Detector Characterization

Kazuhiro Hayama

On behalf of DET subsystem

Tasks

- **Environmental monitor sensors with GIF**
- **Environment and Instrument monitor**
- **Development of characterization system**

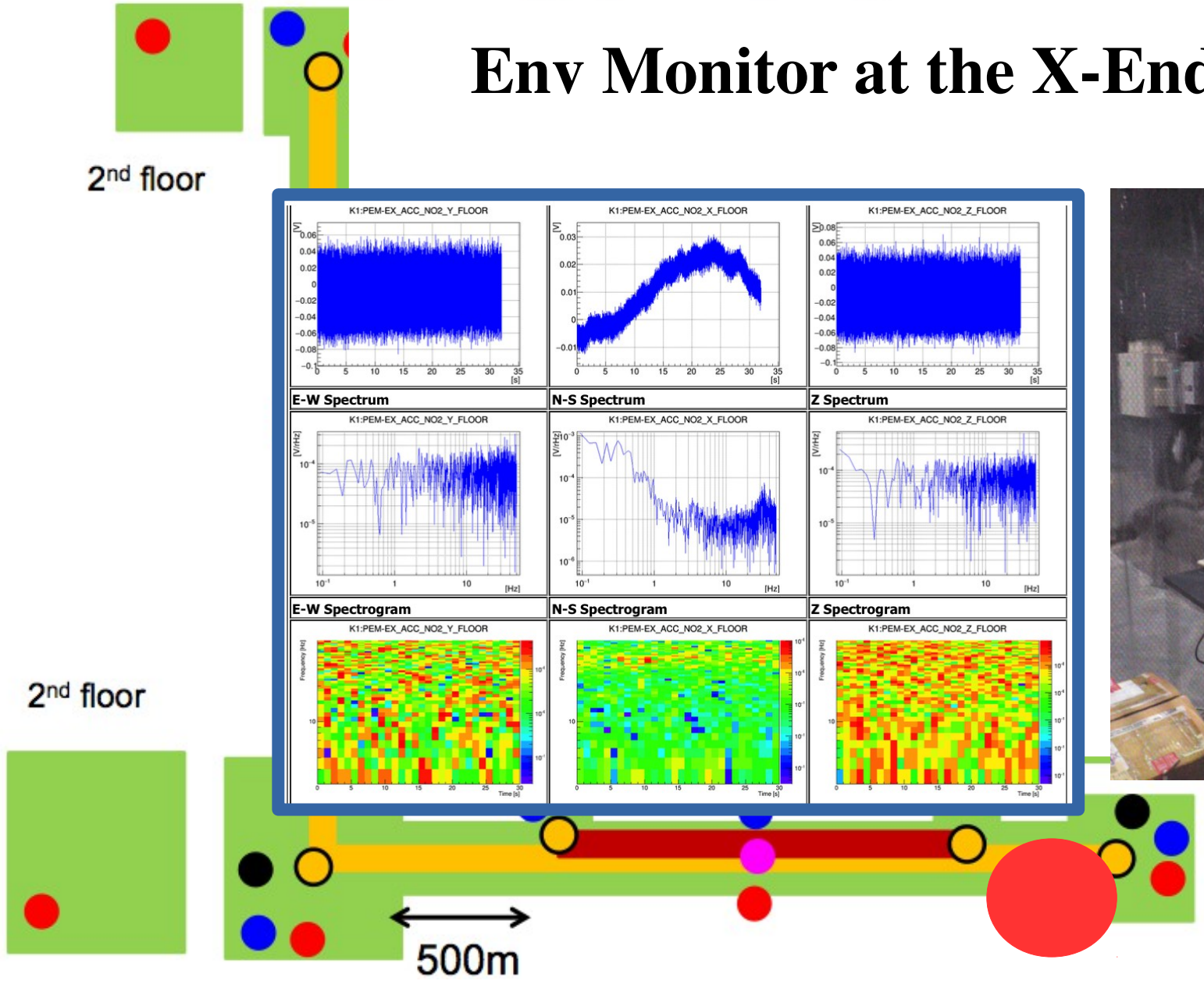
Preparing Environmental Sensors

With GIF

- **Hygrometer, thermometer, barometer are tested at the center area of KAGRA now.**
- **Seismometers, accelerometers are waiting for installation. (Feb ~ earlyMarch)**
- **Magnetometers will be introduced in the middle of this March.**
- **Slow data acquisition system will be set up ~early March.**

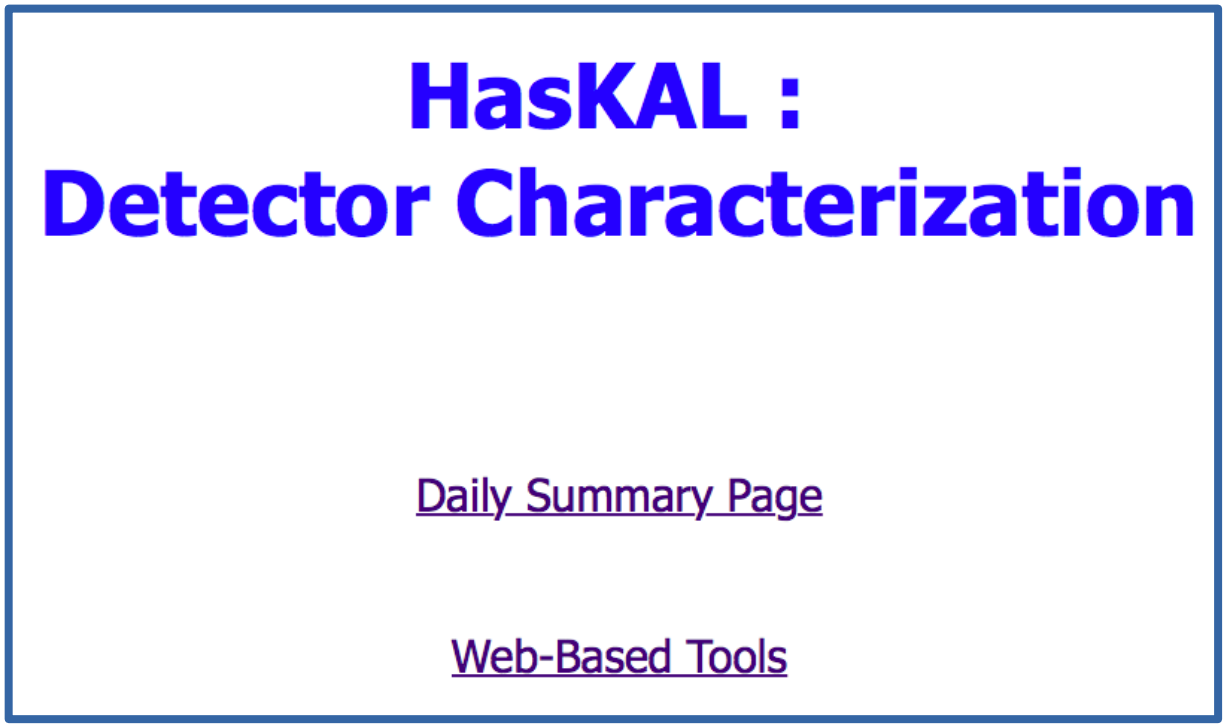
Real-time environment monitor

Env Monitor at the X-End



Preparation of monitoring system

- **Web-Based system**
- **Command-line tools**
- **GUI based tools**



Daily Summary Page

Calendar

Feb. 2016

Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

Jan. 2016

Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Dec. 2015

Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Nov. 2015

Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

Oct. 2015

Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Sep. 2015

Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Aug. 2015

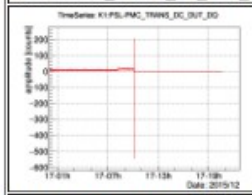
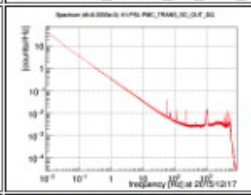
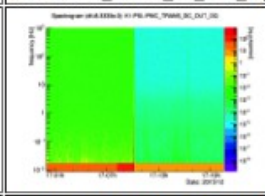
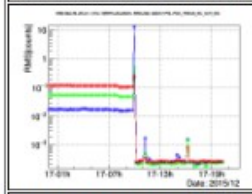
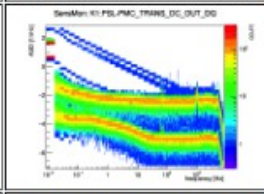
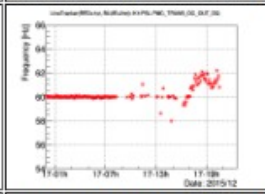
Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Jul. 2015

Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
		1	2	3	4	5

IOO

K1:PSL-PMC_TRANS_DC_OUT_DQ

K1:PSL-PMC_TRANS_DC_OUT_DQ:TimeSeries	K1:PSL-PMC_TRANS_DC_OUT_DQ:Spectrum	K1:PSL-PMC_TRANS_DC_OUT_DQ:Spectrogram
		
K1:PSL-PMC_TRANS_DC_OUT_DQ:RMSMon	**K1:PSL-PMC_TRANS_DC_OUT_DQ:SensMon**	**K1:PSL-PMC_TRANS_DC_OUT_DQ:LTF**
		
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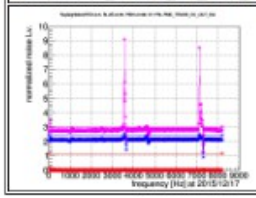
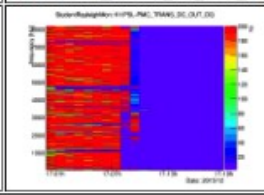
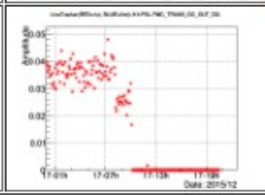
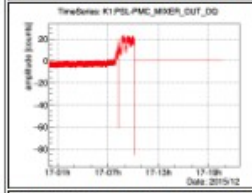
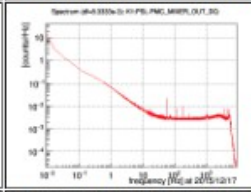
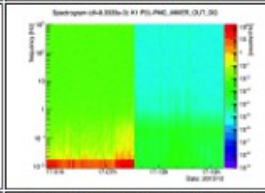
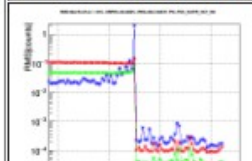
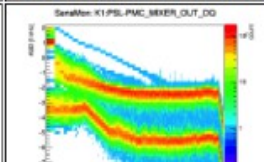
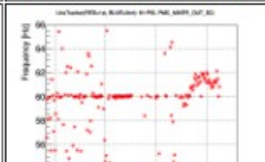
		

K1:PSL-PMC_MIXER_OUT_DQ

K1:PSL-PMC_MIXER_OUT_DQ:TimeSeries	K1:PSL-PMC_MIXER_OUT_DQ:Spectrum	K1:PSL-PMC_MIXER_OUT_DQ:Spectrogram
		
K1:PSL-PMC_MIXER_OUT_DQ:RMSMon	**K1:PSL-PMC_MIXER_OUT_DQ:SensMon**	**K1:PSL-PMC_MIXER_OUT_DQ:LTF**
		

Web-Based Tools

Single Channel Analysis | Coherence Analysis | Correlation Map | Bruco | Detection Range | Daily Summary page

Date:
GPS Time: 1134572417
Local Time:
2015 Dec. 20
0 0 0 JST

Channel List:
make channel list
select channel list (Default)
Channel 1:
K1:PSL-FSS_FAST_MON_OUT_DQ
K1:PSL-FSS_MIXER_OUT_DQ
K1:PSL-FSS_PC_MON_OUT_DQ
K1:PSL-FSS_REFL_DC_OUT_DQ
K1:PSL-FSS_SLOW_MON_OUT_DQ

Parameters:
For General
Duration: sec. (default is 32s)
Freq. band: Hz ~ Hz
(default is from 0Hz to Nyquist freq.)

Monitors:
Pearson Correlation ~~MIC~~

plot view

HasKAL

GPS Time: 1134572417 (2015-12-19 15:00:00 UTC)

duration: 32s **Freq. band:** 0 - fNyquist Hz

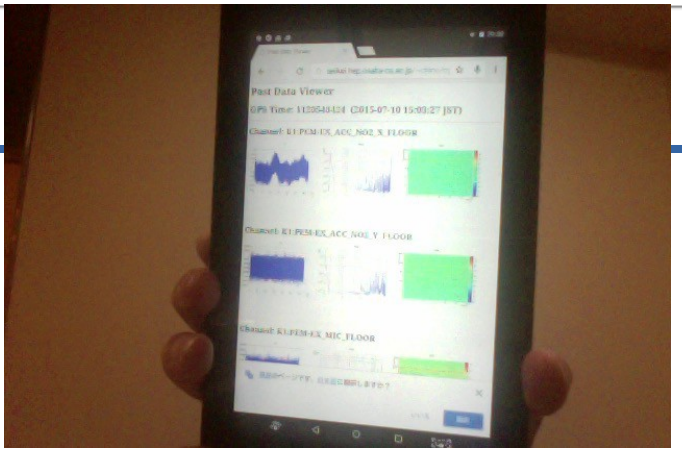
	K1:PSL-FSS_FAST_MON_OUT_DQ	K1:PSL-FSS_MIXER_OUT_DQ	K1:PSL-FSS_PC_MON_OUT_DQ	K1:PSL-FSS_REFL_DC_OUT_DQ	K1:PSL-FSS_SLOW_MON_OUT_DQ
K1:PSL-FSS_FAST_MON_OUT_DQ	1.00000	0.01447	0.02042	NaN	0.01939
K1:PSL-FSS_MIXER_OUT_DQ	0.01447	1.00000	0.01804	NaN	0.01404
K1:PSL-FSS_PC_MON_OUT_DQ	0.02042	0.01804	1.00000	NaN	0.02279
K1:PSL-FSS_REFL_DC_OUT_DQ	NaN	NaN	NaN	1.00000	NaN
K1:PSL-FSS_SLOW_MON_OUT_DQ	0.01939	0.01404	0.02279	NaN	1.00000

Get URL

[< Prev] [Back] [Next >]

Real time quick look page is here

Powerd by HasKAL



Detchar software

- Glitch Monitor

非定常雑音モニタ

- Line Finder
- Line Tracking
- Line Removal

発振などのラインモニタ

- Rayleigh Monitor
- Non-Gaussianity Mo
- RMS Monitor
- Noise Floor Monitor

ガウス性、定常性、非ガウス性

- Time-Series Monitor
- Spectrum Monitor
- Spectrogram Monitor

データの様子、スペクトル

- Sensitivity Monitor
- Range Monitor
  - Inspiral
  - Inspiral-Merger-Ringdown
  - Ringdown
  - Stochastic

重力波への感度

相関関係を調べる

- Coherence Finder
- Multiple-channel coherence finder (BruCo)
- Pearson correlation Finder
- NonLinear correlation Finder

- Realtime Quick look webpage
- Daily summary webpage
- GUI Interface
- Web-Base Interface
- Command-line Interface

インターフェース

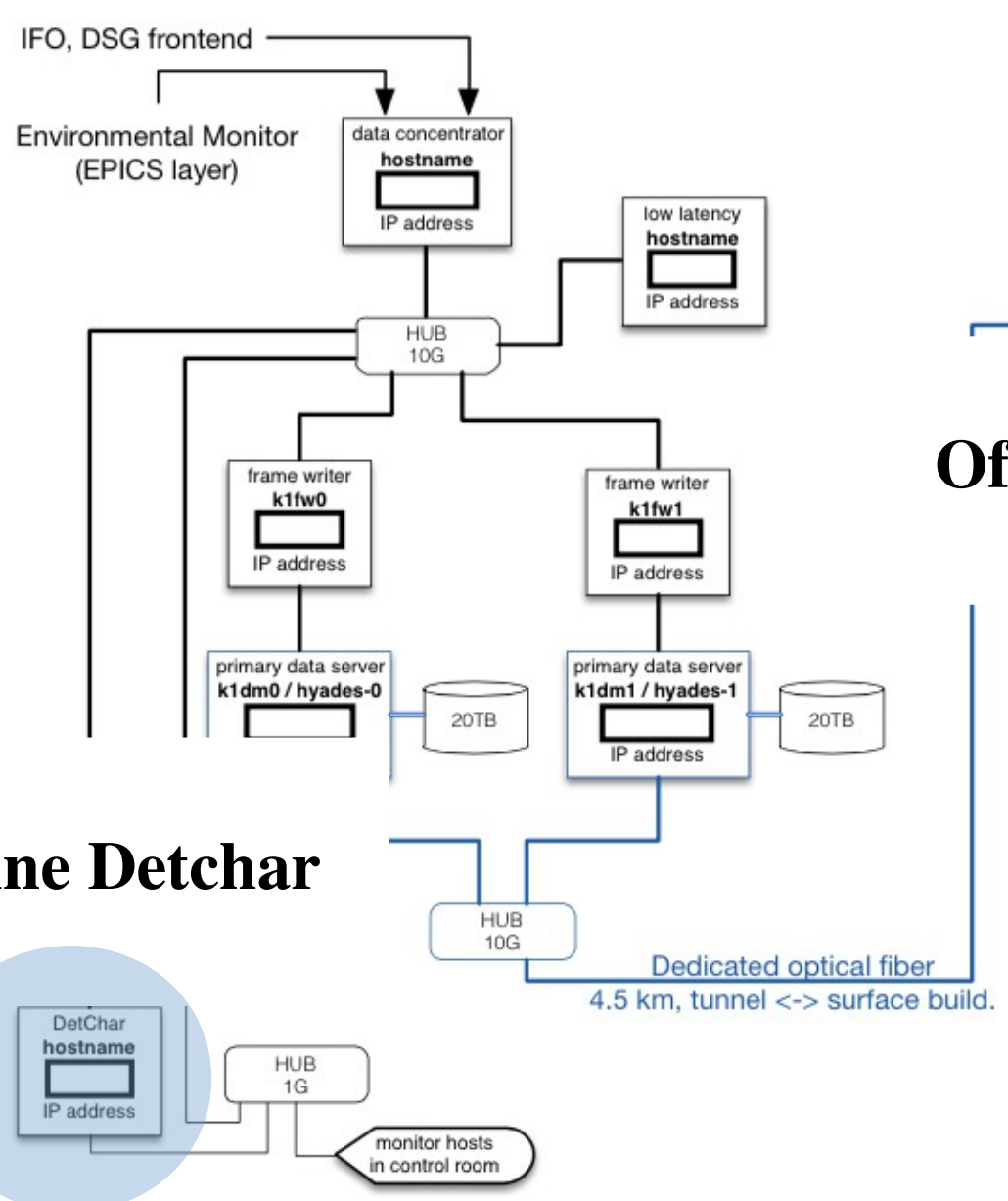
- Health monitor
- Globally Correlated magnetic noise
- Violin mode
- Multi-channel analysis
- Newtonian noise
  - Effect of water inside the mountain

Toward bKAGRA

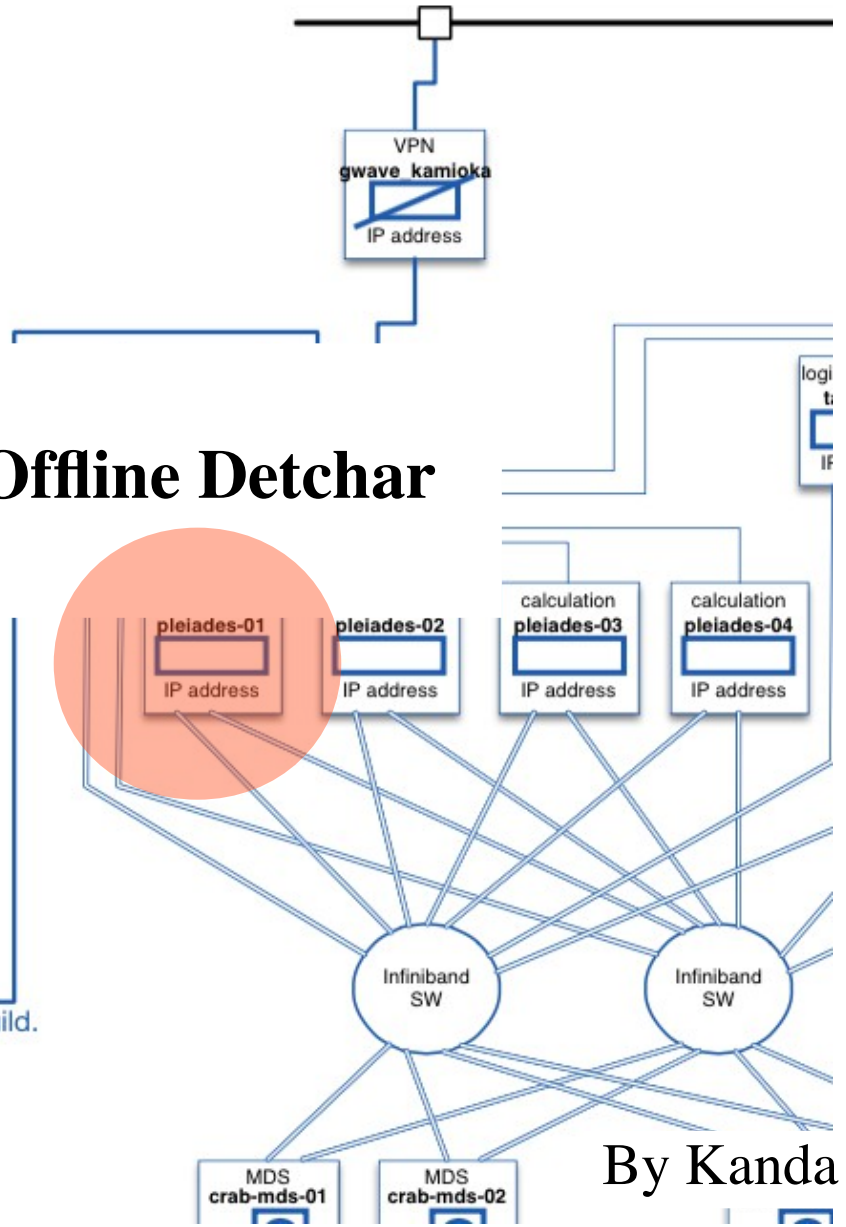
- **Addition of Guardian info to the webpage(also for iKAGRA)**
- **Initial PEM plan will be finished in ~ this summer.**
- **PEM injection system**
- **Chanel selection to monitor deeply**
  - **With PEM injection study(2016-2017)**
  - **With Subsystems (2016-2018)**

Characterization of LIGO data around GW150914

Network



Online Detchar



Offline Detchar

By Kanda