To take osem spectra using matlab

open **plotquad_spectra.m** under */ligo/svncommon/SuSVN/sus/trunk/QUAD/Common/MatlabTools*
Enter the following parameters :

```
printFigs          = 1;
saveData           = 1;
ifo                = 'X1';
opticID            = 'QUAD09';
susType            = 'QUAD';
meas.sensCalib     = false;
meas.author        = 'Whoever';
automatic_gps_saving = false;
```

Enter the 2 gps times you want to start grabbing the data from (usually 500 secs of damped data and 500secs of undamped) under the variables damping_on_gps and damping_off_gps. During the damped set make sure watchdogs are disabled.

Update the figFileTag (date of measurement) as '2014-08-19_1400'

Hit Run. Calibrated spectra should plot up, mat and pdf file saved under the results directory (*/ligo/svncommon/SusSVN/sus/trunk/QUAD/X1/QUAD09/BUILD/SAGM0/Results*)

To compare spectra with QUAD08 for other quad spectra

open **plotallquad_spectra.m** under */ligo/svncommon/SusSVN/sus/trunk/QUAD/Common/MatlabTools*

add a line to the measList as follow :
'X1','QUAD09','2014-09-10_1000-'; ... % | (47) | 1a | LH0 | BOTH | Locked | PASS/ | gpstime1 | gpstime2 | | Some comments

update the useMeasts variable with the new measurement list number (47). Update the figFileTag with an appropriate title. set printFigs to 1 and sensorNoise to 1.
Comparison results will be saved under */ligo/svncommon/SusSVN/sus/trunk/QUAD/Common/Data*

To take undamped TFs measurements of main and reaction chain

open **LH0_X1_Matlab_TF.m** under
/ligo/svncommon/SusSVN/sus/trunk/Common/MatlabTools/SchroederPhaseTools

Uncomment the following lines at the end of the script (should be already uncommented) :

```
switch_dampcomm('X1','QUAD','OFF','ON')
Matlab_TFs('X1','QUAD','09','','1B','M0','wire','TFSettingsLHOQUADPhase3a');  %damping off
Matlab_TFs('X1','QUAD','09','','1B','R0','erm','TFSettingsLHOQUADPhase3a');   %damping off
switch_dampcomm('X1','QUAD','ON','OFF')
```

Run the script. It should turn off damping, start M0 drive, then R0 drive and finally turn damping on again.

Matfile results (frd structure) should be saved under
/ligo/svncommon/SusSVN/sus/trunk/QUAD/X1/QUAD09/BUILD/SAGM0/Data for the main chain

/ligo/svncommon/SusSVN/sus/trunk/QUAD/X1/QUAD09/BUILD/SAGR0/Data for the reaction chain

Result files should be named similarly as this quad08 result, with start time of measurement as the first part (year-month-day-gps_[...])

2014-06-28-1087994899_X1SUSQUAD08_R0_0p01to50Hz_tf.mat

To plot the matlab tfs :

Open plotquad_matlabtfs.m under */ligo/svncommon/SusSVN/sus/trunk/QUAD/Common/MatlabTools*

Modify the input parameters as follow, and run the script.

```
PrintFigs = 1;
saveData  = 1;
printDiagDOFsOnly = 1;
plotFlag  = false;
ifo            = 'X1';
quadID         = 'QUAD';
quadNum        = '09';
buildNum       = '';
sagLevel       = 'R0';  (or M0)
buildType      = 'erm'; (or wireloop)
meas.yyyymmdd   = '2014-06-27';  CF date in the RESULT FILE NAME
meas.time       = '1087961738';       CF gps time in the RESULT FILE NAME
meas.sensCalib  = true;
meas.author     = 'whoever';
isDamped        = 0;
```

This script will save pdf plots and matfiles of a calibrated results + model structure under */ligo/svncommon/SusSVN/sus/trunk/QUAD/X1/QUAD08/BUILD/SAGR0/Results*

To plot comparison of the tf with other quads :

Open plotallquad_tfs.m under */ligo/svncommon/SusSVN/sus/trunk/QUAD/Common/MatlabTools*

update the measList with a line as follow (modify relevant parameters as date and measurement numbers)

```
'X1', 'QUAD09',  'BUILD',   'wireloop',       'erm','2014-06-27','2014-06-27','MATTF' ;... %(365,366)  | QUAD03, BUILD03
|  (ETM) |    1B     |  S.S.  |   OFF   | inc. |          |
```

update the useMeasts.M0 and useMeasts.R0 variables with the correct measurement numbers for comparison (odd numbers for main chain, even numbers for reaction chain). When doing a comparison, it is important to compare apples with apples, in case of QUAD09, with other wireloop quads (QUAD08) for eg.

Update the pringFigs variable if you want to save the pdfs under */ligo/svncommon/SusSVN/sus/trunk/QUAD/Common/Data*

with the figFileTage as the pdf file_name

Don't forget to svn commit the plotall comparison scripts (spectra and tfs), since the measurement list is shared with LLO !

To start iop and sus models in staging building (in case it needs to be restarted)

-from the X1 staging building workstation, connected as controls-

Open a terminal and type the following commands :
ssh bscteststand2
cd /opt/rtcds/tst/x1/scripts

open the quad sitemap from the terminal type sitemap2. open the quad overview screen. open the X1IOPTSTSUS1 GDS TP screen.

Run under the terminal
./startx1ioptstsus1

Quickly hit the burt button right after the command

Open the X1SUSQUAD GDS TP screen
Then type on the terminal :
./startx1susquad

Quickly hit the burt button right after the command

Other good source of documentation for testing is the opsManual :

https://awiki.ligo-wa.caltech.edu/aLIGO/Suspensions/OpsManual/Testing