

LHO {60Hz or $n \cdot 77\text{Hz}$ }

glitches:

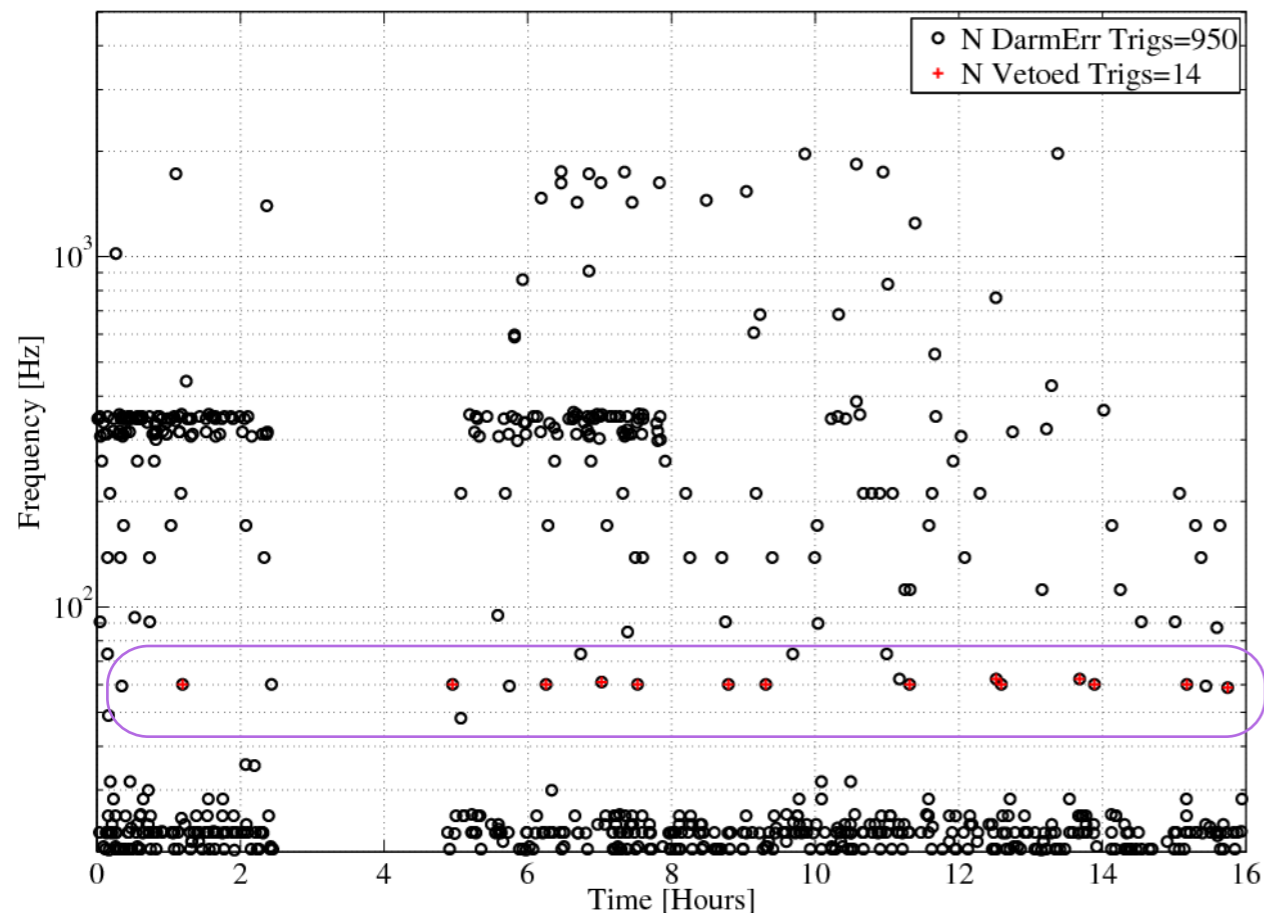
Some EM glitching at EY?

Josh Smith and the DetChar group

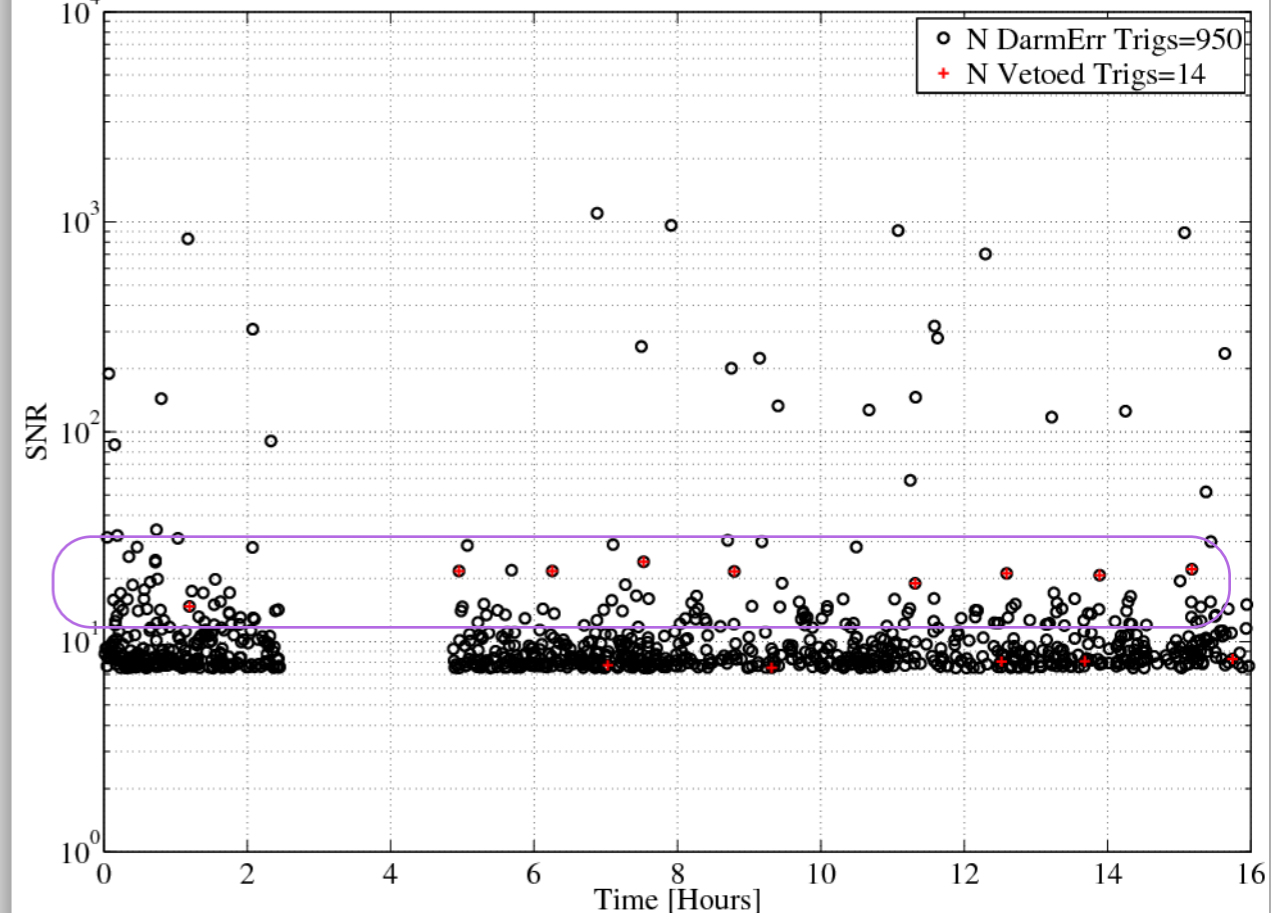
h veto results

- Round 4 of [this page](#) shows a very repeatable time-frequency and time-snr properties in DELTAL
- Probably something switching on once per ~ 40 minutes, it is seen in many signals, but by far strongest in EY Magnetometers
- Red circles below indicate times DARM glitches at same time as EY MAG

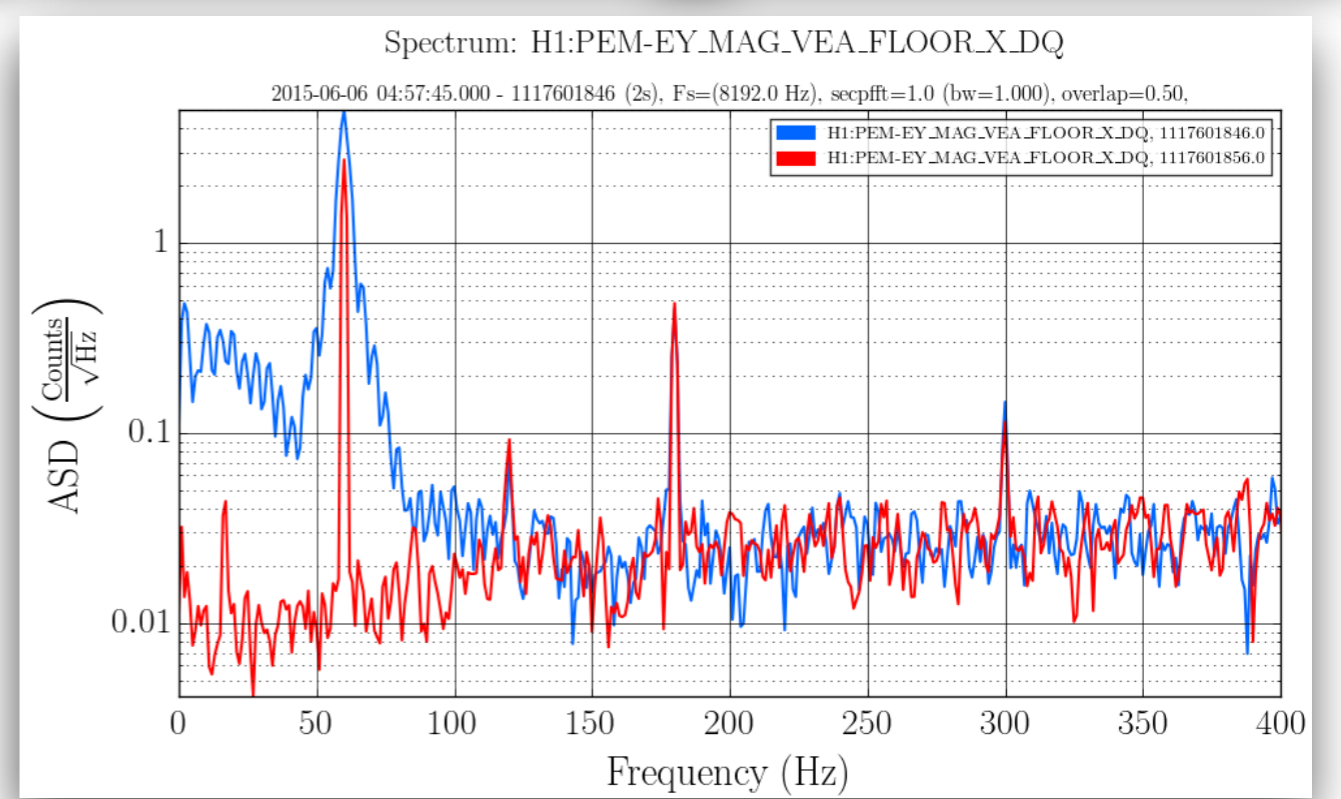
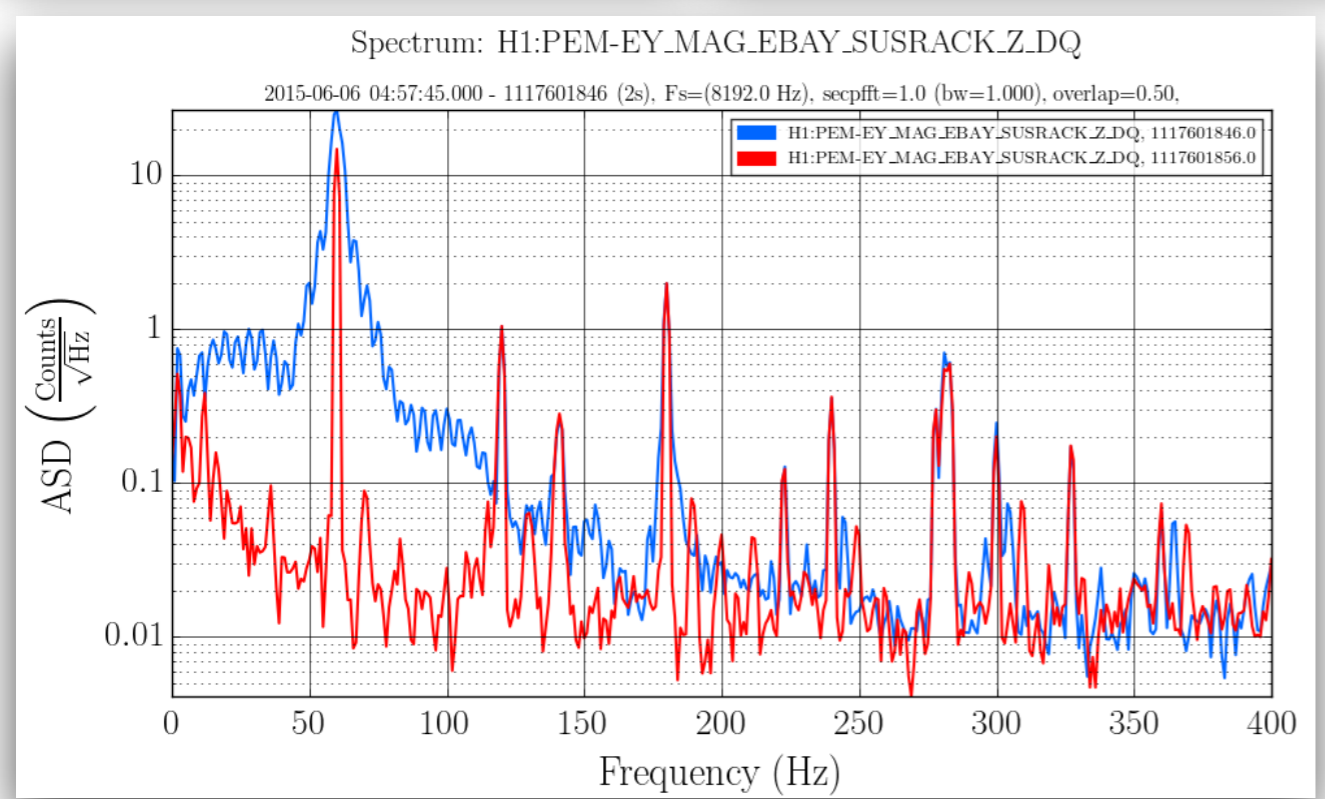
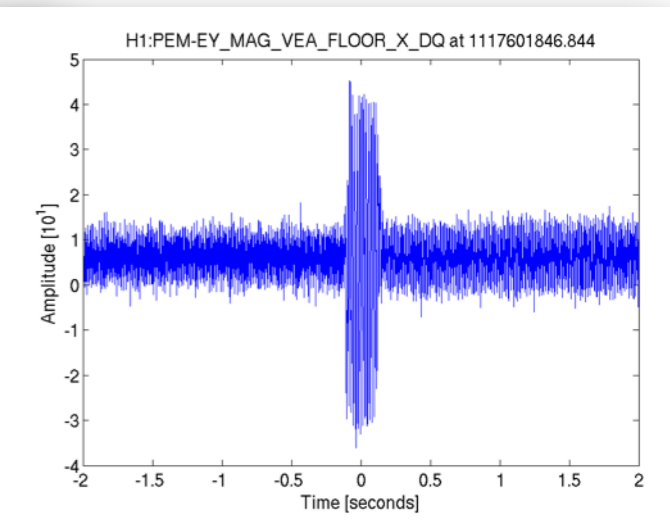
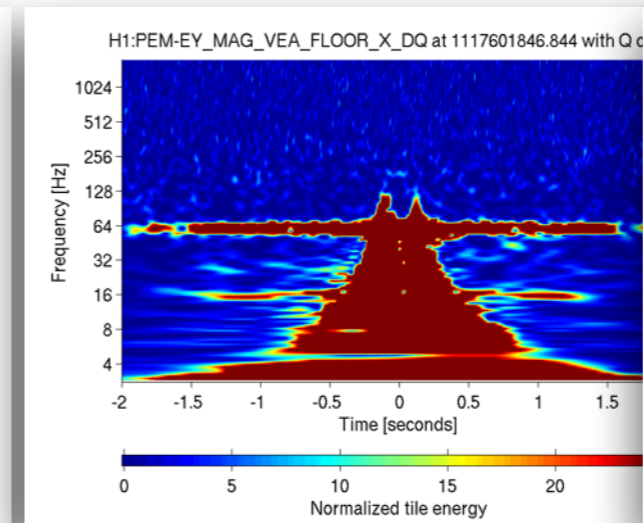
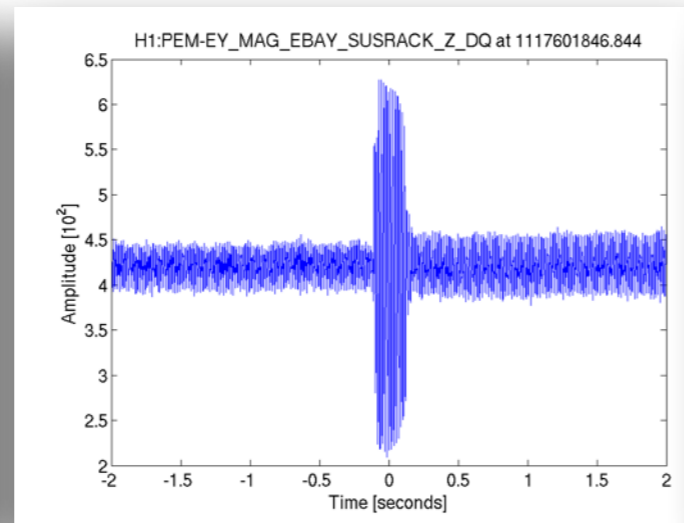
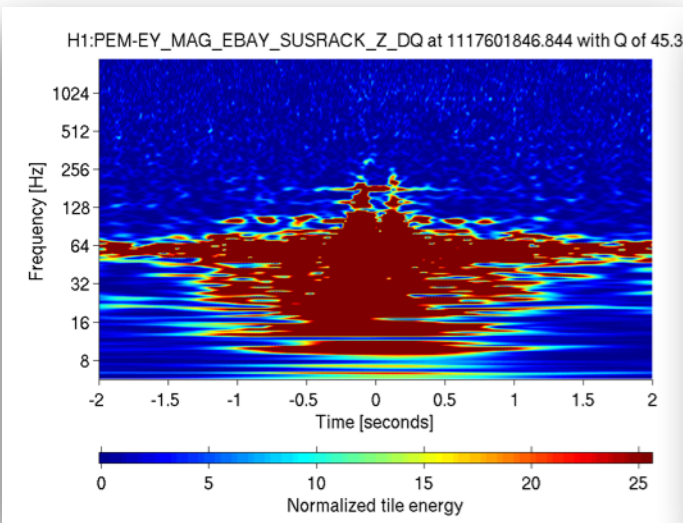
Time-Frequency Map: Detector=H1, Round=4, Winner=PEM-EY_MAG_EBAY_SEIRACK_X_DQ_Omic
Times offset of GPS=1117584016, UTC=2015-06-06 00:00:00



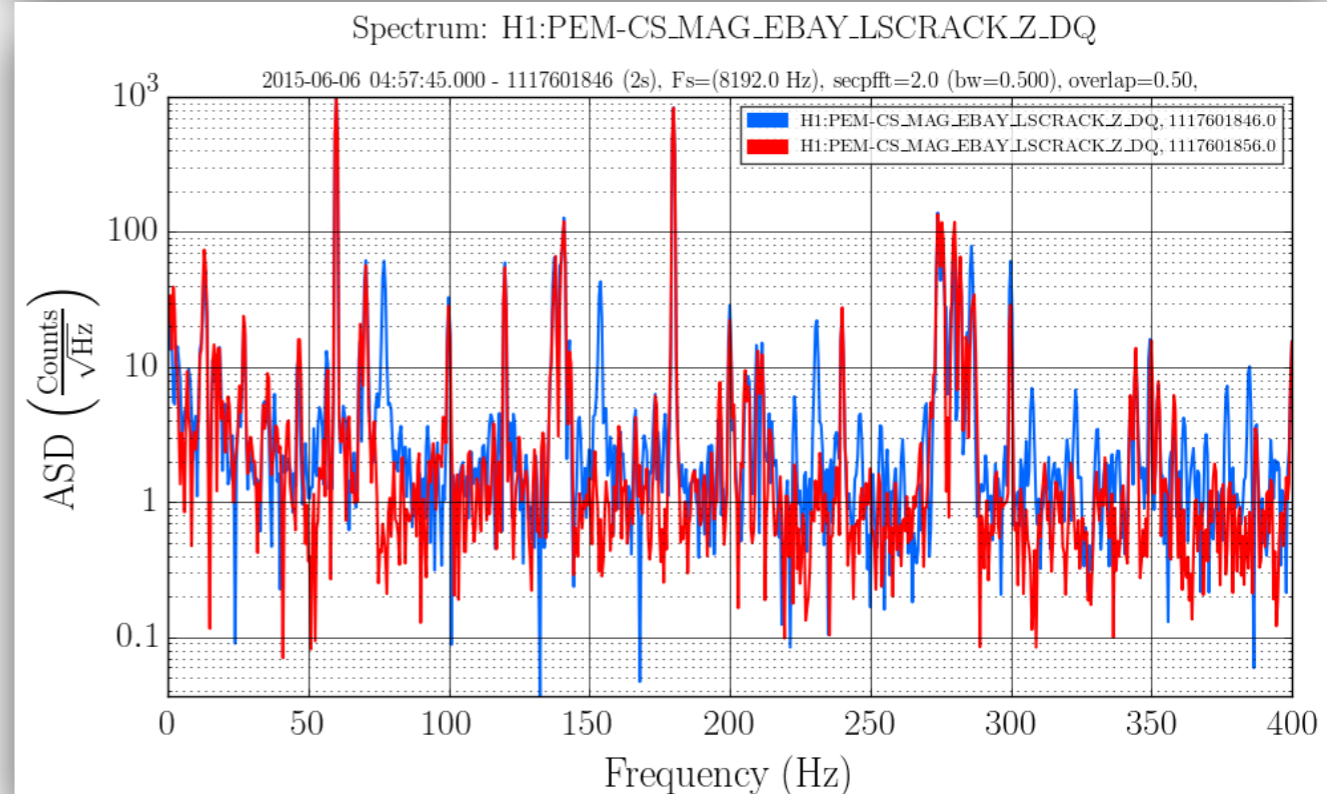
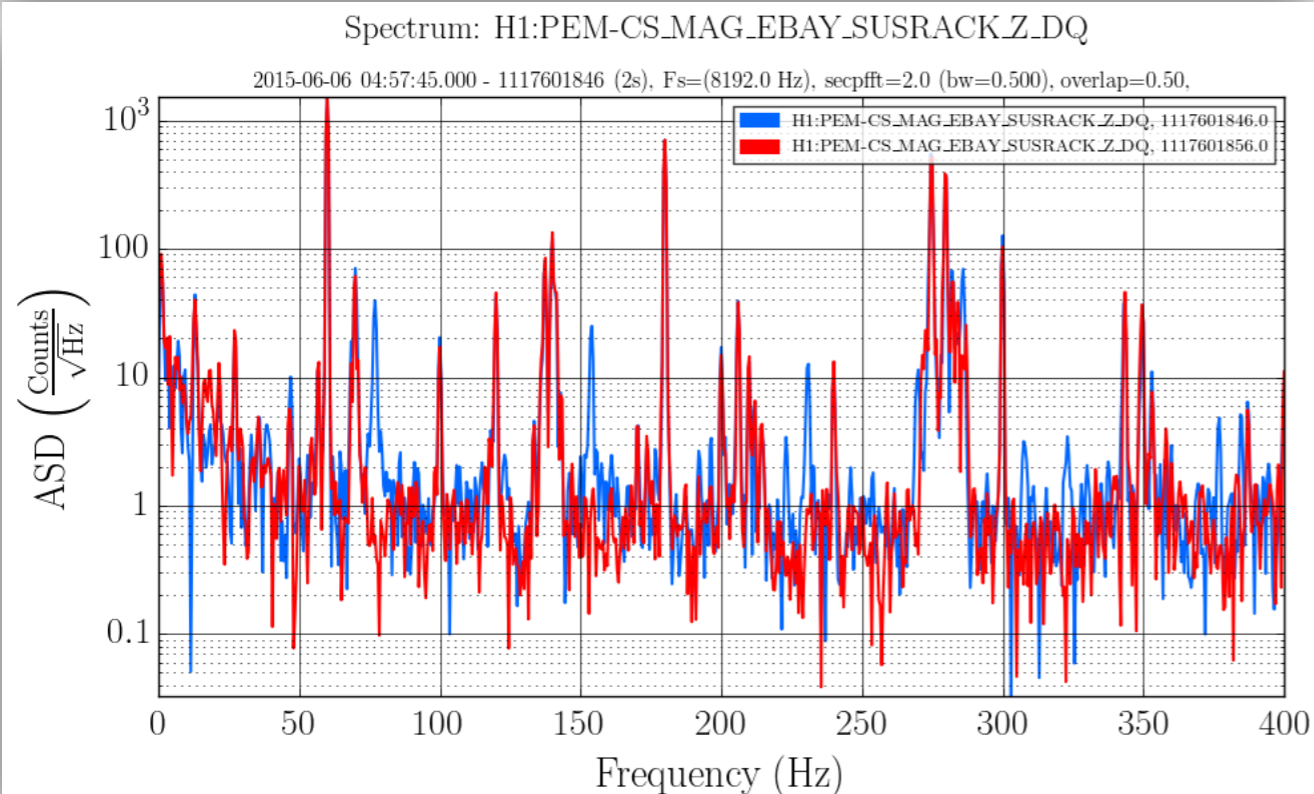
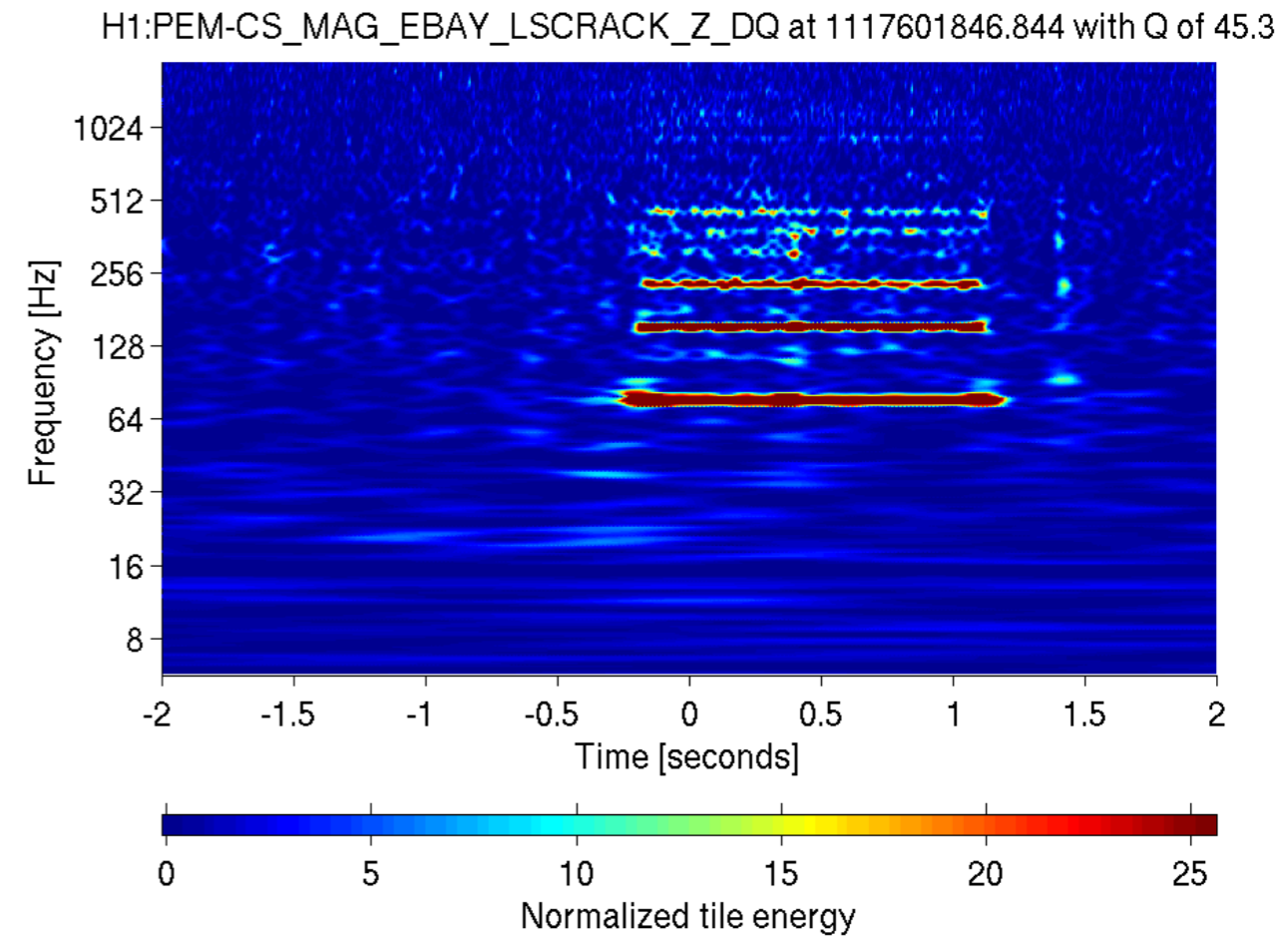
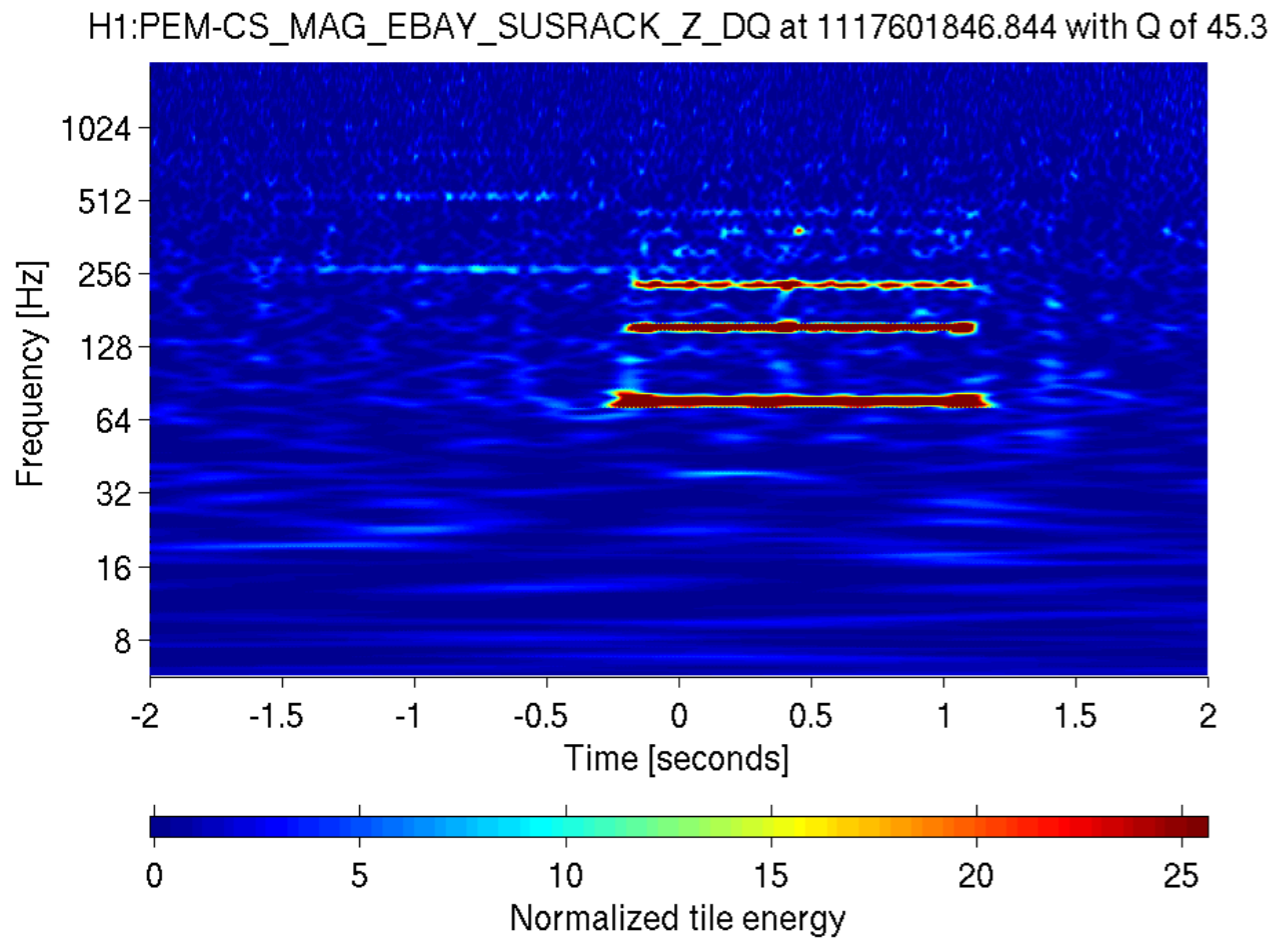
SNR vs. Time: Detector=H1, Round=4, Winner=PEM-EY_MAG_EBAY_SEIRACK_X_DQ_Omic
Times offset of GPS=1117584016, UTC=2015-06-06 00:00:00



SUPER HUGE in EY MAG, as **broadband** magnetic glitch around **60Hz** line

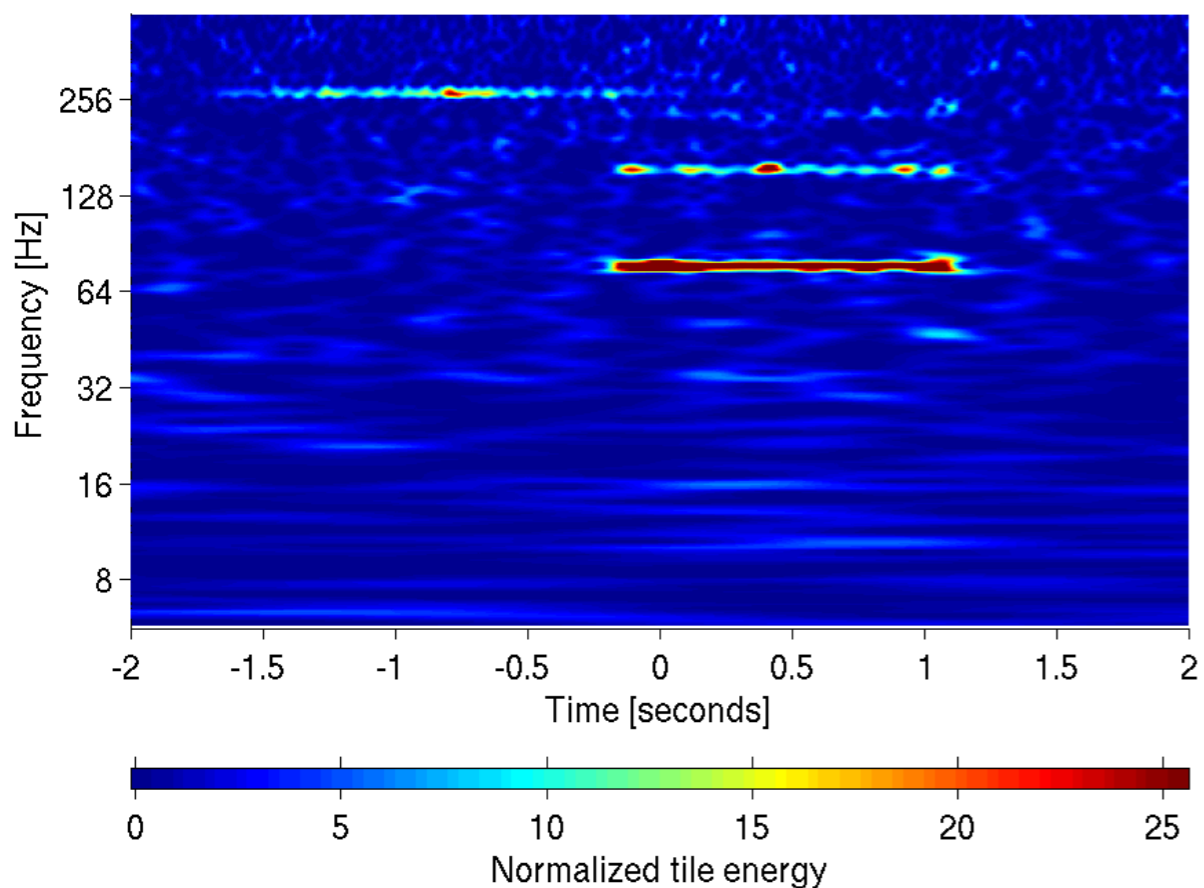


Strong at $n^*77\text{Hz}$ in CS EBAY magnetometers Z

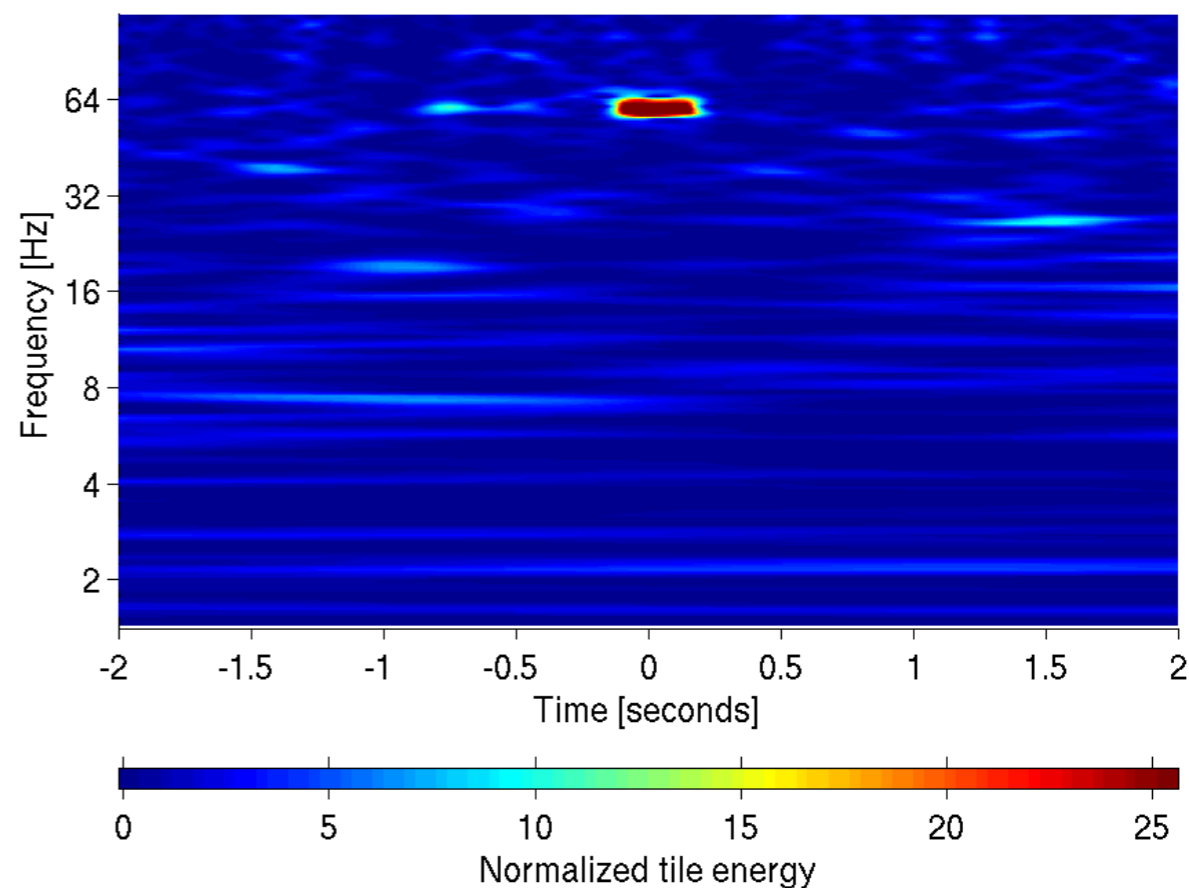


Visible at n^*77 Hz ITMY ETMY SUS L1 L2 L,P,Y

H1:SUS-ITMY_L1_WIT_L_DQ at 1117601846.844 with Q of 45.3

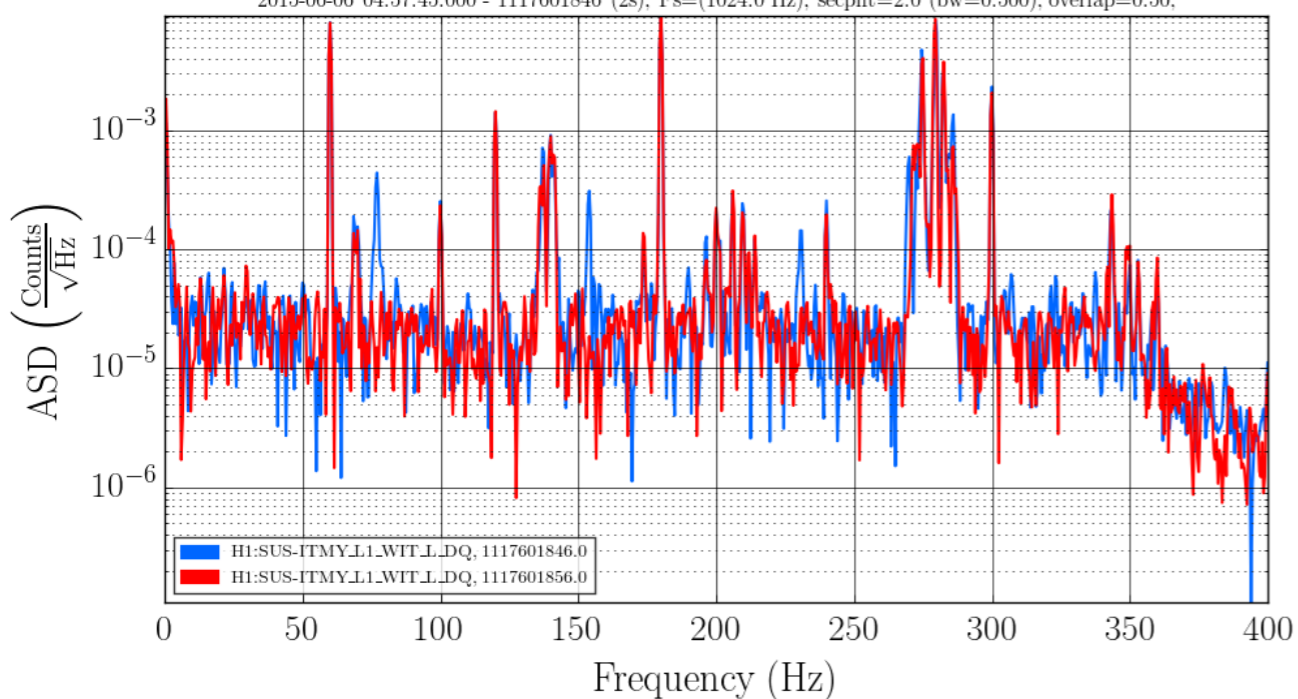


H1:SUS-ETMY_L2_WIT_L_DQ at 1117601846.844 with Q of 45.3



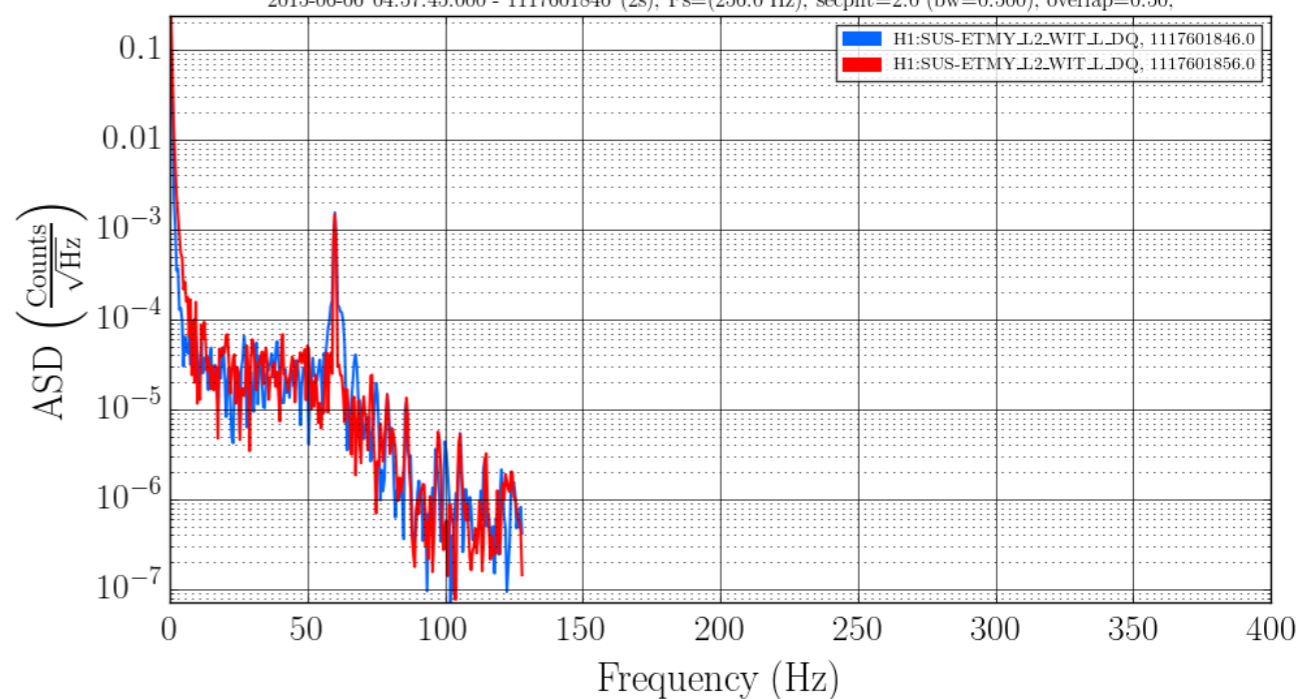
Spectrum: H1:SUS-ITMY_L1_WIT_L_DQ

2015-06-06 04:57:45.000 - 1117601846 (2s), Fs=(1024.0 Hz), secpfft=2.0 (bw=0.500), overlap=0.50,

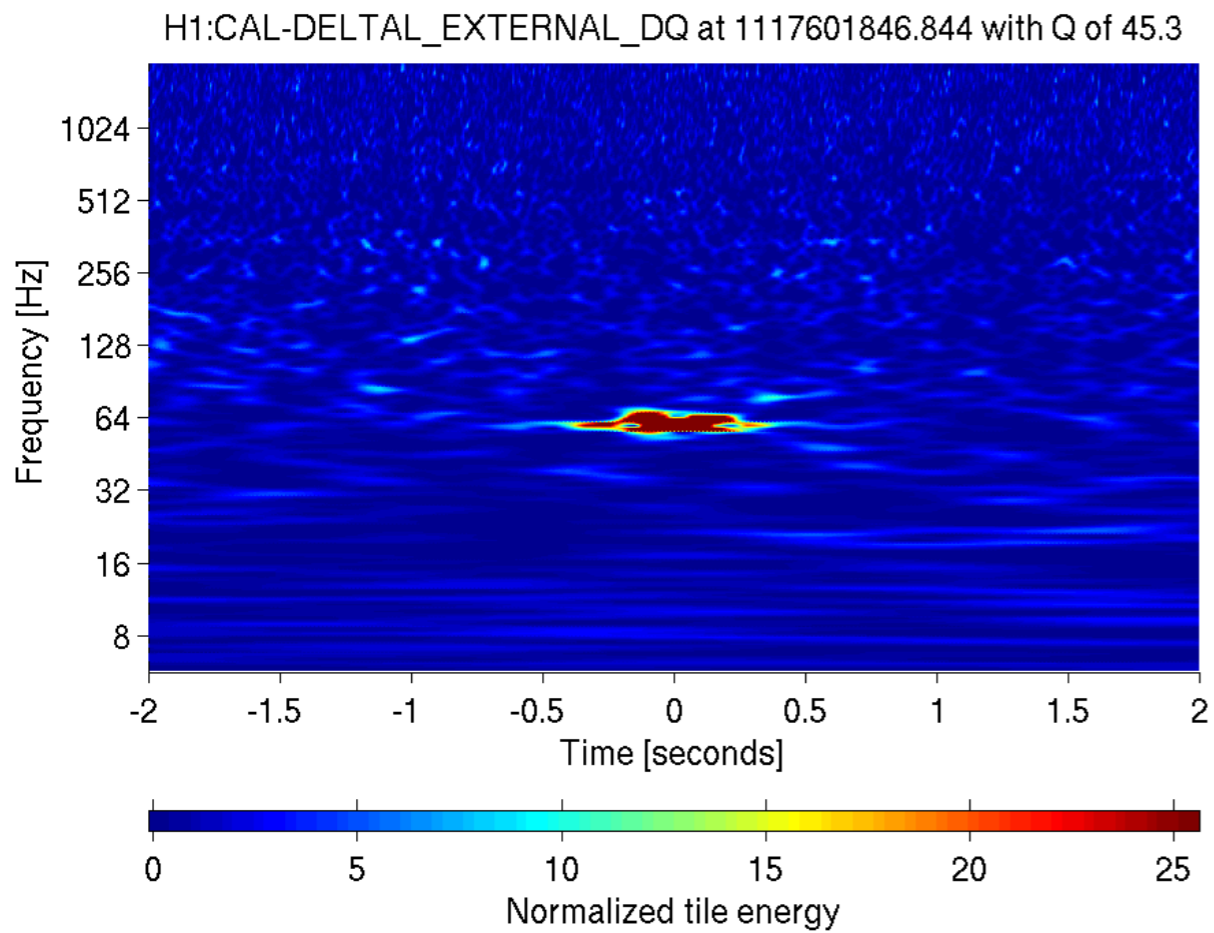


Spectrum: H1:SUS-ETMY_L2_WIT_L_DQ

2015-06-06 04:57:45.000 - 1117601846 (2s), Fs=(256.0 Hz), secpfft=2.0 (bw=0.500), overlap=0.50,

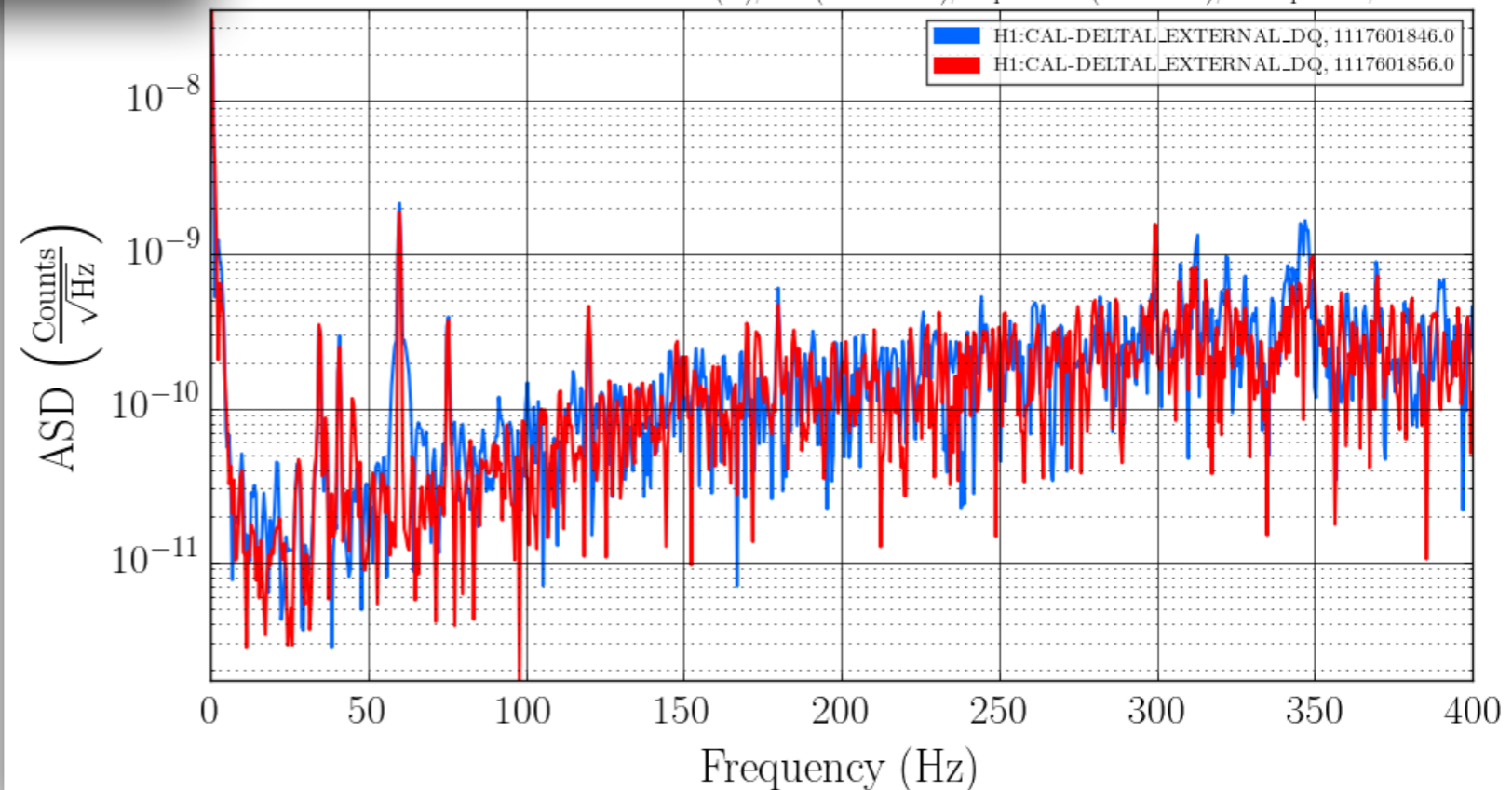


Visible around **60Hz** in DELTAL



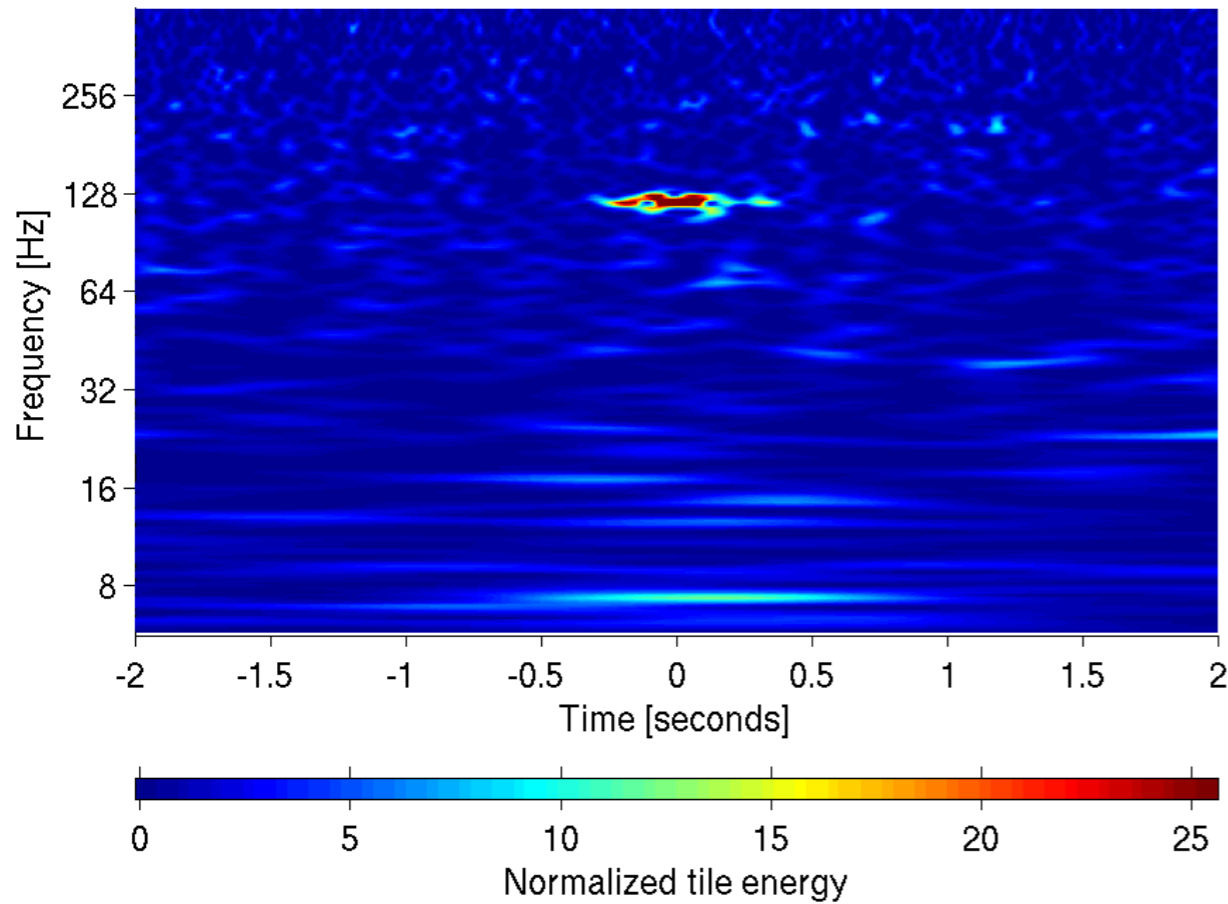
Spectrum: H1:CAL-DELTAL_EXTERNAL_DQ

2015-06-06 04:57:45.000 - 1117601846 (2s), Fs=(16384.0 Hz), secpft=2.0 (bw=0.500), overlap=0.50,

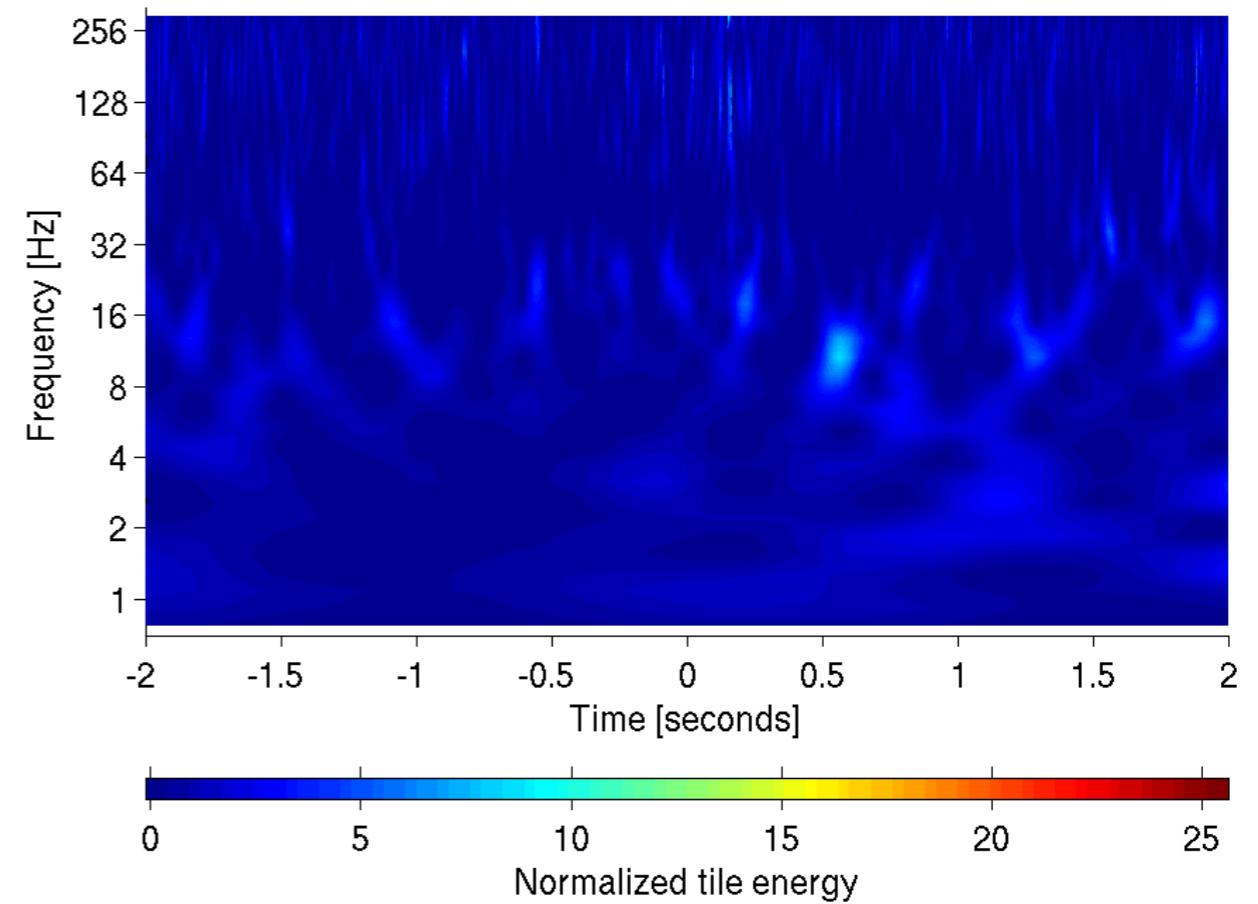


NOT strong in EY Mains (thanks Robert) not seen in EY MIC

H1:PEM-EY_MAINSMON_EBAY_QUAD_SUM_DQ at 1117601846.844 with Q of 45



H1:PEM-EY_MAINSMON_EBAY_2_DQ at 1117601846.844 with Q of 5.7



Coupling thoughts

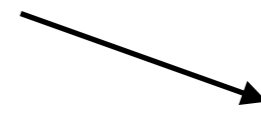
- From timing in the omega scans:
- Start times suggest it's an End-Y EM glitch that couples directly to DELTAL (both at $t=0$) at 60Hz
- For some reason (resonances?) then couples into SUS ($n \cdot 77\text{Hz}$ rings long after $t=0$).
- Suggests direct coupling to DELTAL, also couples to SUS (but not through that path to DARM).

Glitch Spacing ~75 minutes

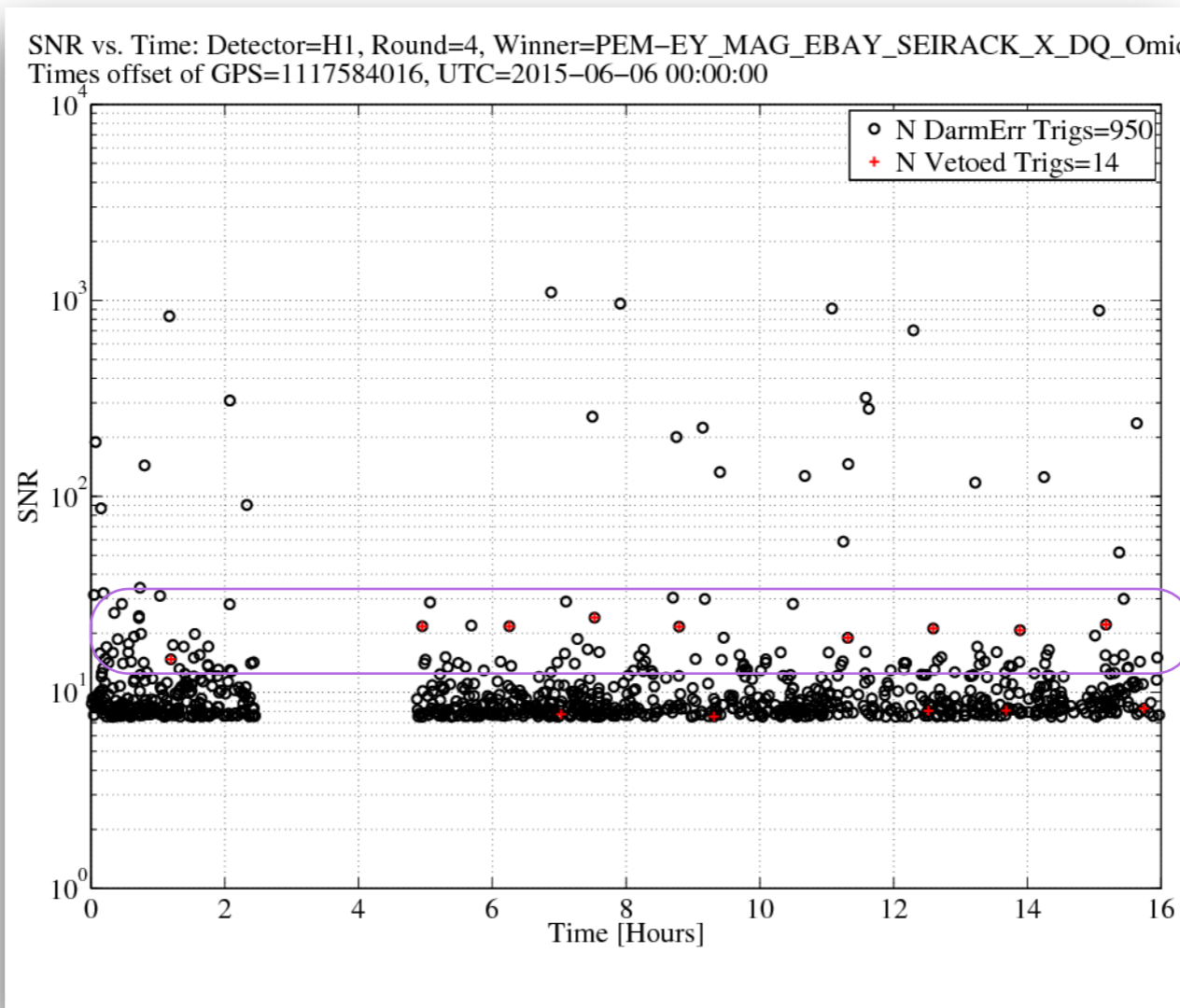
```
#[central_time central_frequency SNR]
1117588315.062500 60.109380 14.738710
1117601846.843750 60.109380 21.736640
1117606531.812500 60.109380 21.738600
1117609319.382812 61.031250 7.728510
1117611116.437500 60.109380 24.049790
1117615667.781250 60.109380 21.624790
1117617547.625000 60.109380 7.524460
1117624750.156250 60.109380 18.978120
1117629092.875000 62.250000 8.045980
1117629347.875000 60.109380 21.162600
1117633271.390625 62.250000 8.085310
1117634017.687500 60.109380 20.758610
1117638645.218750 60.109380 22.149340
1117640690.500000 58.843750 8.272900
```

Loud glitches (converted to UTC)

Sat Jun 06 01:11:39 UTC 2015
 Sat Jun 06 04:57:10 UTC 2015
 Sat Jun 06 06:15:15 UTC 2015
 Sat Jun 06 07:31:40 UTC 2015
 Sat Jun 06 08:47:31 UTC 2015
 Sat Jun 06 11:18:54 UTC 2015
 Sat Jun 06 12:35:31 UTC 2015
 Sat Jun 06 13:53:21 UTC 2015
 Sat Jun 06 15:10:29 UTC 2015



Time in minutes
between loud
glitches:



mins =
 225.5167
 78.0833
 76.4167
 75.8500
 151.3833
 76.6167
 77.8333
 77.1333