

## KAGRA Detector characterization meeting on 17 May 2012

### Today's topics

- Korea-Japan workshop during 28-29 May.
- Recent activity (Oh, Hayama)
- Anything else?

# Korea-Japan workshop

## Tentative Program

5/28 (Mon)

10:00-10:10 Opening Talk

10:10-12:00 Current status of the collaboration research (I)

Hyun Won Lee/Hideyuki Tagoshi "Data Analysis"

Nobuyuki Kanda (Hideyuki Tagoshi) "Data Branch"

Kyuman Cho/Seiji Kawamura "Interferometer/Quantum Optics"

Ryutaro Takahashi "Vibration Isolation"

Sang Hoon Oh/Kazuhiro Hayama "Detector Characterization"

12:00-13:00 Lunch

13:00-14:00 Current status of the collaboration research (II)

Tai Hyun Yoon/Norikatsu Mio "Laser"

14:00-15:00 Relevant research (I)

Hyung Won Lee "Stochastic gravitational wave and parameter estimation"  
(20 min)

15:00-15:30 Coffee break

15:30-16:30 Discussion about the future collaboration

16:30-17:30 Lab tour

18:00-20:00 Banquet at Hassai

5/29 (Tue)

(Morning: KAGRA international collaboration meeting)

13:00-15:00 Relevant research (II)

15:00-15:30 Coffee break

15:30-17:00 Relevant research (III)

# Recent activities

## Hayama

o We had external review in April.

-- Presentation document

<http://gwdoc.icrr.u-tokyo.ac.jp/cgi-bin/private/DocDB/ShowDocument?docid=992>

-- Review document

<http://gwdoc.icrr.u-tokyo.ac.jp/cgi-bin/private/DocDB/ShowDocument?docid=947>

o Our current activities are mainly concentrated into 3 topics:

-- Building detchar system

We will use DTT, DMT.

-- Checking monitor software

There are lots of monitor software developed in LVC. We will import some of them.

<http://www.ligo.caltech.edu/~jzweizig/dmt/Monitors/MonTable.html>

-- Channel selection

To propose which channels are needed for building glitch-free interferometer.

Hayama(NAOJ), Miyakawa(ICRR), Yamamoto, Yuzurihara(OCU),  
Susa(Titech), Dan (UT)

- **Simple standalone system** (RT PC + ADC, Client WS, router) has been **delivered to NAOJ** on 12/6/2011.
- 3days work for installation, lecture and training
- **Online analysis software** will be developed by DAS group.



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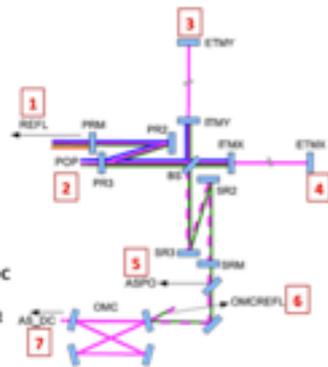
Monitor	Summary
BicoMon	
BitTest	Checks for stuck bits and repeated words in the raw data
CorrMon	Measure interchannel correlations and optionally estimate linear response functions
DEnvCorr	Measure and remove cross correlations between a signal channel and one or more environment channels.
DTracker	Multitaper line tracker.
DuoTone	Measures LSC timing stability using RAMP and Dual-Tone sinusoids.
GainMon	This monitor tracks the unity gain frequency for the DARM loop
HistCompr	Make histograms of [filtered] data [trigger on differences from reference].
IRIG-B	Measure timing stability relative to IRIG-B signals.
InspiralMon	Monitor online compact binary inspiral search
LIGOLwMon	A monitor for displaying time series data derived from LIGO LW XML files.
LineMonitor	Monitoring of amplitude, frequency and phase of narrow resonances.
Listen	Send a specified channel to the audio device of your workstation.
LockLoss	Watch for acquisition and loss of lock.
LscMonitor	
MTLineMon	Use multitaper spectral methods to identify and remove spectral lines.
MultiVolt	Monitor power line frequency, RMS and harmonic content
NoiseFloorMon	
PSLmon	Generic monitor program (Spectra, Glitches and Bands) for PSL and others
PTmon	Glitch monitor using peak-trough (peak-to-peak) time series.
PhotonCal	Measures LSC calibration using the photon calibrators.
PlaneMon	Monitors microphone channels for airplane signals and records airplane events.
PulsarMon	A Periodic Source Sensitivity Monitor for the DMT
RayleighMonitor	Real-time display of Raleigh statistic (a measure of noise gaussianity)
SegGener	Construct arbitrary segment table entries from OSC conditions.
SenseMonitor	A Binary-Inspiral Sensitivity Monitor for the DMT

ServoMon	Watch for servo instabilities.
ShapeMon	Monitor spectral shape stability
Slice2	Look for improper time ordering of data slices.
SpecMon	
SpectrumArchiver	
SpectrumFold	Diagnose excess power in bins at multiples of a fixed frequency (in particular 0.25 Hz)
Station	
StochMon	A Stochastic Sensitivity Monitor for the DMT
StrainbandsMon	A monitor to keep track of the strain within certain frequency bands.
TimeMon	Monitor timing card stability using ramp signals
TrigDsply	Display raw or filtered data associated with a list of triggers
TrigSpec	
WaveMon	Monitoring of glitches using wavelet time-frequency analysis
absGlitch	Glitch monitor using fixed trigger thresholds.
blrms_monitor	Apply a bank of IIR bandpass filters to timeseries data
burstMon	
eqMon	An earthquake monitor.
fastGlitch	Tool to plot filtered time series around given trigger times.
glitchMon	Generate a trigger when the signal exceeds threshold.
kleineWelle	
magGlitch	glitchMon optimized for magnetometer data.
sigma	Utility to display data graphically as time, frequency series and histogram.
suspensionMon	

## MIF\_LSC

- 1 \*REFL\_PD1\_DC
- \*REFL\_PD1\_I
- \*REFL\_PD1\_Q
- \*REFL\_PD2\_DC
- \*REFL\_PD2\_I
- \*REFL\_PD2\_Q

- 2 \*POP\_PD1\_DC
- \*POP\_PD1\_I
- \*POP\_PD1\_Q
- \*POP\_PD2\_DC
- \*POP\_PD2\_I
- \*POP\_PD2\_Q



- 5 \*AS\_PD1\_DC
- \*AS\_PD1\_I
- \*AS\_PD1\_Q

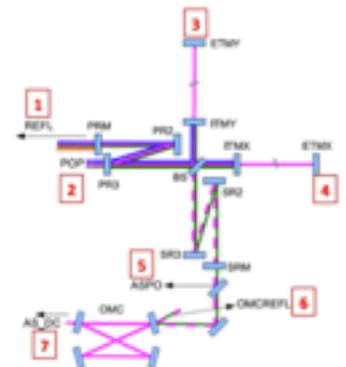
- 6 \*OMCREFL\_PD1\_DC
- \*OMCREFL\_PD1\_I
- \*OMCREFL\_PD1\_Q

- 7 \*AS\_DC

## MIF\_ASC\_Yaw

- 1 \*REFL\_QPD1\_Total
- \*REFL\_QPD1\_DC
- \*REFL\_QPD1\_I
- \*REFL\_QPD1\_Q
- \*REFL\_QPD2\_Total
- \*REFL\_QPD2\_DC
- \*REFL\_QPD2\_I
- \*REFL\_QPD2\_Q

- 2 \*POP\_QPD1\_Total
- \*POP\_QPD1\_DC
- \*POP\_QPD1\_I
- \*POP\_QPD1\_Q
- \*POP\_QPD2\_Total
- \*POP\_QPD2\_DC
- \*POP\_QPD2\_I
- \*POP\_QPD2\_Q



- 3 \*EY\_QPD\_Total
- \*EY\_QPD\_DC
- \*EY\_QPD\_I
- \*EY\_QPD\_Q

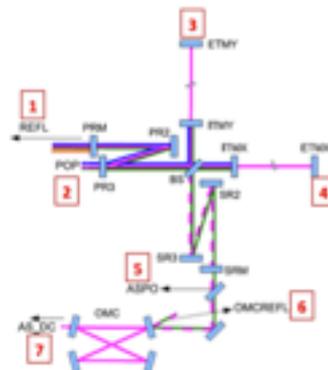
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- \*EX\_QPD\_DC
- \*EX\_QPD\_I
- \*EX\_QPD\_Q

- 5 \*AS\_QPD1\_Total
- \*AS\_QPD1\_DC
- \*AS\_QPD1\_I
- \*AS\_QPD1\_Q

## MIF\_ASC\_Pitch

- 1 \*REFL\_QPD1\_Total
- \*REFL\_QPD1\_DC
- \*REFL\_QPD1\_I
- \*REFL\_QPD1\_Q
- \*REFL\_QPD2\_Total
- \*REFL\_QPD2\_DC
- \*REFL\_QPD2\_I
- \*REFL\_QPD2\_Q

- 2 \*POP\_QPD1\_Total
- \*POP\_QPD1\_DC
- \*POP\_QPD1\_I
- \*POP\_QPD1\_Q
- \*POP\_QPD2\_Total
- \*POP\_QPD2\_DC
- \*POP\_QPD2\_I
- \*POP\_QPD2\_Q

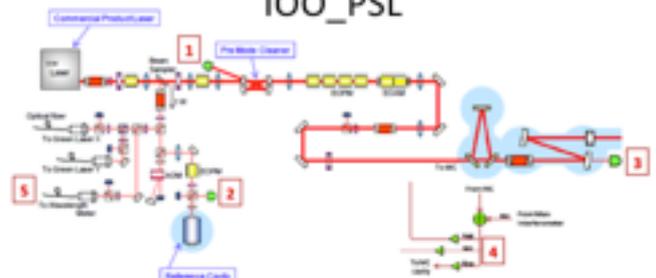


- 3 \*EY\_QPD\_Total
- \*EY\_QPD\_DC
- \*EY\_QPD\_I
- \*EY\_QPD\_Q

- 4 \*EX\_QPD\_Total
- \*EX\_QPD\_DC
- \*EX\_QPD\_I
- \*EX\_QPD\_Q

- 5 \*AS\_QPD1\_Total
- \*AS\_QPD1\_DC
- \*AS\_QPD1\_I
- \*AS\_QPD1\_Q

## IOO\_PSL



- 1 \*PMC\_DC
- \*PMC\_RF

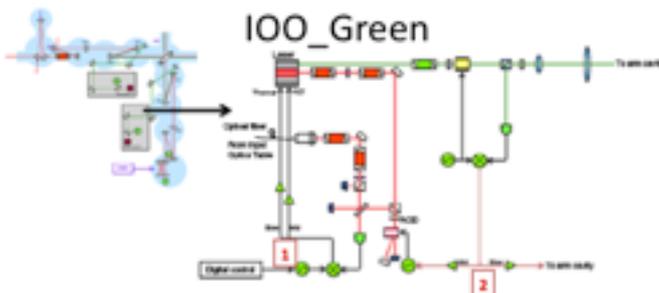
- 2 \*RC\_DC
- \*RC\_RF\_Fast
- \*RC\_RF\_Mid
- \*RC\_RF\_Slow

- 3 \*IS\_DC
- Intensity Stabilization

- 4 \*FA\_Fast
  - \*FA\_Mid
  - \*FA\_Slow
- Feed-Around

- 5 \*Wavelength

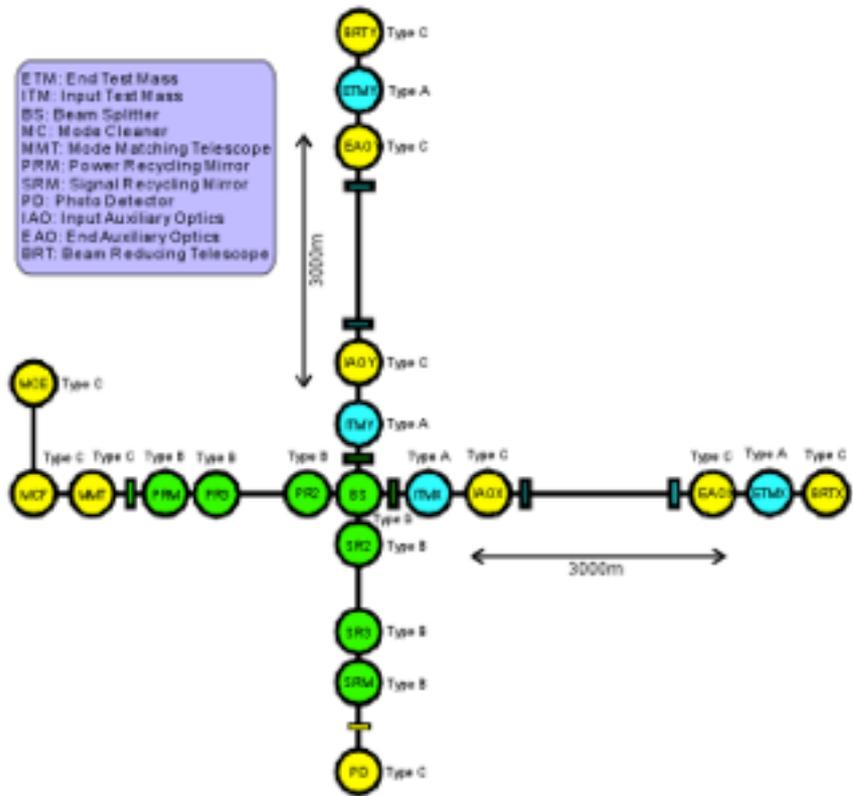
## IOO\_Green



- 1 \*In\_Mid
- \*In\_Slow

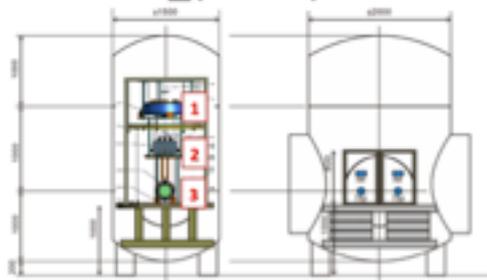
- 2 \*Out\_Mid
- \*Out\_Slow

# VIS



## VIS\_(SAS-B)

- 1 -BF\_VDET\_V
- BF\_MC\_V
- BF\_PC\_H0
- BF\_PC\_H2
- BF\_PC\_V



- 2 -TM-MM\_PS\_H0
- TM-MM\_PS\_H2
- TM-MM\_PS\_H3
- TM-MM\_PS\_V0
- TM-MM\_PS\_V2
- TM-MM\_PS\_V3
- TM-MM\_MC\_H0
- TM-MM\_MC\_H2
- TM-MM\_MC\_H3
- TM-MM\_MC\_V0
- TM-MM\_MC\_V2
- TM-MM\_MC\_V3
- TM-MM\_PC\_H0
- TM-MM\_PC\_H2

- 3 -TM-MM\_PS\_H0
- TM-MM\_PS\_H2
- TM-MM\_PS\_V0
- TM-MM\_PS\_V2
- TM-MM\_MC\_H0
- TM-MM\_MC\_H2
- TM-MM\_MC\_V0
- TM-MM\_MC\_V2
- DL\_X
- DL\_Y
- DL\_Total

## VIS\_(SAS-A)

Power	Power/S	BF	MM	TM
ACQ00 x0	LAD000 x1	LAD000 x1	PR000 x0	PR000 x2
ACQ00 x1	LAD000 x2	LAD000 x2	PR000 x1	PR000 x1
ACQ00 x2	LAD000 x3	LAD000 x3	DL x1	DL x1
MC000 x0	MC000 x1	MC000 x1	MC000 x0	MC000 x2
MC000 x1	MC000 x2	MC000 x2	MC000 x1	MC000 x1
PD000 x0	PR000 x0	PR000 x0	PR000 x0	PR000 x0
PD000 x1	PR000 x1	PR000 x1	PR000 x1	PR000 x1

- 2 -VL\_VDET\_V
- VL\_MC\_V
- VL\_PC\_H0
- VL\_PC\_H2
- VL\_PC\_V
- VL\_PC\_H0
- VL\_PC\_H2
- VL\_PC\_V
- VL\_MC\_V
- TM-MM\_PS\_H0
- TM-MM\_PS\_H2
- TM-MM\_PS\_V0
- TM-MM\_PS\_V2
- TM-MM\_MC\_H0
- TM-MM\_MC\_H2
- TM-MM\_MC\_V0
- TM-MM\_MC\_V2
- DL\_X
- DL\_Y
- DL\_Total

- 3 -BF\_VDET\_V
- BF\_MC\_V
- BF\_PC\_H0
- BF\_PC\_H2
- BF\_PC\_V



- 1 -Top Mass (TM)
- 2 -Input Fiber (I-F) or Type-A
- 3 -Bottom Fiber (BF)
- 4 -Intermediate Mass (IM)
- 5 -Optical Bench (O-Bench)