
 - want to monitor the effect of large water flow
 - want to start data taking from April
 - Check seismic motion close to cryostat
 - Know the unknown seismic motion

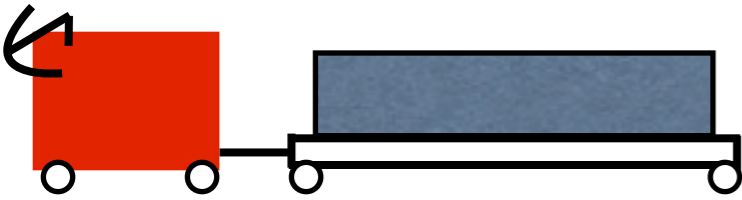
KAGRA X-end



center hole and door



X arm (3km)



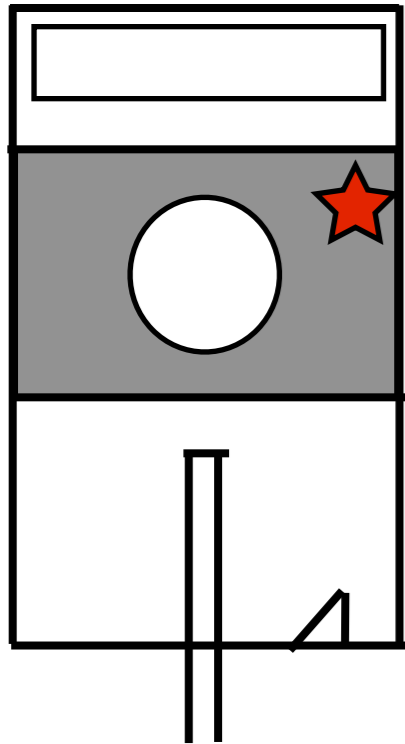
X end 1



X end 2



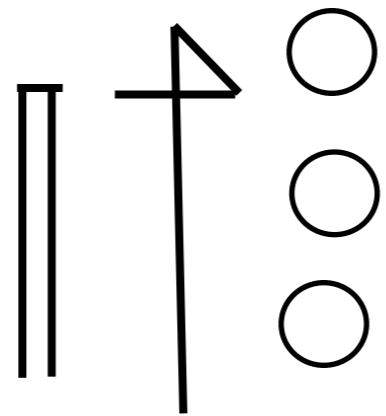
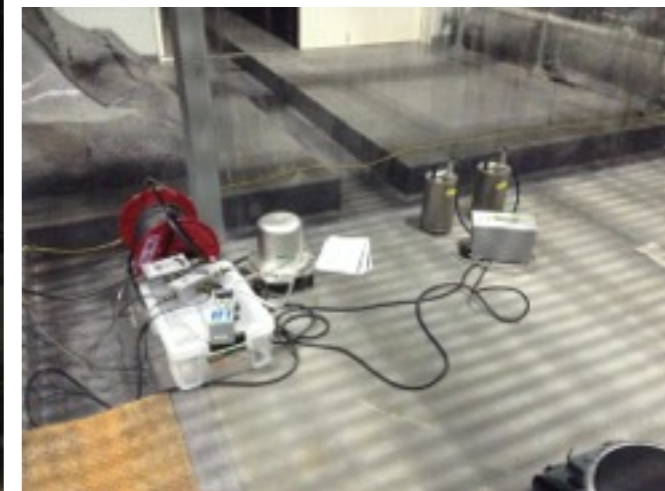
X end status



Tube, desk,...etc

Clean booth with cryostat

★ Point of data taking



○ ACC 1 x direction set to pipe direction

○ ACC 2

○ MAG

No water
temperature:~20°C
humidity:70%

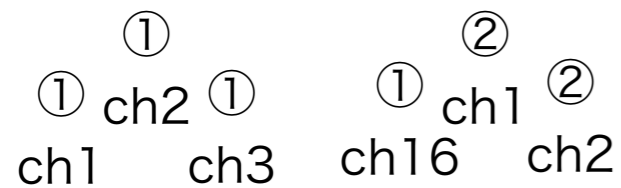
ADC setup



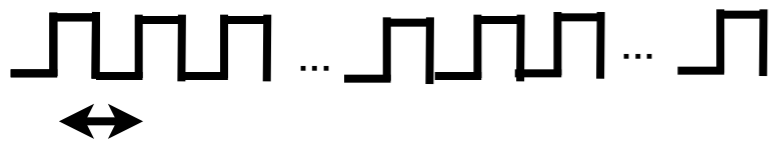
Magnetometer electronics
Spectrometer analyzer
Oscilloscope
PC desktop

Function generator
Signal input port $\times 2$
PC with ADC board

Seismometer controller



$$\begin{aligned} & (\text{Sampling frequency}) \times (\text{Number of channel}) \\ & = 2,048[\text{Hz}] \times 16[\text{ch}] = 32,768 \end{aligned}$$



$1/32768$

Data taking

- 8 channels are available
- Setup1 check the correlation between ACC1 and ACC2
- Setup2 final configuration
 - Sine wave 256Hz (For data condition check)
 - MIC
 - ACC xyz (x 10 times amplitude)
 - MAG xyz

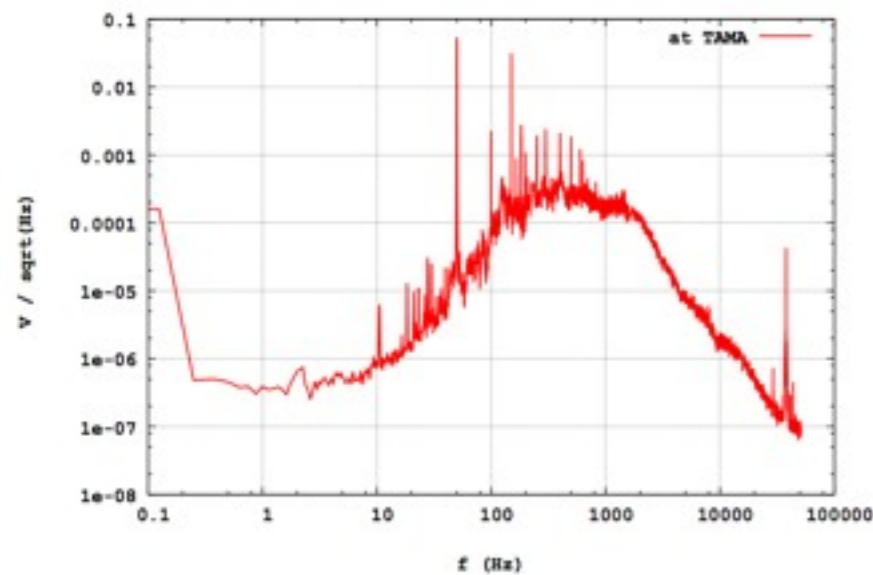
Back ups

MIC information

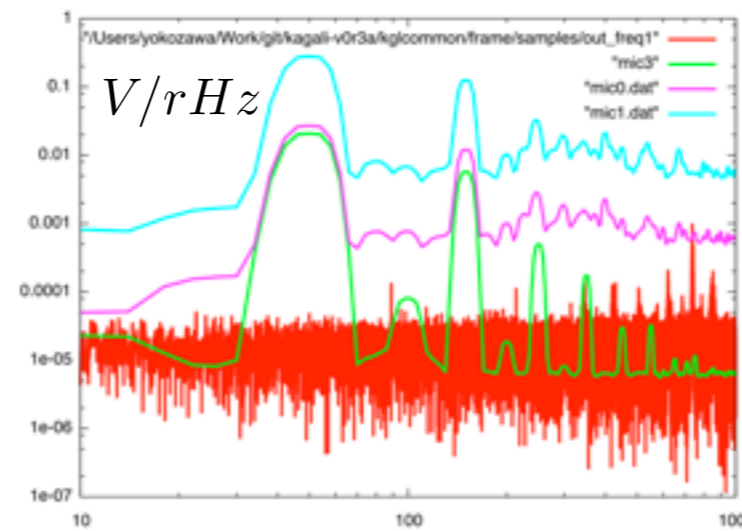


+DC power 15V

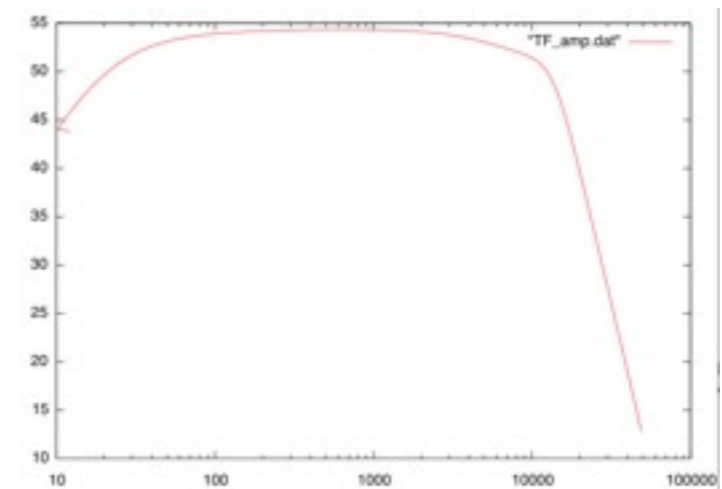
Acoustic Sensor Spectrum



measured in NAOJ

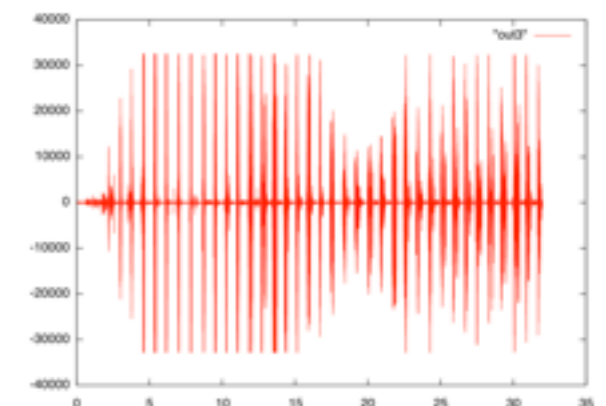


measured in KEK



TF of amp[dB]

time domain of yokozawa voice



ACC information



calibration factor $\sim 2000\text{V/m/s}$
 $\pm 10\text{V}$ output

