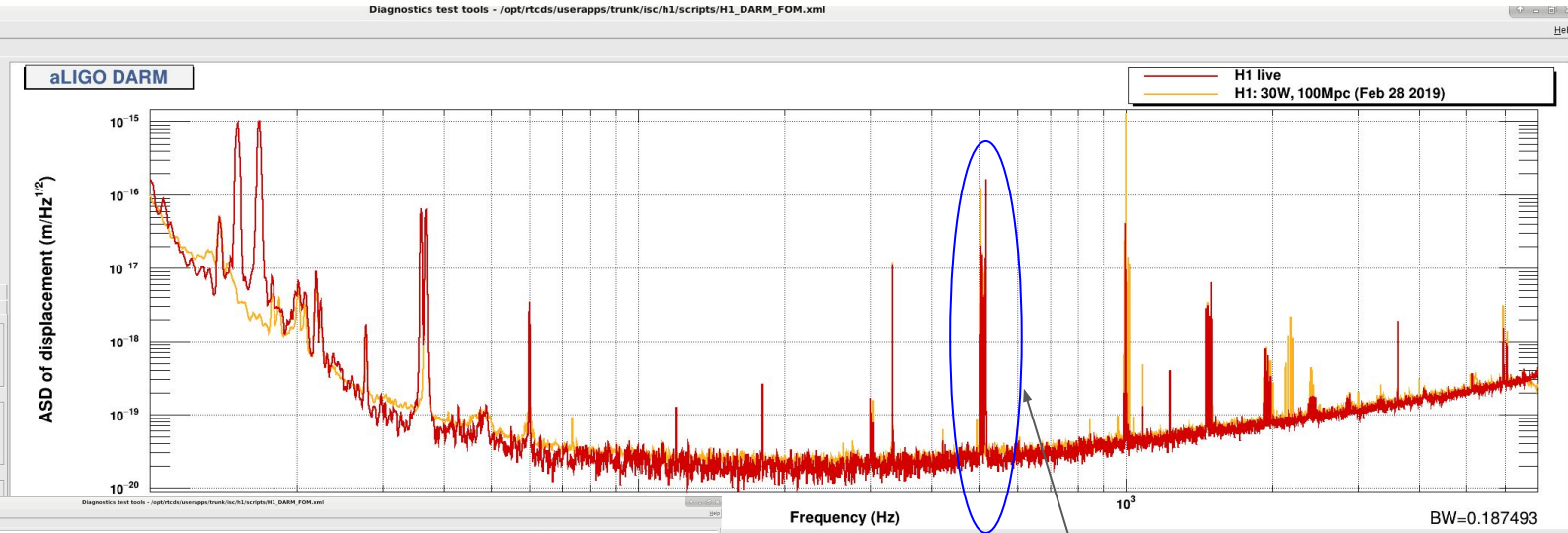


Steps for manually damping the rung-up violin modes

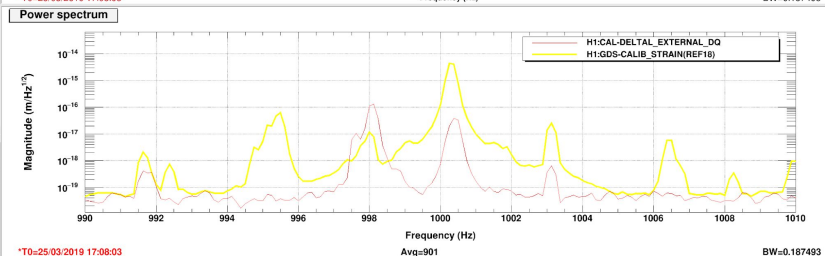
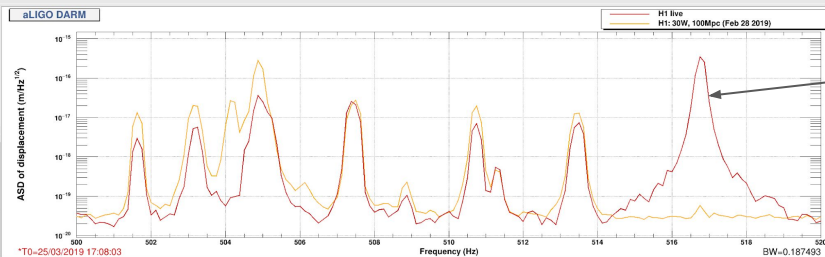
Rahul Kumar
March 2019

(1) Open the DTT and look at the aLIGO DARM

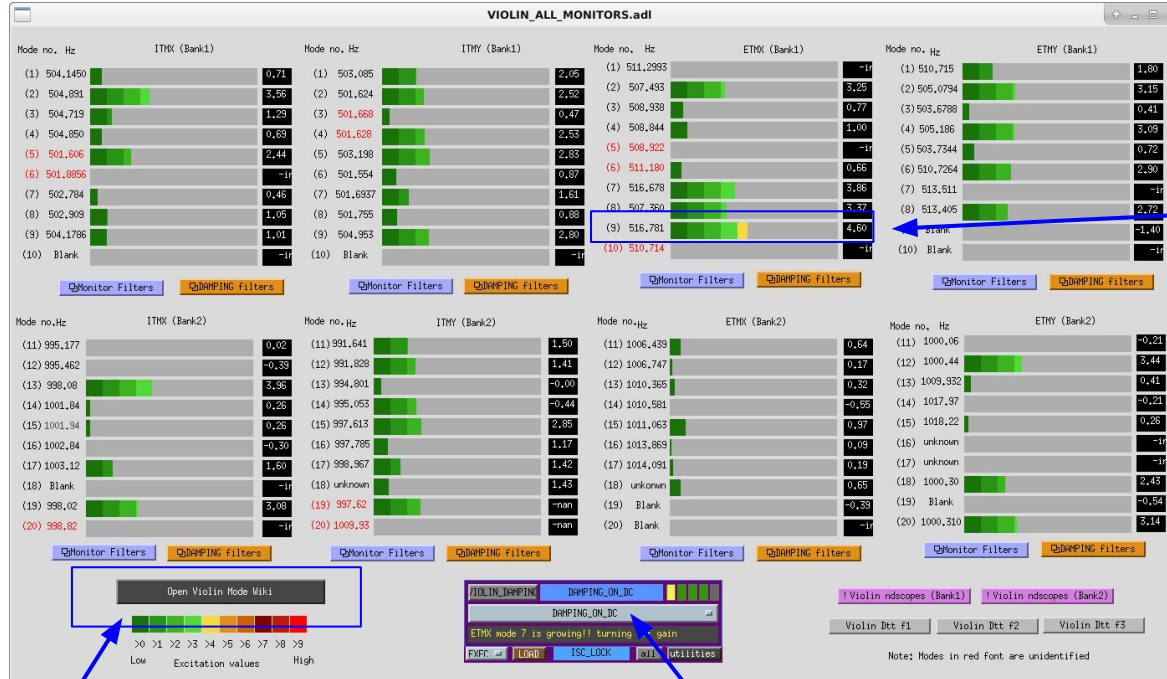


For example this mode is rung up

Zoom-in (by adjusting the freq. range) to look into the individual peaks



Open VIOLIN_ALL_MONITORS.adl (through sitemap)



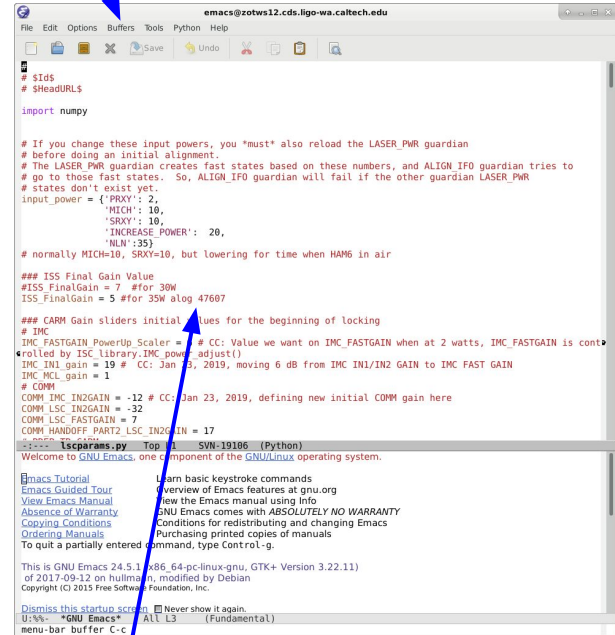
Step (2): Get the mode no. and frequency by looking at this window.

Instructions for damping

Step (3): Click here and Select DAMPING_ON_SIMPLE (this way you can manually adjust the GAIN)

Lscparam.py (for choosing the right GAIN)

Step (7) From Buffers - select lscparams.py



```

File Edit Options Buffers Tools Python Help
# Sids
# $headURLs
import numpy

# If you change these input powers, you 'must' also reload the LASER_PWR guardian
# before doing an initial alignment.
# The LASER_PWR guardian creates fast states based on these numbers, and ALIGN IFO guardian tries to
# go to those fast states. So, ALIGN IFO guardian will fail if the other guardian LASER_PWR
# states don't exist yet:
input_power = {'PRXY': 2,
               'MICH': 10,
               'SRXY': 10,
               'INCREASE_POWER': 20,
               'NLN': 35}

# normally MICH=10, SRXY=10, but lowering for time when HAM6 in air

### ISS Final Gain Value
#ISS FinalGain = 7 #for 30W
ISS FinalGain = 5 #for 35W along 47607

### CARM Gain sliders initial values for the beginning of locking
# IMC
IMC_FASTGAIN_PowerUp_Scaler = # CC: Value we want on IMC_FASTGAIN when at 2 watts, IMC_FASTGAIN is controlled by LSC.adjust()
IMC IN1 gain = 19 # CC: Jan 23, 2019, moving 6 dB from IMC IN1/IN2 GAIN to IMC FAST GAIN
IMC IN2 gain = 1
# COM
COMM IMC IN2GAIN = -12 # CC: Jan 23, 2019, defining new initial COMM gain here
COMM LSC IN2GAIN = -32
COMM LSC_FASTGAIN = 7
COMM HANDOFF_PART2 LSC IN2GAIN = 17

#----- lscparams.py -----
Welcome to GNU Emacs, one component of the GNU/Linux operating system.

Emacs Tutorial
Emacs Guided Tour
View Emacs Manual
Absence of Warranty
Copying Conditions
Ordering Manuals
To quit a partially entered command, type Control-g.

This is GNU Emacs 24.5.1 on x86_64-pc-linux-gnu, GTK+ Version 3.22.11)
of 2017-09-12 on hulla, modified by Debian
Copyright (C) 2015 Free Software Foundation, Inc.

Dismiss this startup screen. [X] Never show it again.
U: % GNU Emacs* A: L3 (Fundamental)
menu-bar buffer C-c
  
```

Step (8): Scroll down and look for VIOLIN damping settings and choose and apply the GAIN for that mode. **Now Close the python code**

Step (6): Select utilities --> edit --> opens up a python code



VIOLIN_ALL_MONITORS.adl

Mode no. Hz	ITMX (Bank1)	Mode no. Hz	ITYX (Bank1)	Mode no. Hz	ETMX (Bank1)	Mode no. Hz	ETTY (Bank1)
(1) 504,1450	0.71	(1) 503,085	2.06	(1) 511,2933	-1	(1) 510,715	1.80
(2) 504,881	3.56	(2) 501,434	2.52	(2) 507,493	3.25	(2) 505,0734	3.15
(3) 504,719	1.23	(3) 501,668	0.47	(3) 508,838	0.77	(3) 503,6788	0.41
(4) 504,850	0.69	(4) 501,628	2.53	(4) 508,844	1.00	(4) 505,186	3.09
(5) 501,606	2.44	(5) 503,198	2.83	(5) 508,922	-1	(5) 503,7344	0.72
(6) 501,8956	-1	(6) 501,554	0.87	(6) 511,180	0.66	(6) 510,7264	2.50
(7) 502,784	0.46	(7) 501,6937	1.61	(7) 516,678	3.86	(7) 513,511	-1
(8) 502,909	1.05	(8) 501,755	0.88	(8) 507,360	3.37	(8) 513,405	2.72
(9) 504,1786	1.01	(9) 504,953	2.80	(9) 516,781	4.60	(9) Blank	-1.40
(10) Blank	-1	(10) Blank	-1	(10) 510,714	-1	(10) Blank	-1

Monitor Filters DAMPING Filters

Mode no. Hz	ITMX (Bank2)	Mode no. Hz	ITYX (Bank2)	Mode no. Hz	ETMX (Bank2)	Mode no. Hz	ETTY (Bank2)
(11) 995,177	0.02	(11) 991,641	1.50	(11) 1006,439	0.64	(11) 1000,06	-0.21
(12) 995,462	-0.39	(12) 991,828	1.41	(12) 1006,747	0.17	(12) 1000,44	3.44
(13) 998,08	3.96	(13) 994,801	-0.00	(13) 1010,365	0.32	(13) 1009,932	0.41
(14) 1001,84	0.26	(14) 995,053	-0.44	(14) 1010,581	-0.95	(14) 1017,97	-0.21
(15) 1001,34	0.26	(15) 997,613	2.85	(15) 1011,063	0.97	(15) 1018,22	0.26
(16) 1002,84	-0.30	(16) 997,785	1.17	(16) 1013,869	0.09	(16) unknown	-1
(17) 1003,12	1.60	(17) 998,967	1.42	(17) 1014,091	0.19	(17) unknown	-1
(18) Blank	-1	(18) unknown	1.43	(18) unknown	0.65	(18) 1000,30	2.43
(19) 998,02	3.08	(19) 997,62	-nan	(19) Blank	-0.39	(19) Blank	-0.54
(20) 998,82	-1	(20) 1009,33	-nan	(20) Blank	-1	(20) 1000,310	3.14

Monitor Filters DAMPING Filters

Open Violin Mode Wiki

Excitation values: >0 >1 >2 >3 >4 >5 >6 >7 >8 >9 High

VIOLIN_DAMPING DAMPING_ON_DC

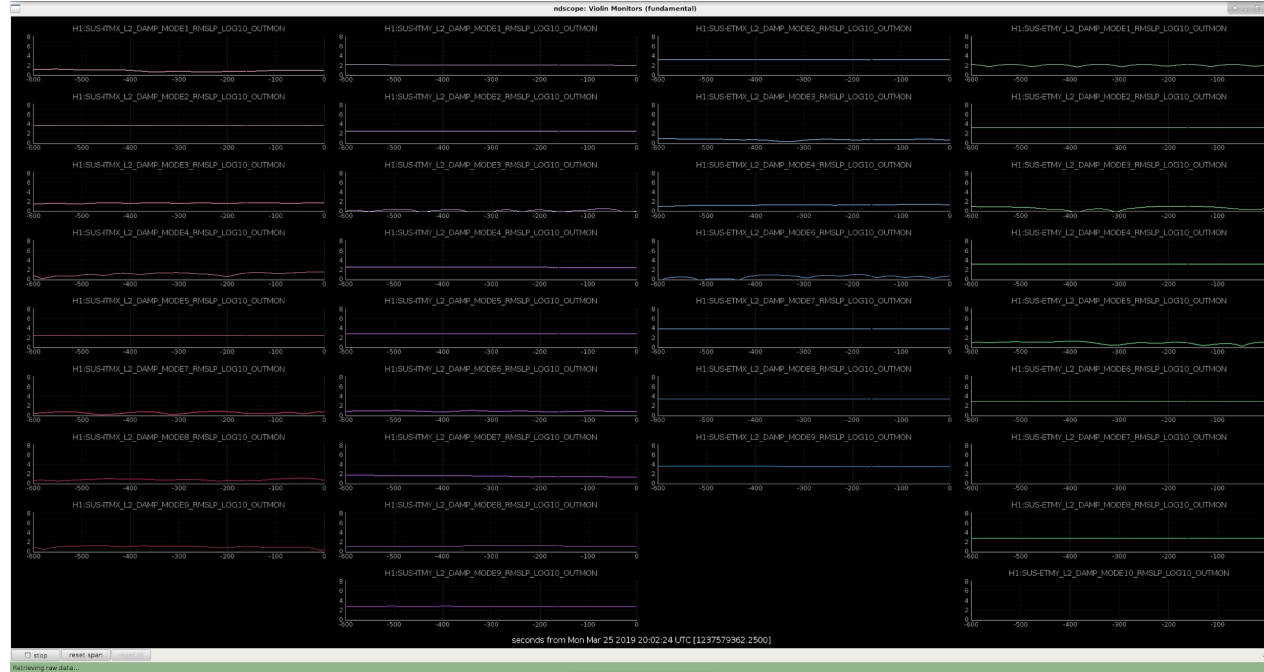
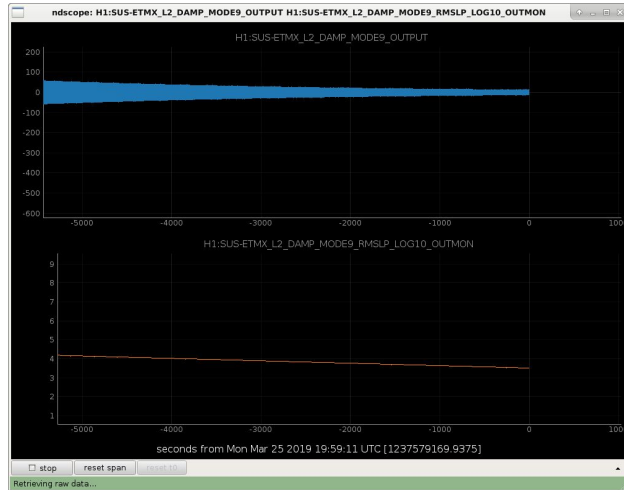
ETMX mode 7 is growing!! turning off gain

EXP LOAD IS_LOCK SHI UTILITIES

Violin Dtt f1 Violin Dtt f2 Violin Dtt f3

Note: Modes in red font are unidentified

Step (9): Open ndscope to monitor the damping (check successful or not)



Important - keep tracking other modes for any rise in excitation values - Guardian is currently under manual mode (Damping_ON_Simple) and hence it will actively **not start damping** the other rung-up modes. You need to do it manually or quickly move to Damping_ON_DC mode (next slide).

How to turn Guardian back to it's normal state?

Currently :- Damping_ON_SIMPLE



Set Guardian to IDLE state (to recollect the current status)



Set Guardian back to Damping_ON_DC (this puts it back on the watch duty, i.e actively damping the rung up modes).