
PROGRESS ON S1 INTERSITE TRANSIENTS STUDY

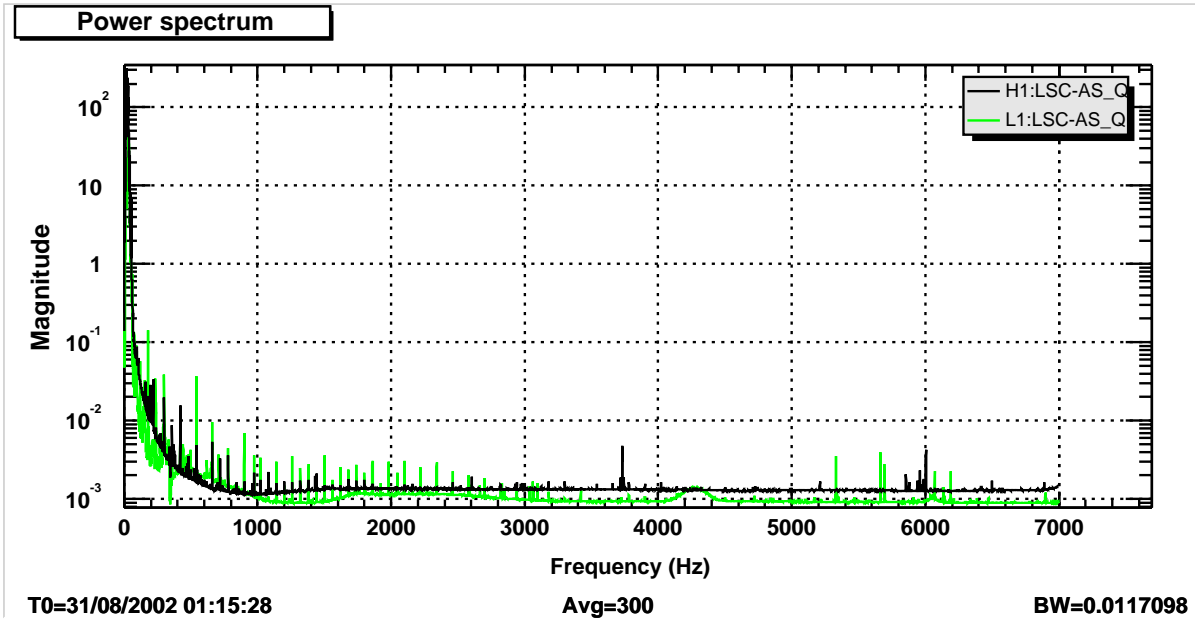
The intersite RDS (frames containing AS_Q and PEM channels for both sites) has been produced for all but the last 2 days or so of S1

**The intersite RDS is available from fortress in:
`/ldasdisks/S1cross/frames`**

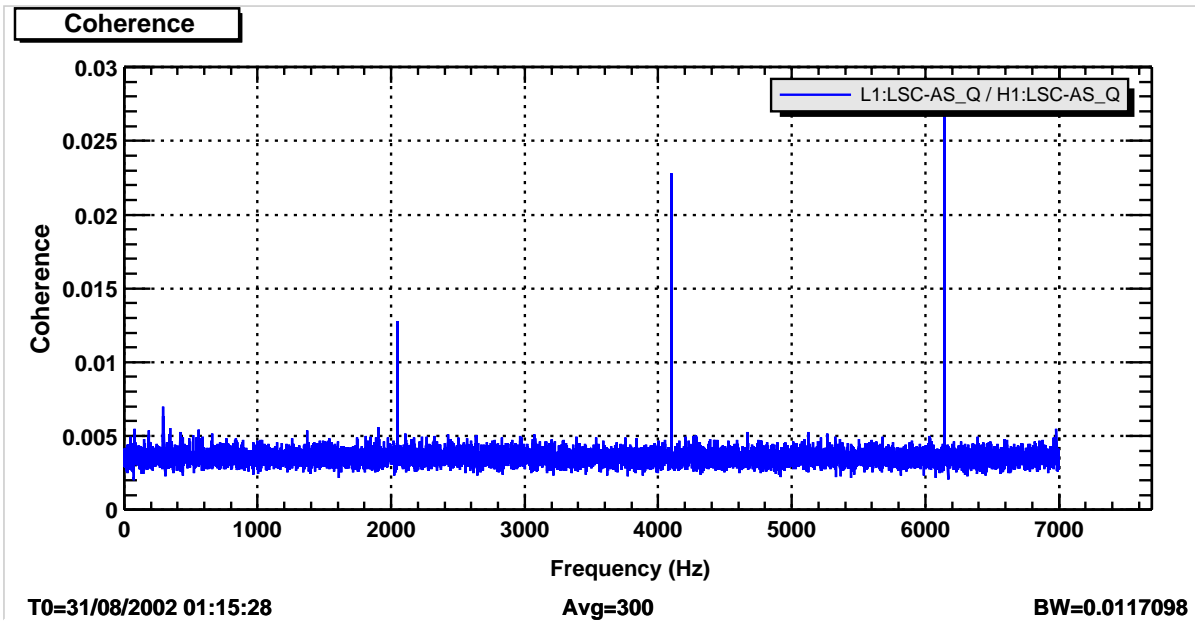
Preliminary coherence studies of the primary channels revealed mainly self-inflicted coherence between sites (e.g. 2048 Hz and harmonics, 1 Hz and harmonics, 16 Hz and harmonics, 100 Hz and harmonics).

Preliminary runs of multi-channel coincidence code have not yet revealed greater than chance coincidence between glitches detected at each site.

AS_Q L1 and H1

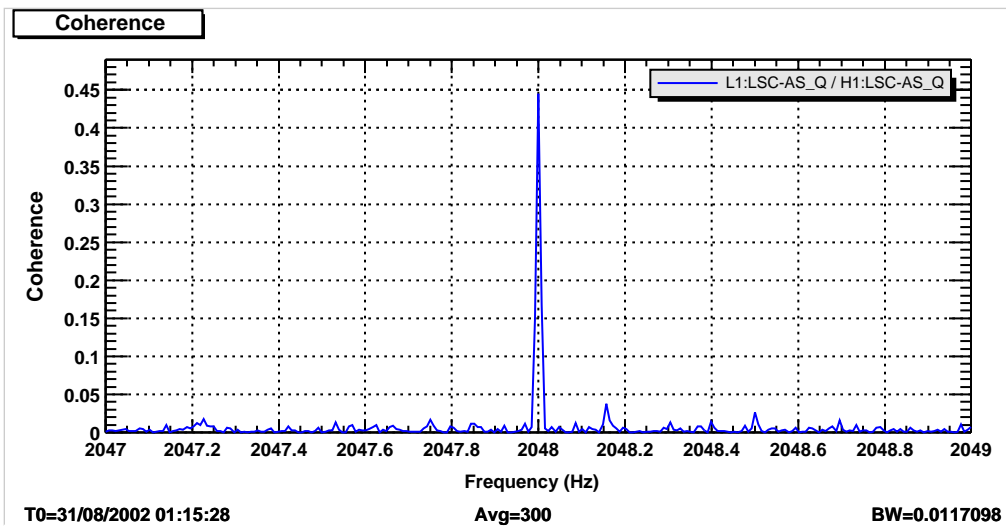
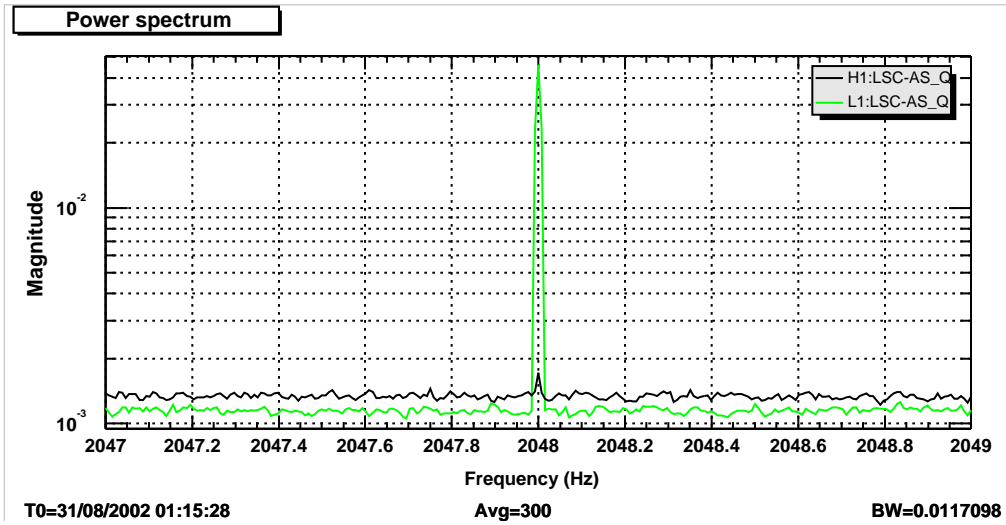


Coherence over 10.7 hours



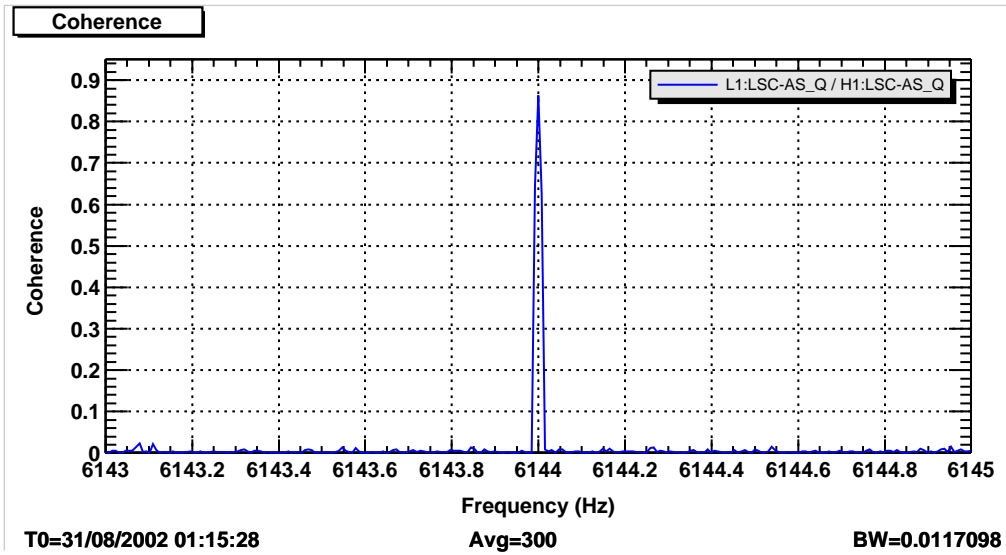
(due to dtt binning, coherence values inaccurate for BW)

L1 and H1 AS_Q , peak at 2048

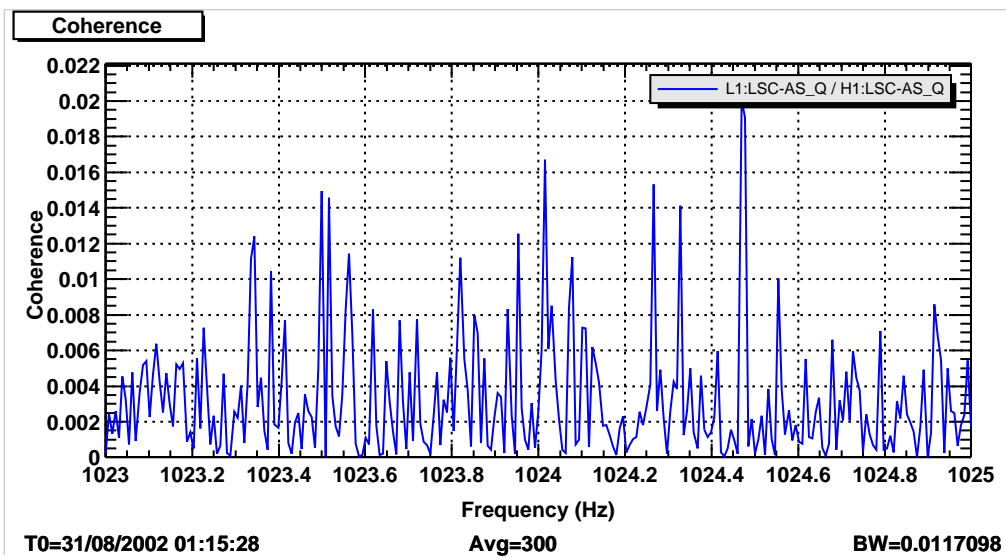


these coherence values are accurate (no re-binning)

L1 and H1 AS_Q coherence at 6144

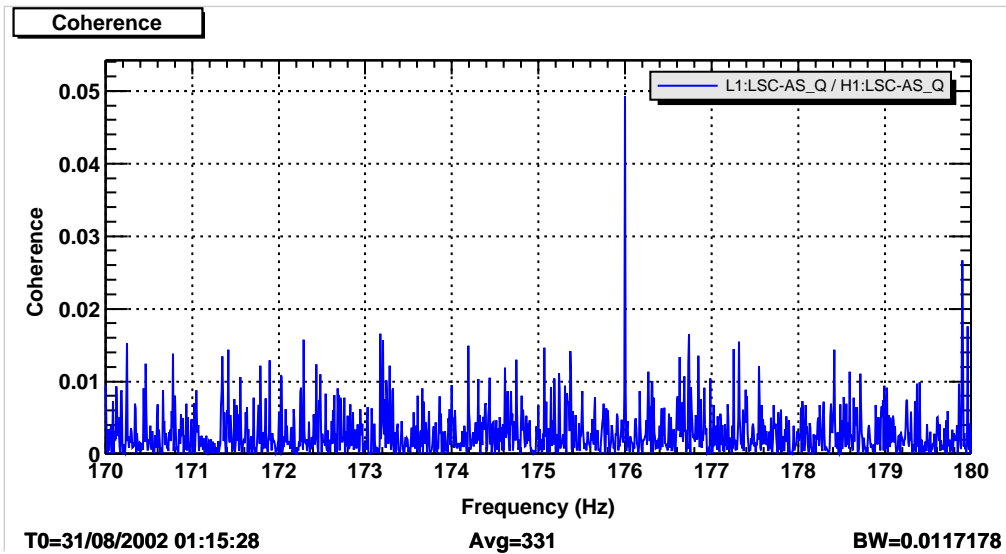
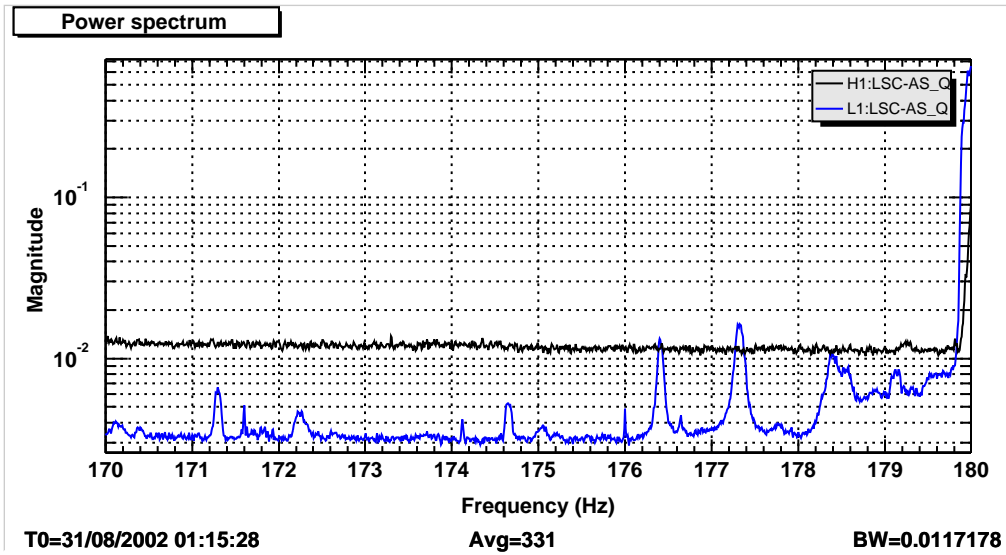


but not at 1024



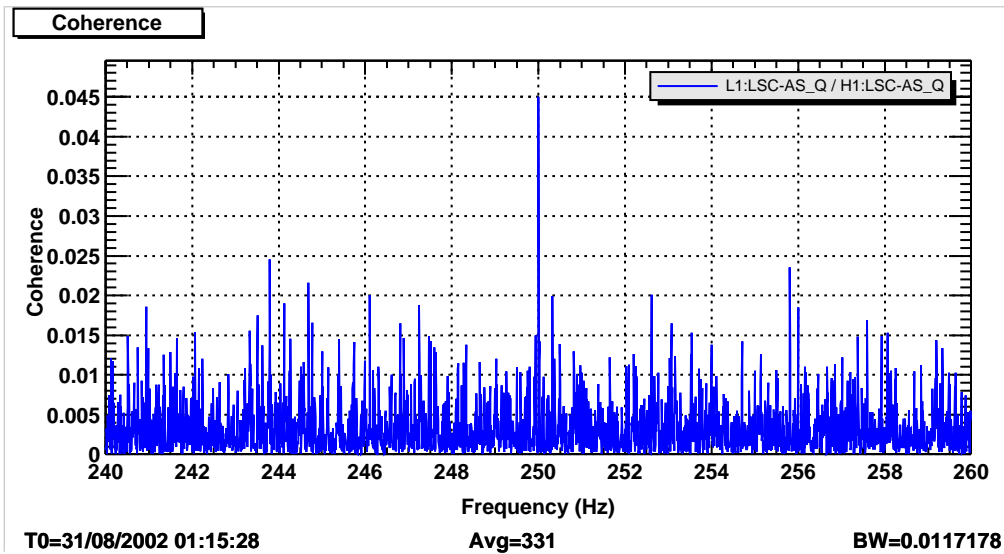
2048 and harmonics

L1 and H1 AS_Q coherence at 176

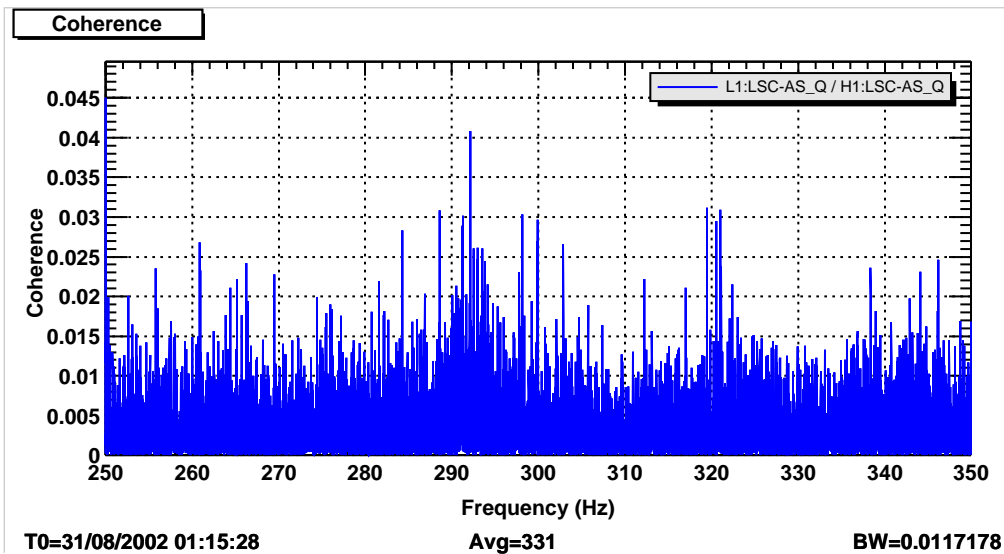


only about 10.7 hours of data - could be a good clock chip

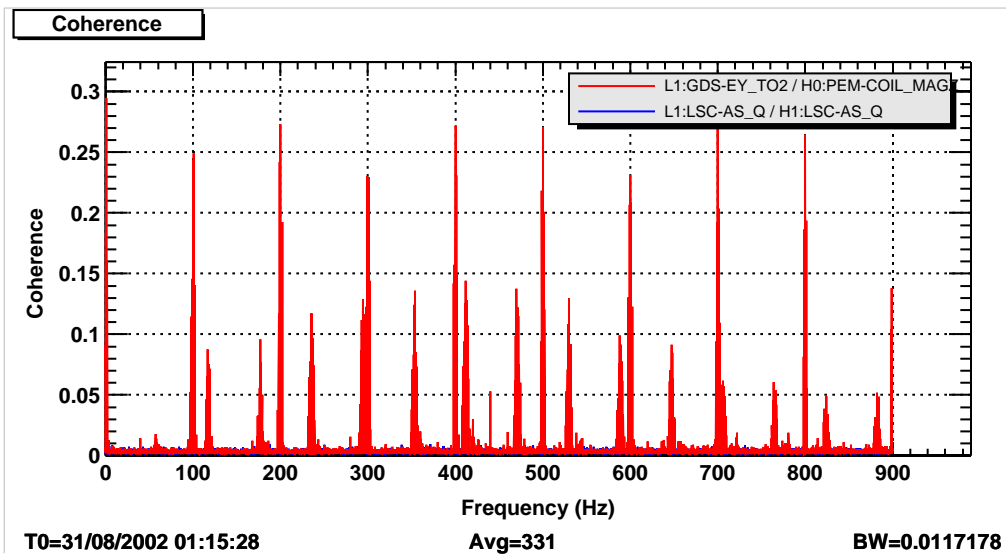
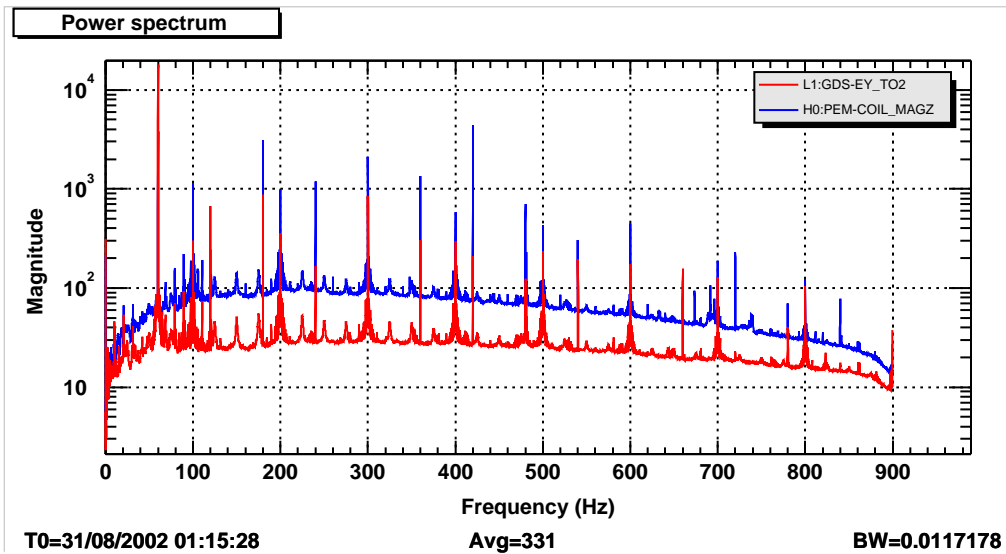
L1 and H1 AS_Q coherence at 250



another good clock?
and 290?

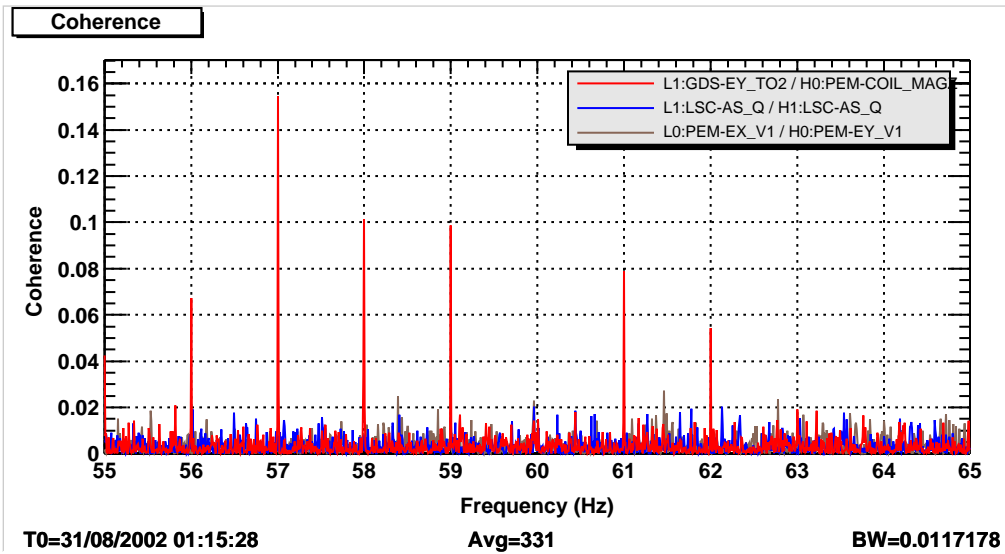
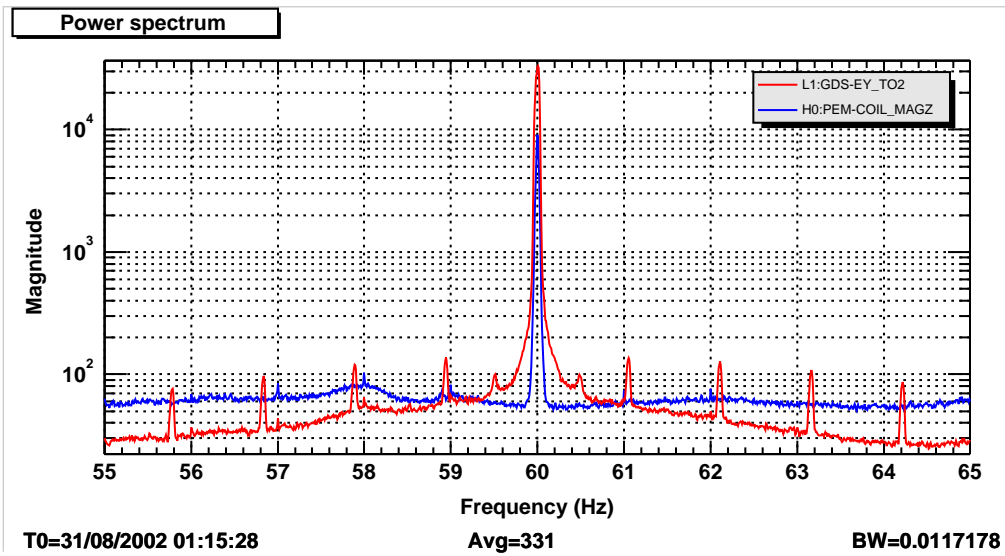


LLO and LHO coil magnetometers coherent at 100 and harmonics

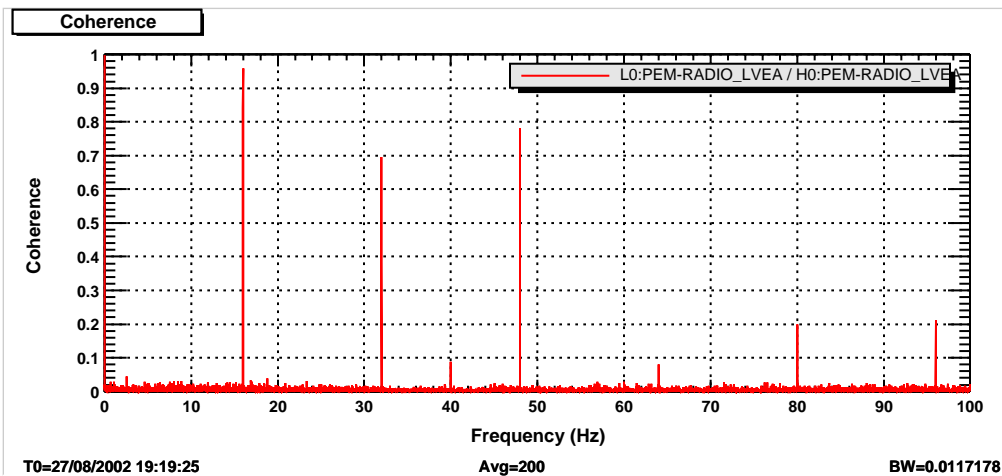
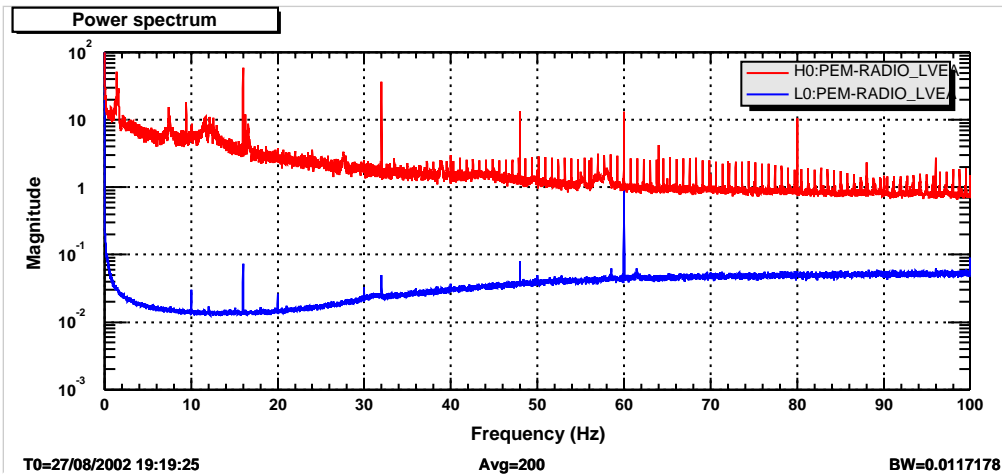


Coherence inaccurate for BW due to binning

LHO and LLO coil magnetometers

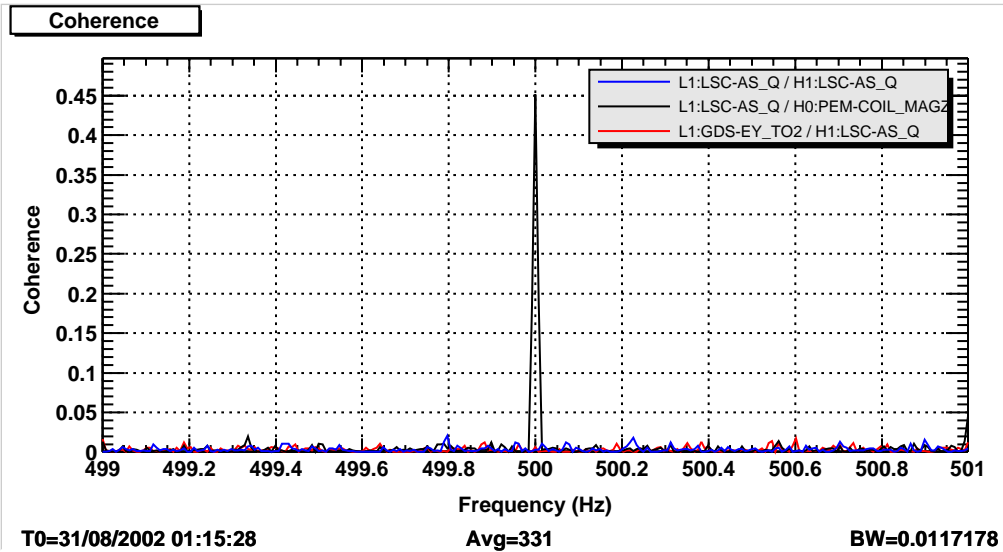
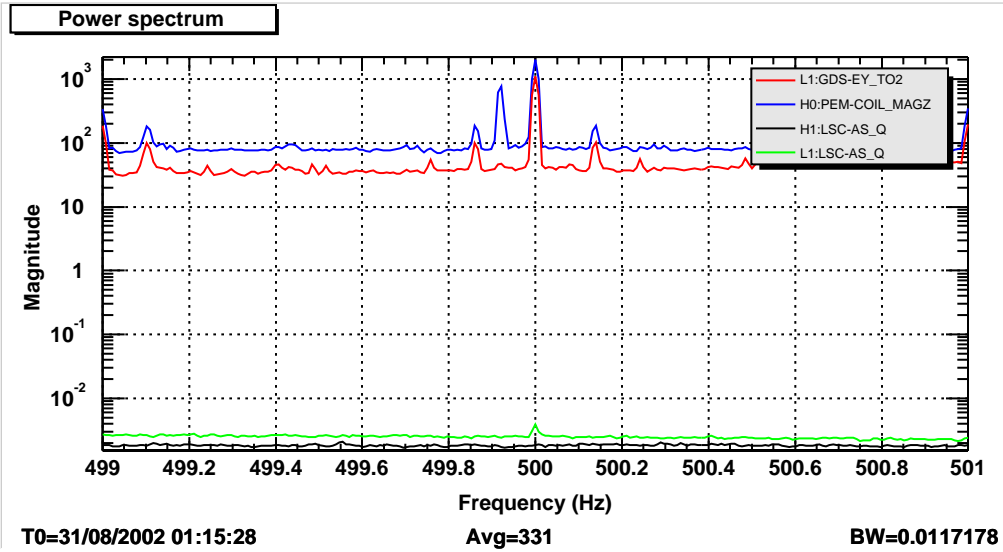


LLO and LHO radio channels: coherence at 16 Hz and harmonics (LLO radio not working)



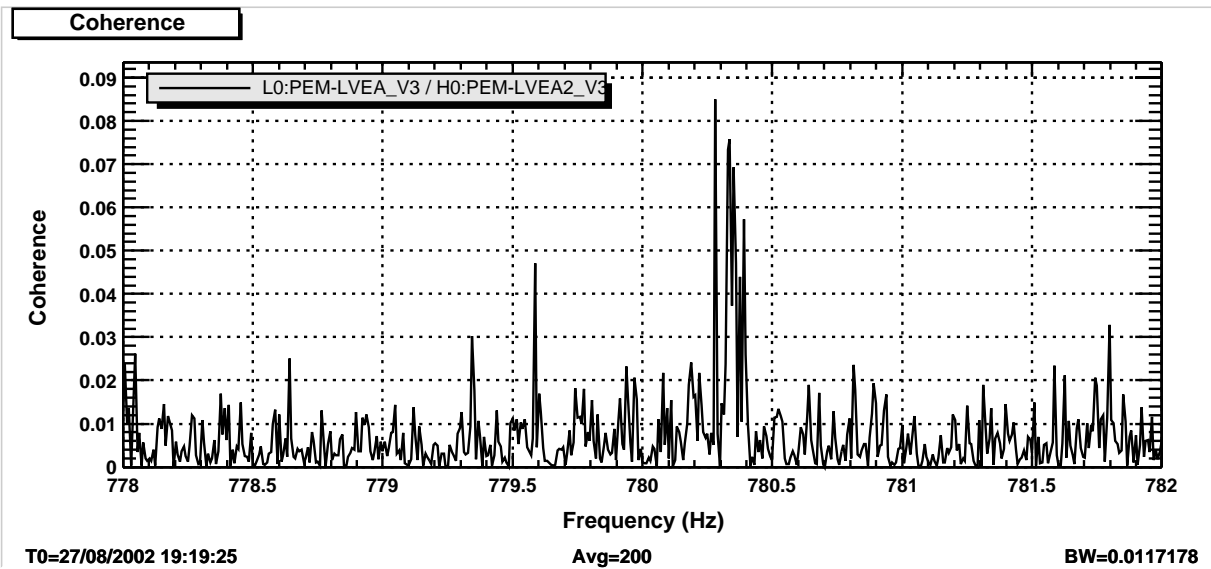
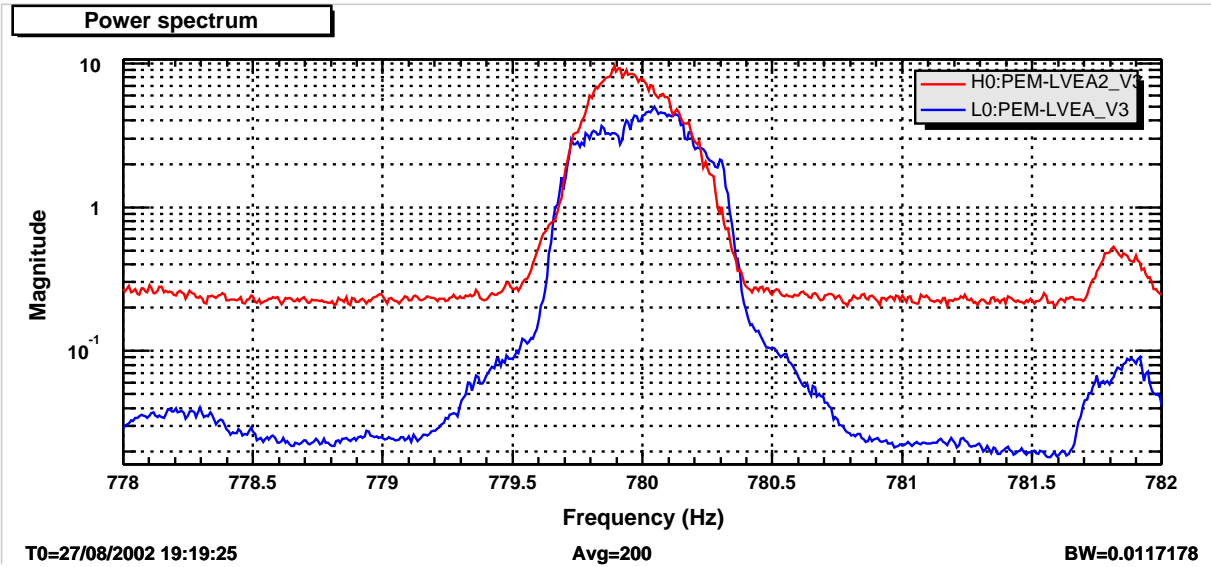
Intersite coherence at 16 Hz and harmonics also found on several pairs of Bartington magnetometer channels

Coherence at 500 Hz between LHO coil magnetometer and LLO AS_Q



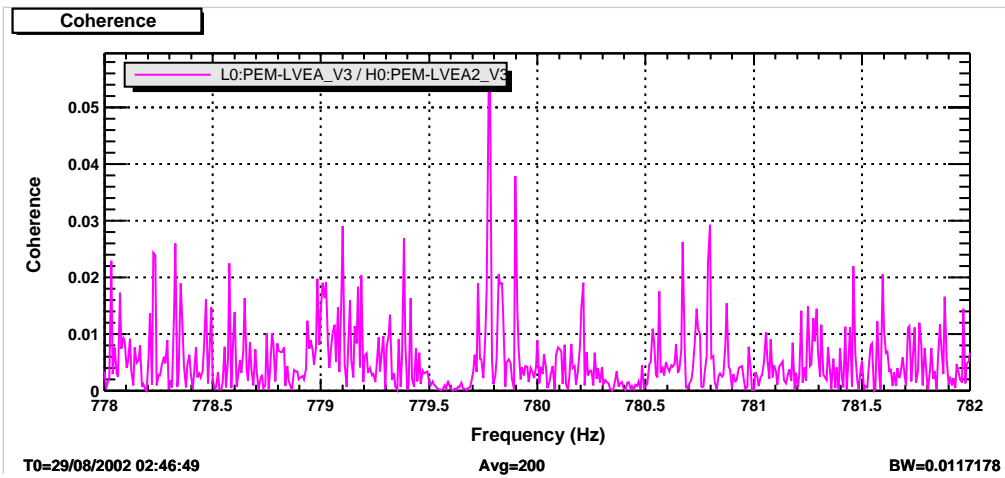
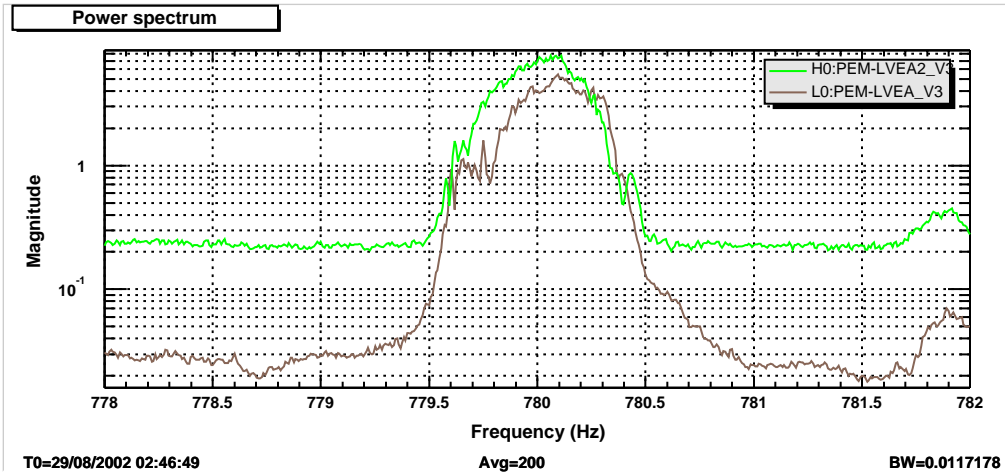
a mystery but probably self-inflicted.

LLO and LHO voltage monitors: persistent coherence near edge of peak



About 7 hours of data

LLO and LHO voltage monitors



Stand alone algorithm compares multi-channel coincidence for aligned and misaligned time series

3.5 Highest threshold

560 filter band

580 filter band

4 filter order

1 not used

8 number of channels

3 number of LLO channels that must exceed threshold to produce event

3 number of LHO channels that must exceed threshold to produce event

L0:PEM-EX_V1

L0:PEM-EX_V2

L0:PEM-LVEA_V3

L0:PEM-LVEA_V1

H0:PEM-MY_V1

H0:PEM-MY_V2

H0:PEM-LVEA2_V2

H0:PEM-LVEA2_V1

Total number of seconds: 42840

Threshold	Events	Off Second Events	(on - off)	sqrt(on+off)
3.5	0	0	0	0
3.3	0	0	0	0
3.1	2	1	1	1.73205
2.9	4	5	-1	3
2.7	23	20	3	6.55744
2.5	118	109	9	15.0665
2.3	632	675	-43	36.1525
2.1	3344	3406	-62	82.1584
1.9	13593	13649	-56	165.052

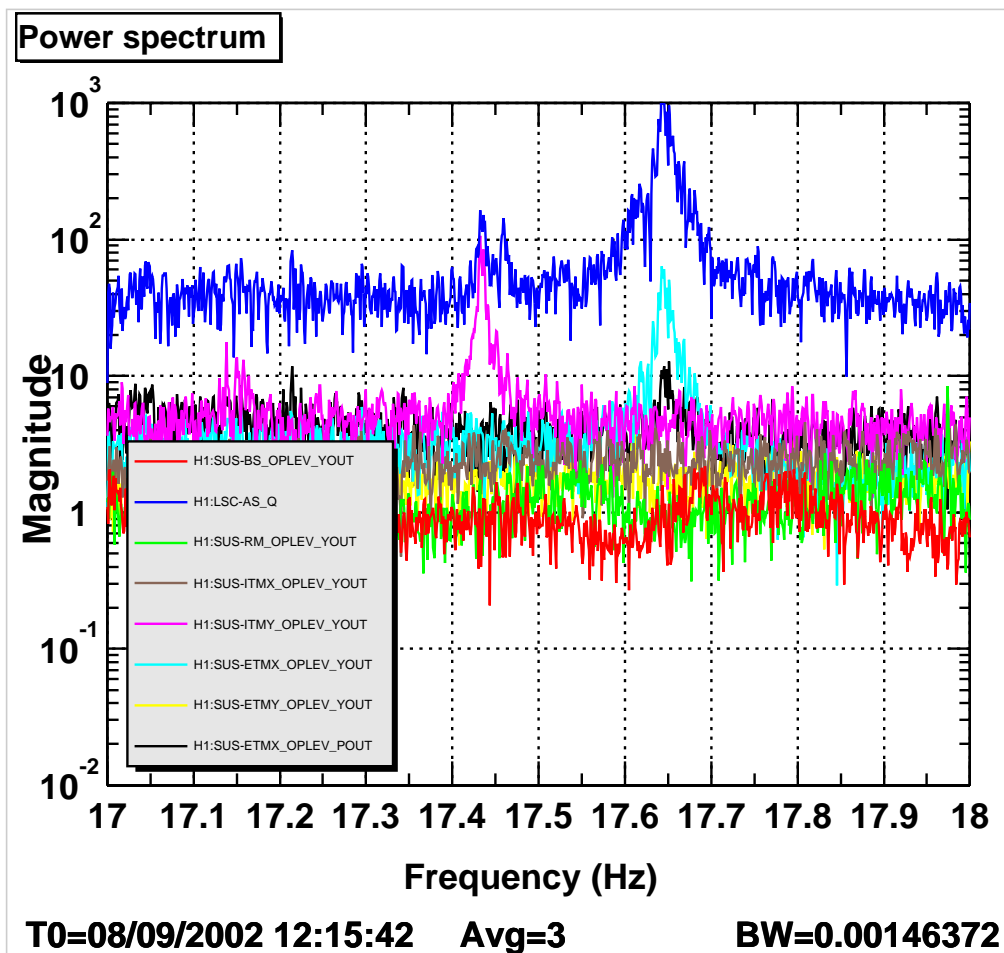
Nothing seen yet..... 13

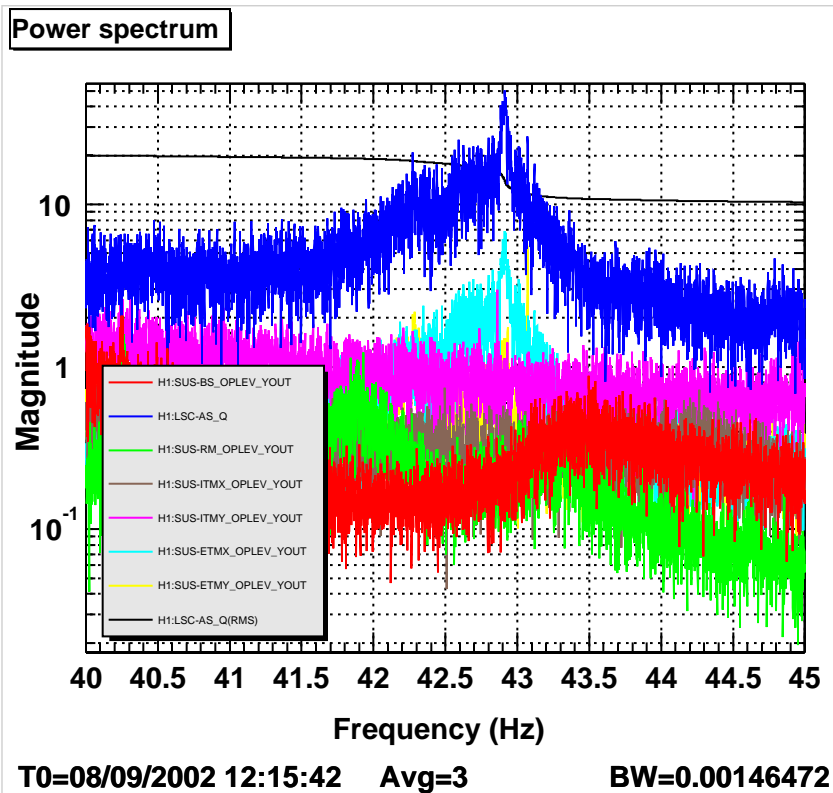
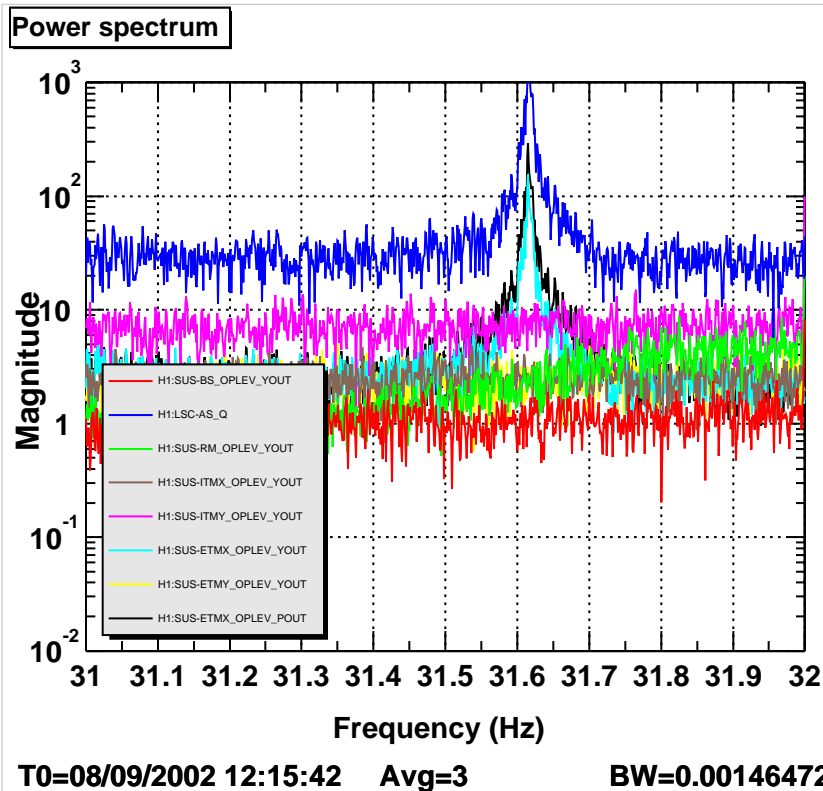
**PROGRESS ON S1 ENVIRONMENTAL DISTURBANCES
(with a focus on loose bolts)**



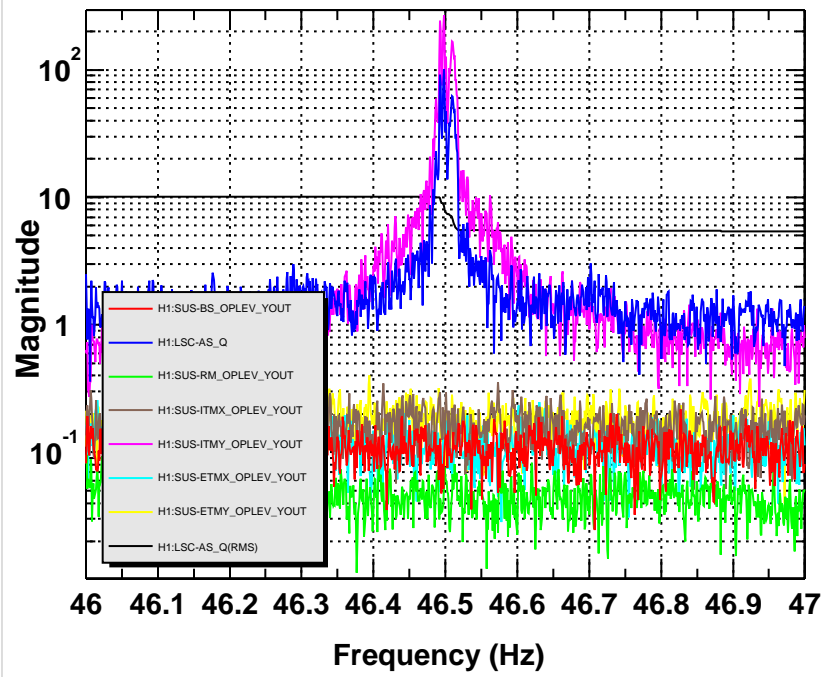
Optical Levers

During S1 many peaks in H1 AS_Q matched peaks in optical lever servo signals



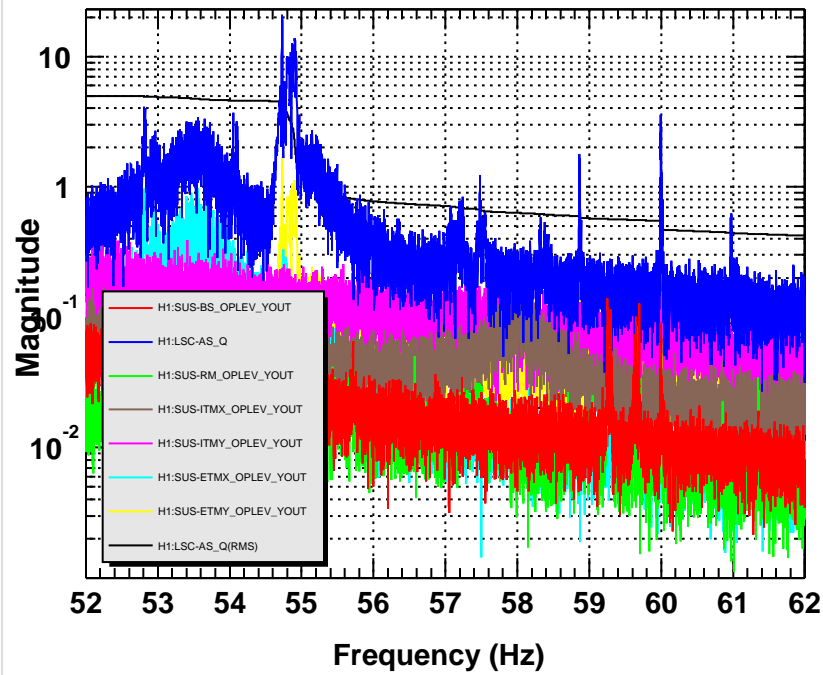


Power spectrum



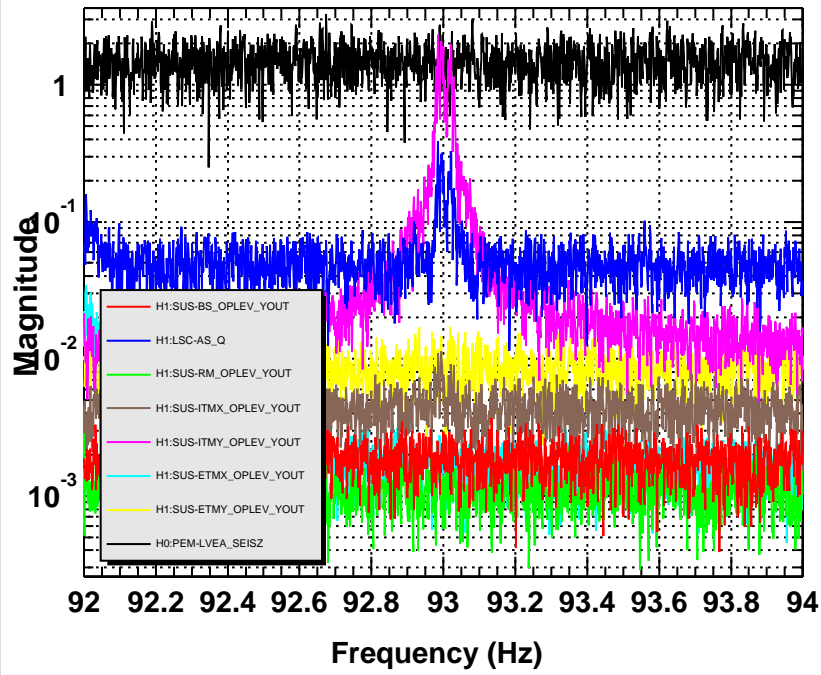
T0=08/09/2002 12:15:42 Avg=3 BW=0.00146472

Power spectrum



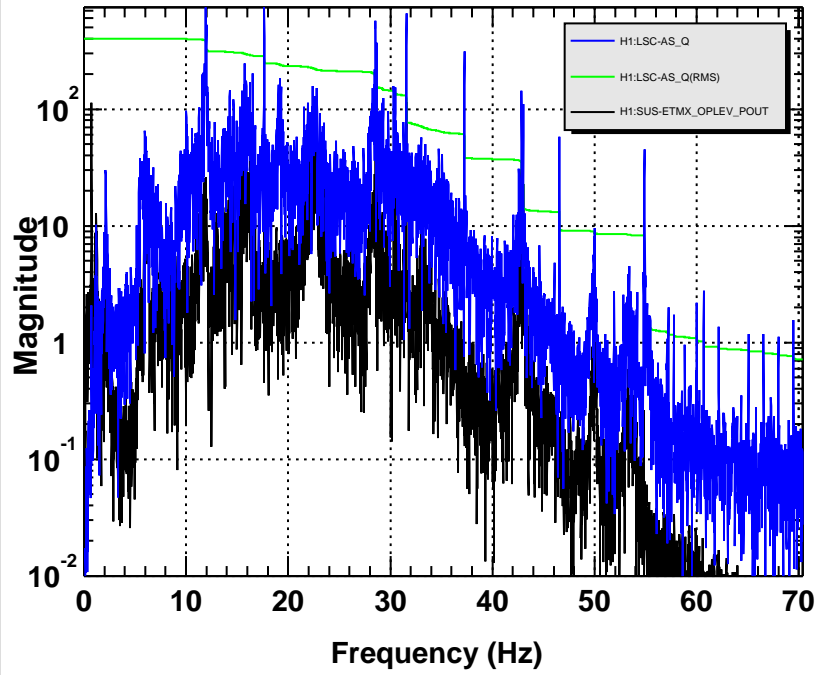
T0=08/09/2002 12:15:42 Avg=3 BW=0.00146472

Power spectrum

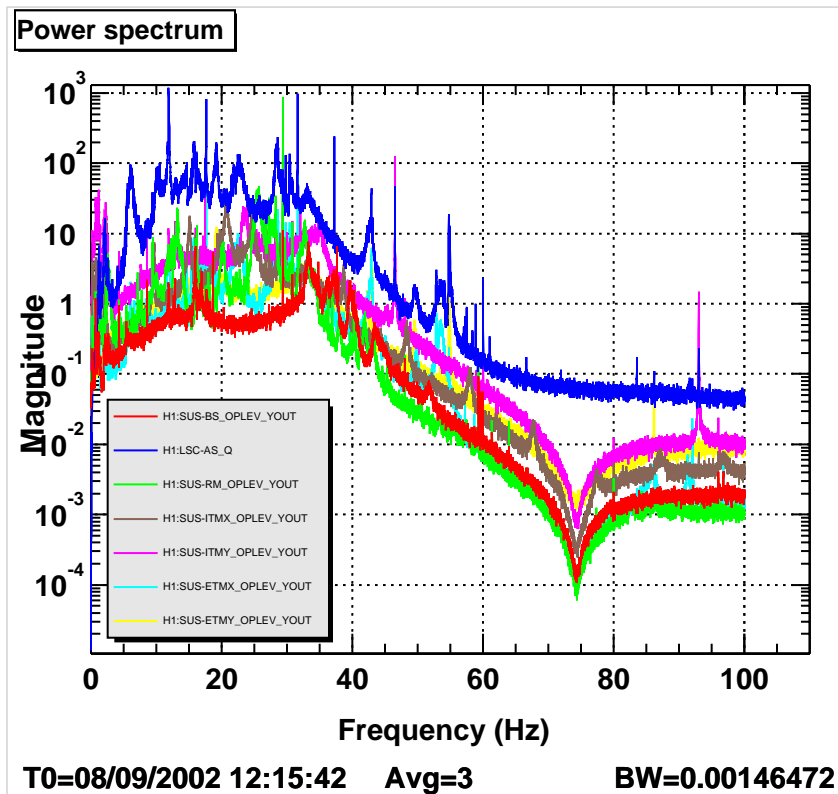


T0=08/09/2002 12:15:42 Avg=3 BW=0.00146472

Power spectrum



T0=06/09/2002 10:30:00 Avg=3 BW=0.0234367



Summary:

ETMX op. lev.: 17.65, 31.6, 43.

ETMY op. lev.: 43 and about 53

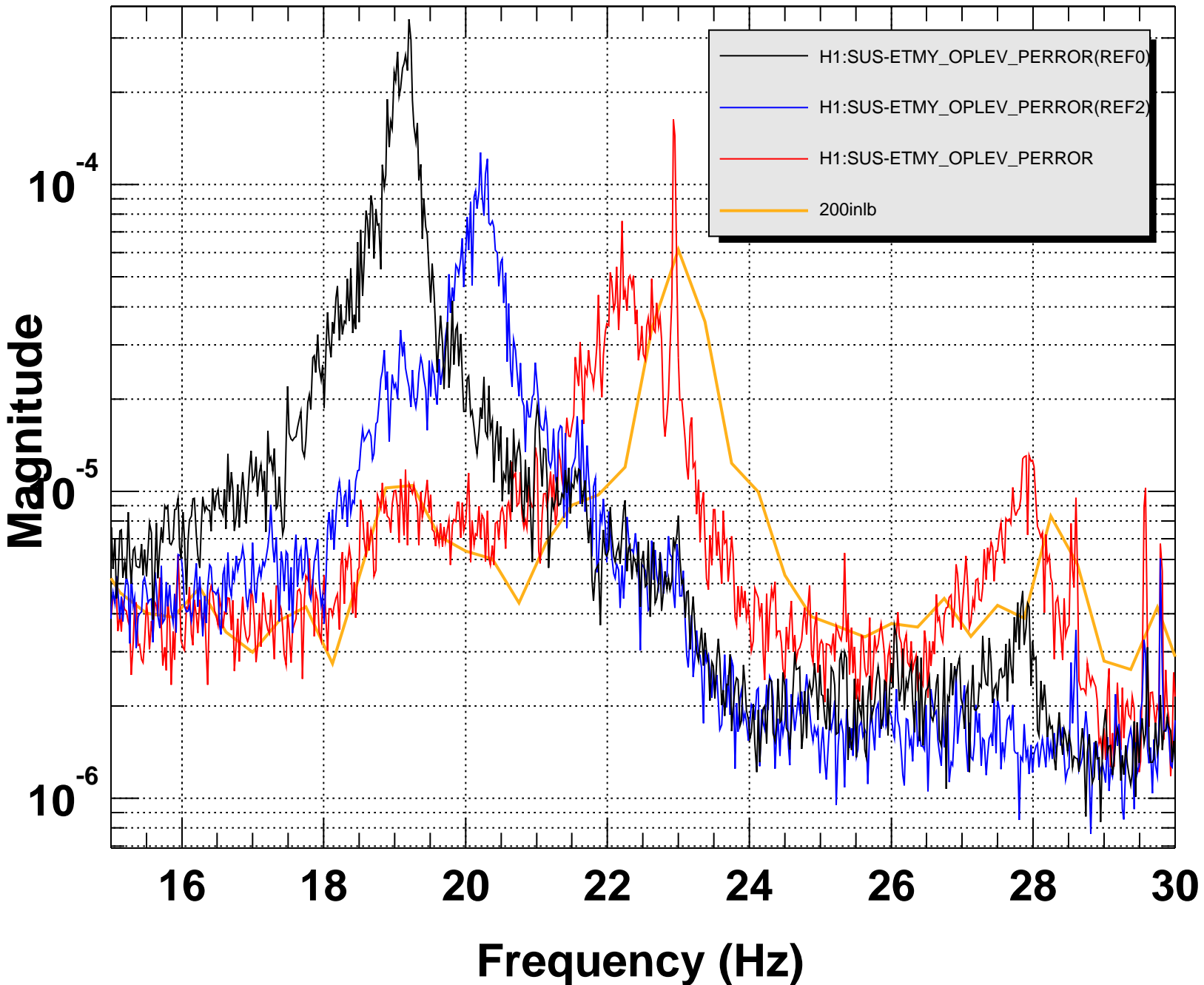
ITMY op. lev.: 29.35, 46.5, 93

ITMX op. lev.: 29.35

John Z. and I showed that ETMY op. lev. was responsible for some major non-stationarity that he had detected.

Tightening bolts moved and reduced peaks:

Power spectrum



*T0=12/11/2002 04:23:33 *Avg=4

*BW=0.0117178

A number of people have been working on the optical lever problem, new servo filters have been installed and we are working out schemes to reduce the amplitudes of the resonances

LN2 DEWARS AND LOCK LOSS



Large 1-2 per day MX seismic transient knocked us out of lock nearly every time during S1

Set up an accelerometer about 30m +X of MX station and one -X of the building. Three total including the one in the building

Struck various candidates with a padded 4x8 piece of lumber to get propagation delay times to each accelerometer.

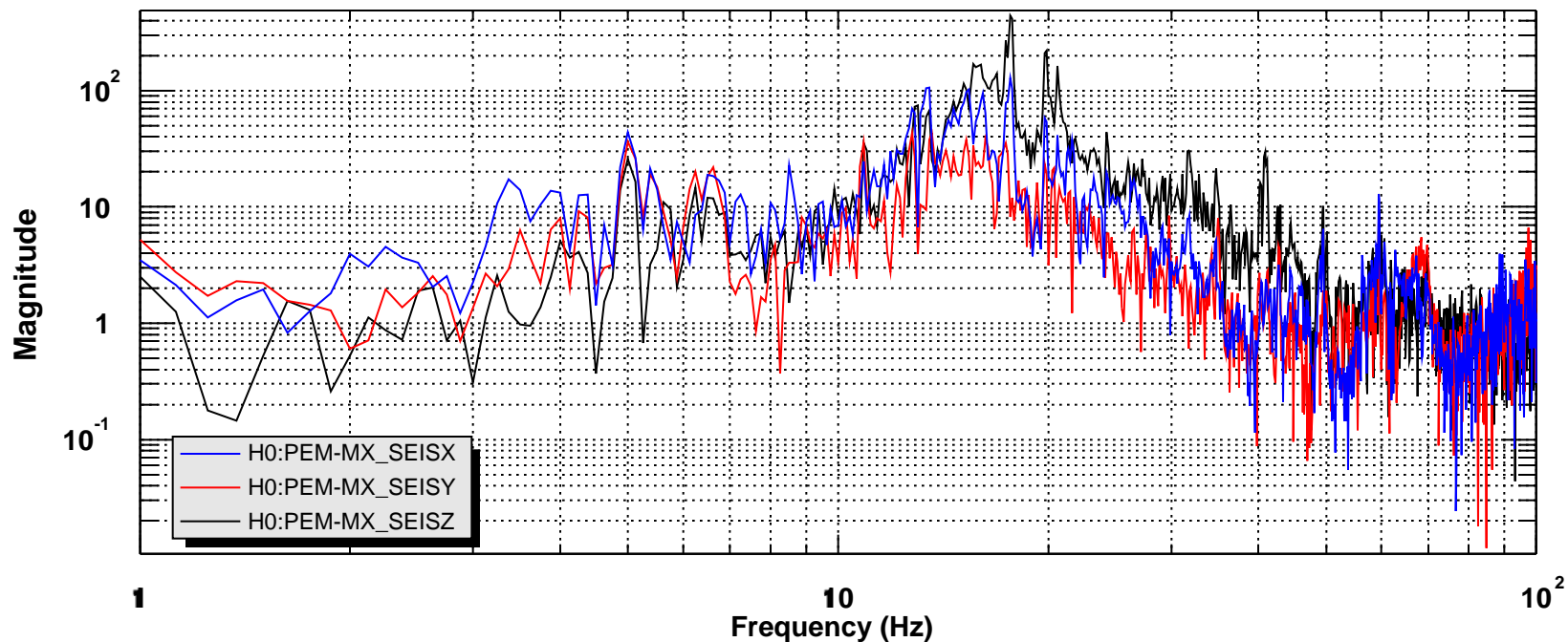
Propagation delays from the transient matched those for the struck +X LN2 dewar. Accelerometer on dewar confirmed.

Transient went away after John W. and Kyle tightened bolts.

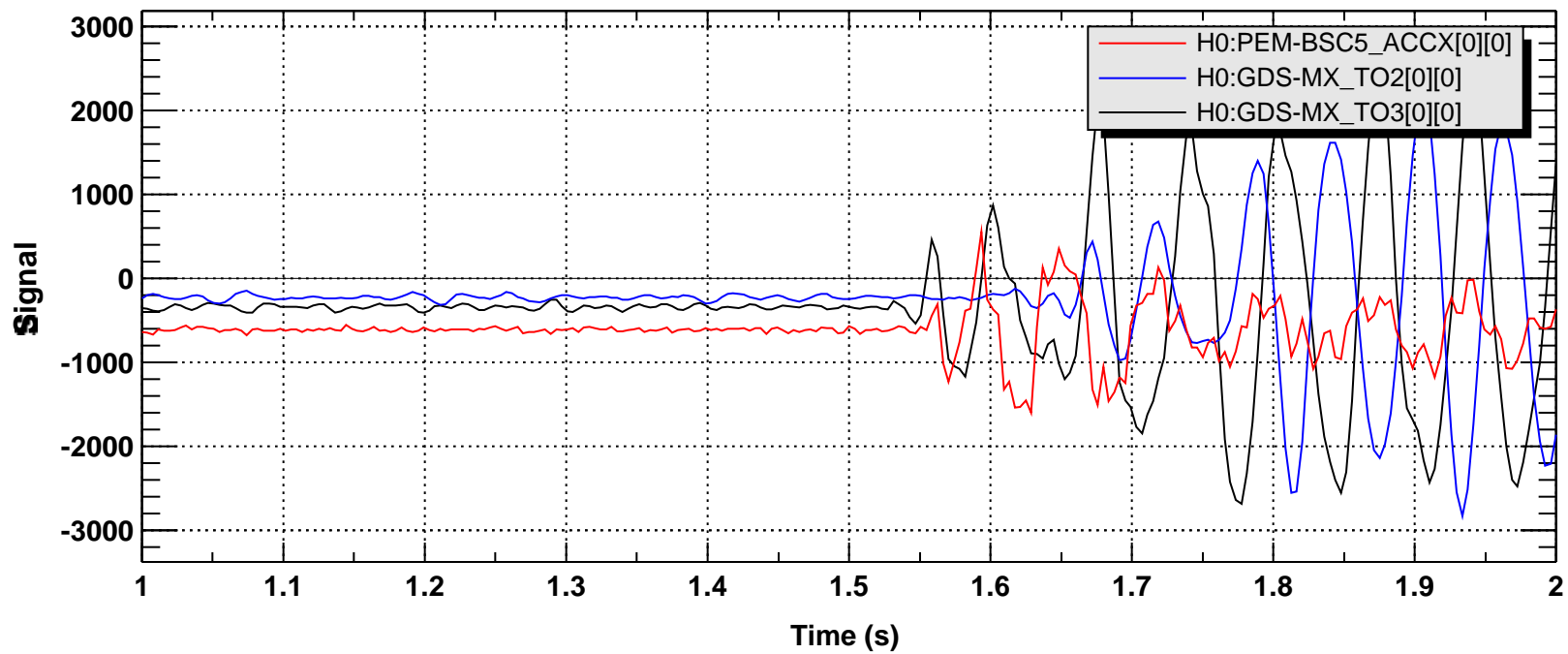
But smaller transients appeared to be coming from -X dewar.

Welding may be solution if leg stick and slip is the cause. John W. is instrumenting legs.

Power spectrum



Time series



T0=11/10/2002 12:25:01

Avg=1

