aLOG report @LLO

2014/4/21 Tuesday @DetChar meeting, Yuzurihara

o I read Logbook of LIGO Livingston and picked up interesting topics about detector characterization.

https://alog.ligo-la.caltech.edu/aLOG/index.php

o Today's topic

- DQ shift summary
- bad L1 accelerometer channels
- whistle glitches at LLO and LHO

DQ Shift Summary of the L1 lock on April 14

https://alog.ligo-la.caltech.edu/aLOG/index.php?callRep=17786

L1 General (Detchar)

alan.weinstein@LIGO.ORG - posted 15:07, Monday 20 April 2015 (17786)

DQ Shift Summary of the L1 lock on April 14

Here is a DQ Shift Summary of the "Observation Intent" lock of LLO on April 14:

https://wiki.ligo.org/DetChar/DataQuality/DQShiftLLO20150414

including a summary of detector performance, stability, glitches and potential DQ vetoes, calibration, etc.

This joins previous DQ shift summaries: https://wiki.ligo.org/DetChar/DataQuality/PreO1DQShifts

and with many more to come, especially if folks use the "Observation Intent" setting.

KAGRA detchar group also should prepare summary pages including these information.

Three bad L1 accelerometer channels

https://alog.ligo-la.caltech.edu/aLOG/index.php?callRep=17771

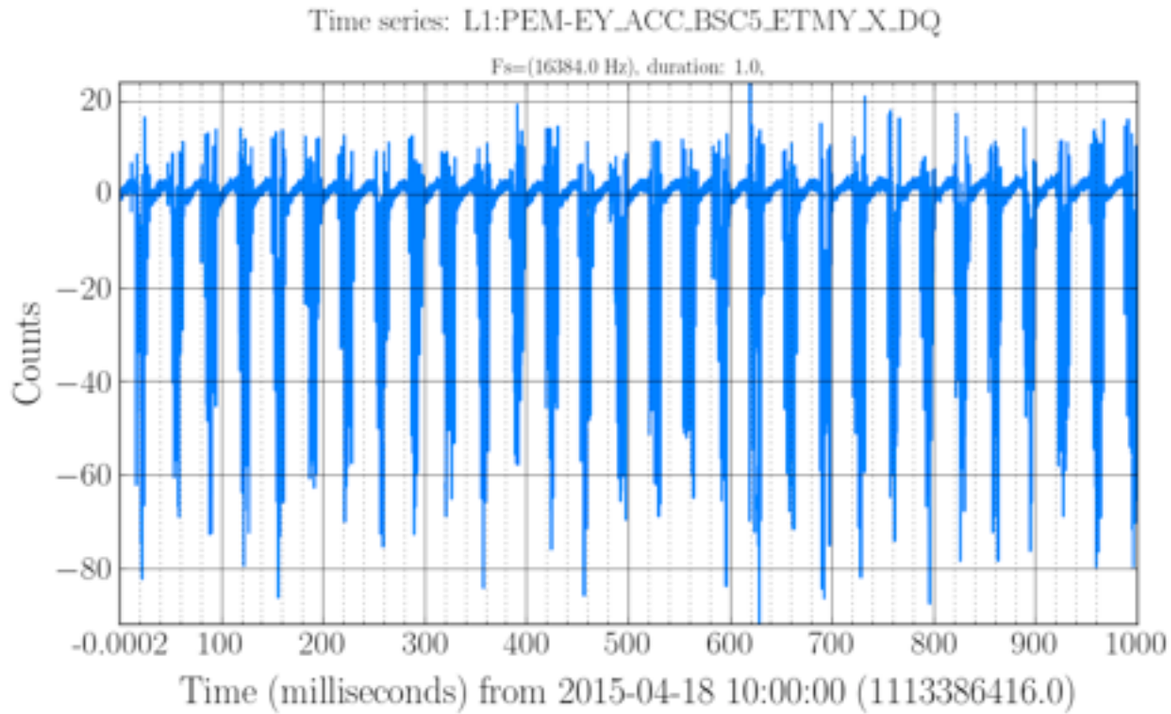
Three accelerometer channels are recording bad signals and look to be disconnected.

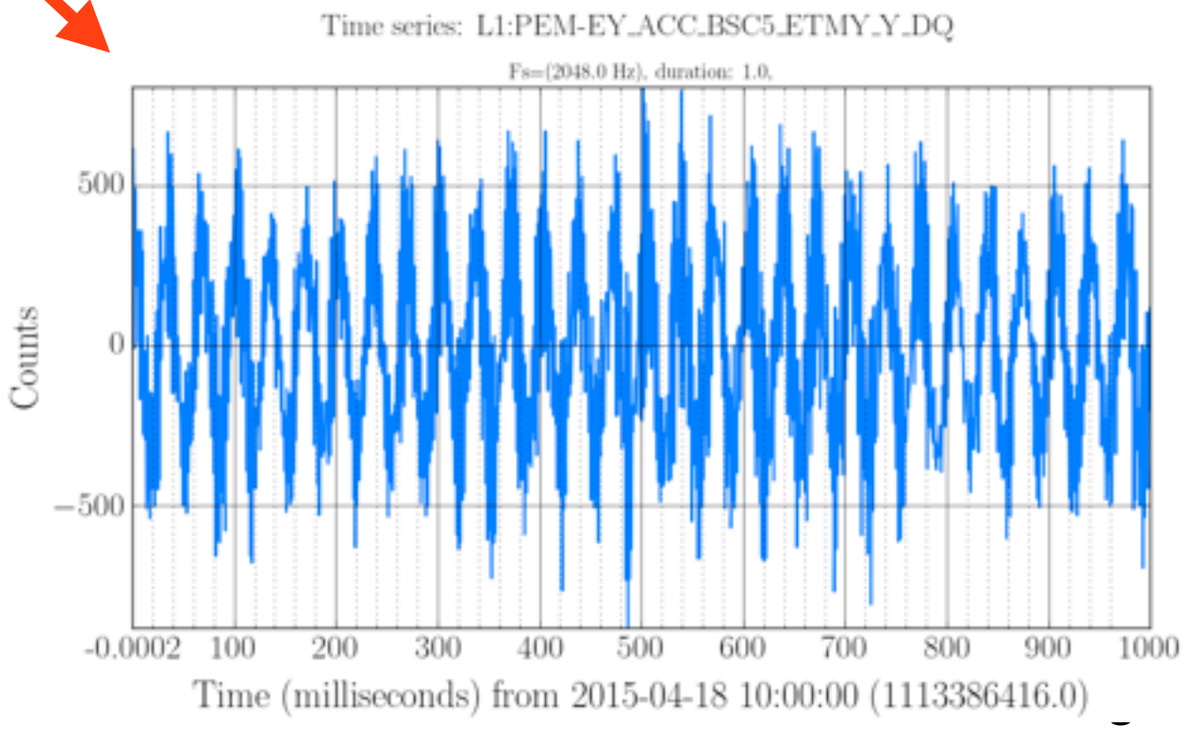
1s time series:
L1:PEM-EY_ACC_BSC5_ETMY_X_DQ [Bad]
L1:PEM-EY_ACC_BSC5_ETMY_Y_DQ [OK]
L1:PEM-EY_ACC_BSC5_ETMY_Z_DQ [Bad]

L1:PEM-CS_ACC_HAM2_PRM_Y_DQ [Ok]
L1:PEM-CS_ACC_HAM2_PRM_Z_DQ [Bad]

10s spectra:
Here. [ETMY_{X,Z} and PRM_Z look disconnected]

BSC5 : LLO - houses ETMY
HAM2: LLO - holds MC2, MMT2





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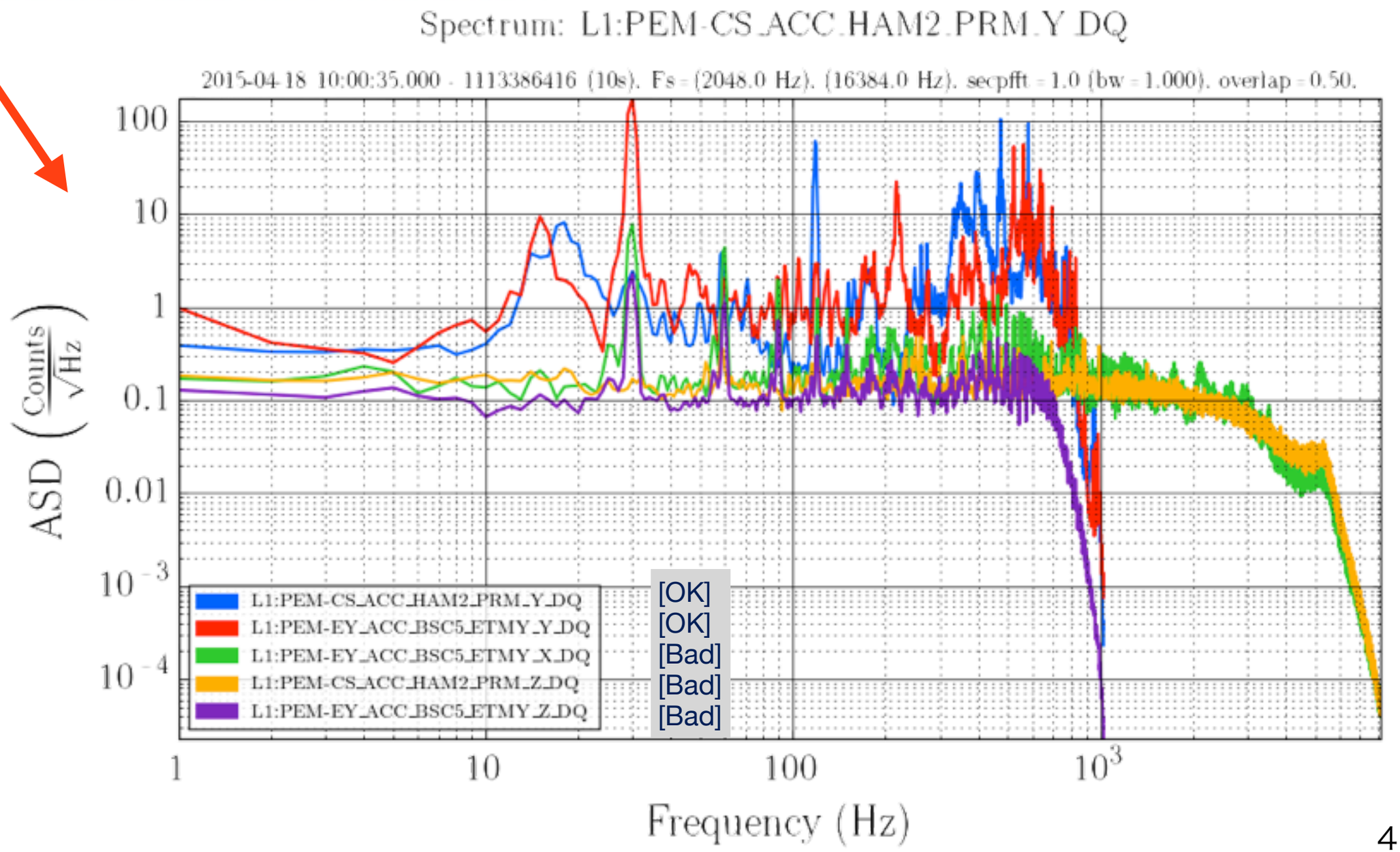


IMC-F Whistles Correspond to Numerous Frequencies

https://alog.ligo-la.caltech.edu/aLOG/index.php?callRep=17751

o The whistle glitches are observed

in segments [1112928416, 1112928448) {13 Apr 02:46:40}
and [1113030715, 1113030747) {14 Apr 07:11:39}

o The whistle glitches appeared in two site(LLO and LHO).
But its mechanism is dissimilar.

o I cannot understand whistle glitch and its mechanism but introduce it.

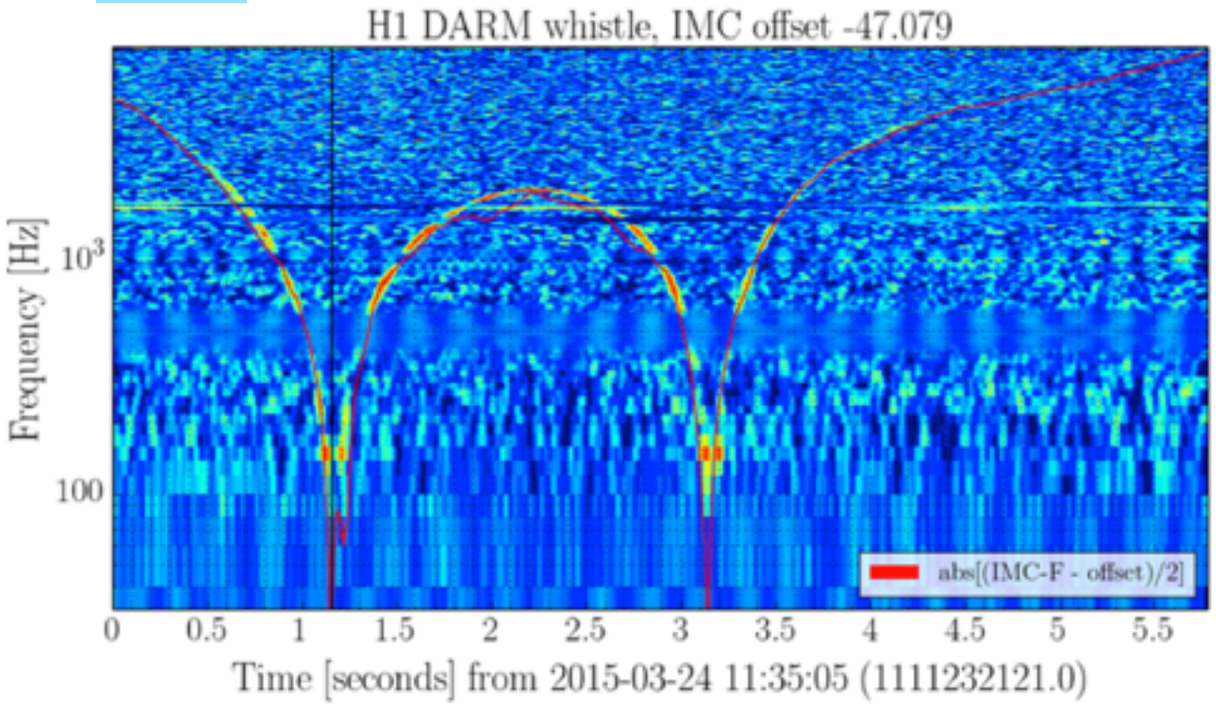
Whistle mechanism at LLO dissimilar to LHO

https://alog.ligo-la.caltech.edu/aLOG/index.php?callRep=17707

Attached is a PDF with plots of the situation at LHO, a whistle glitch at LLO during the recent lock (with ALS VCO off) and an absent glitch 13 seconds later with the same IMC-F value, and a W-shaped whistle from the lock before showing that IMC-F against a fixed oscillator is a bad match.

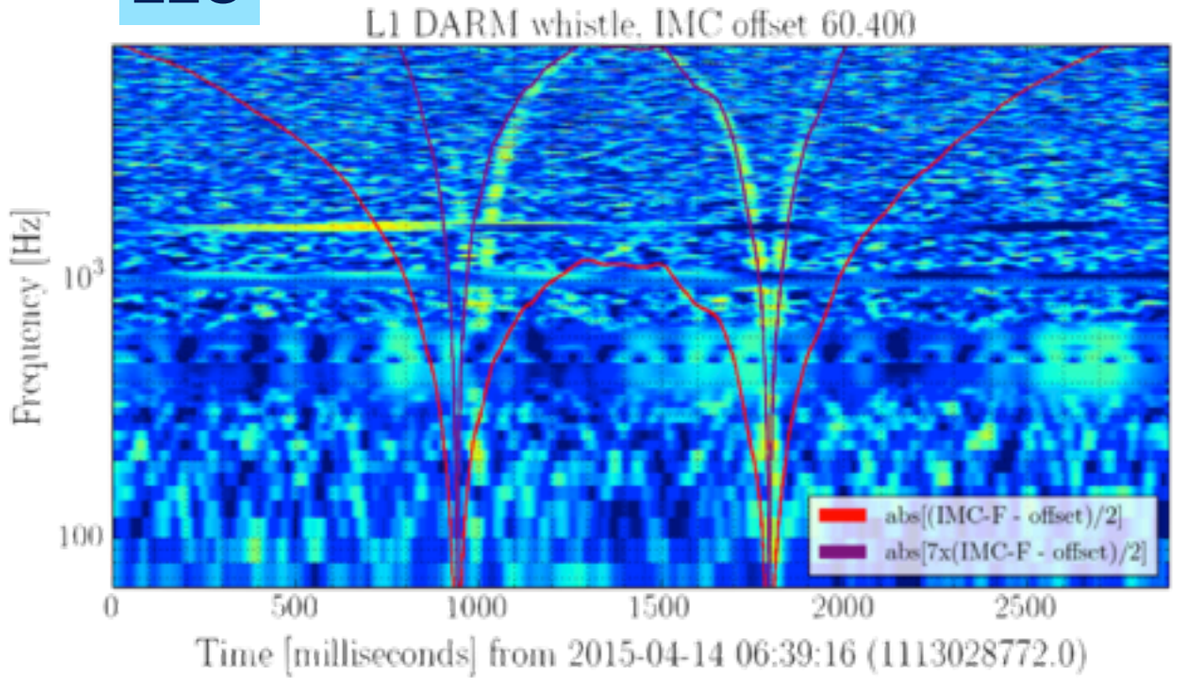
PSL : Pre-Stabilized Laser
VCO : Voltage Controlled Oscillator
ALS : Armlength Stabilization System (aLIGO ISC)

LHO



- A whistle happens whenever PSL VCO frequency crosses fixed oscillator at 79.2 MHz

LLO



- Even within a few seconds, the other oscillator drifts - see how the timing on the first whistle is off
- The track seems to follow 7 x PSL frequency - why?

https://alog.ligo-la.caltech.edu/aLOG/uploads/17707_20150414123814_comparison_H1_L1_whistles.pdf