

E7 Correlations

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CorrMon from Adrian

- Concentrate on correlations between AS_Q, IOO-MC_F and PEMs

XBIC from Steve

- A program that calculates bicoherence
- Use it to (hopefully) find non-linear noise upconversion
- See Steve Penn's talk!

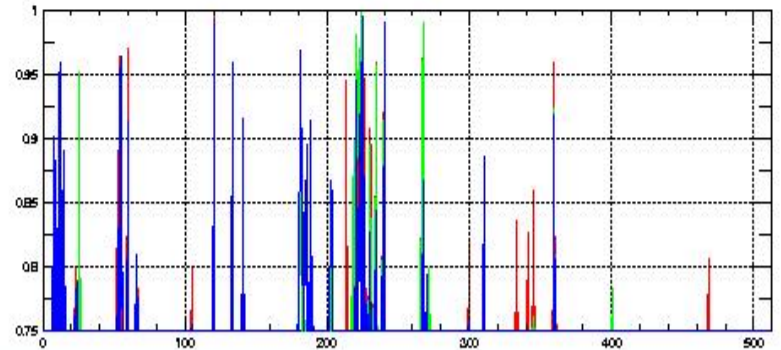
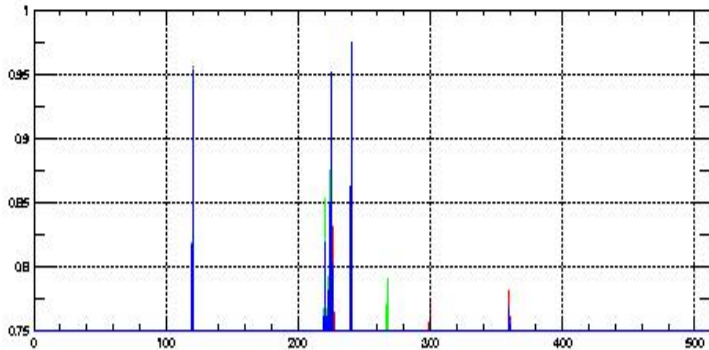
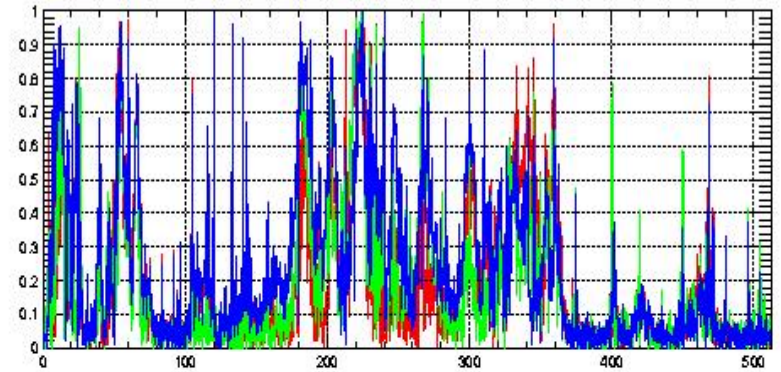
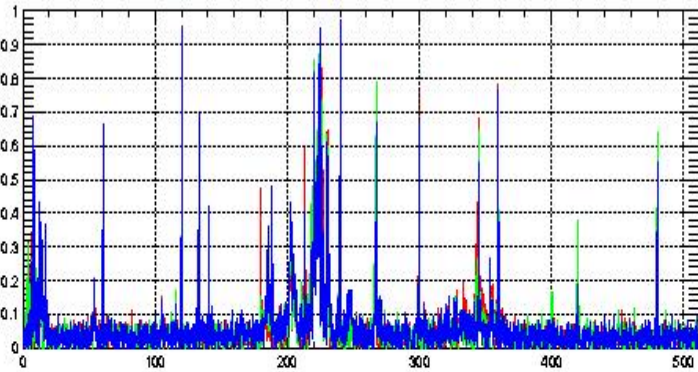
CorrMon Results LHO

- Concentrate on H2:LSC-AS_Q and IOO-MC_F
- Dominant correlation among channels by far is with the PSL accelerometers
- PSL-Microphone and HAM accelerometers show correlations
- LVEA seismometers show lots of noise below 20 Hz in both MC_F and AS_Q -- no surprise there. There are a series of peaks in MC_F at 40, 47, 50, 52, and 56 Hz that don't show up at all in AS_Q. ceiling fans ???

CorrMon Results LHO

- One peak that seems to carry over into AS_Q with regularity is a somewhat-wide spike at about 230 Hz, which shows up in all of the accelerometers and the microphone. What's the source of this? VME crate fans???
- Most other channels show only 60 Hz & harmonics

PSL Accelerometers



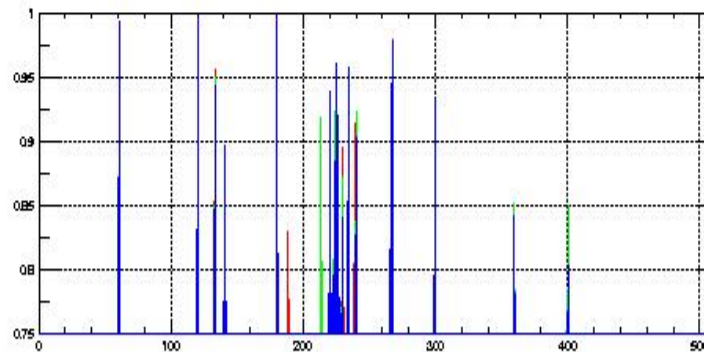
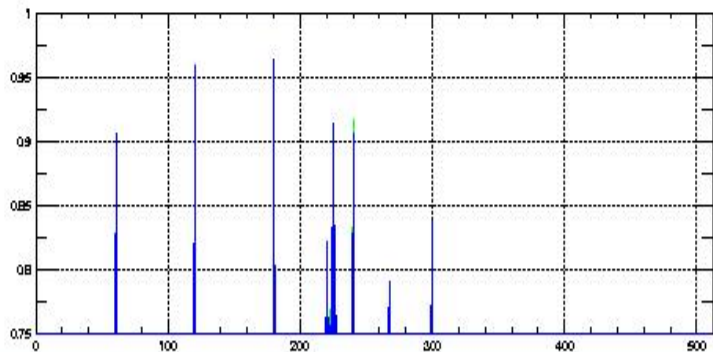
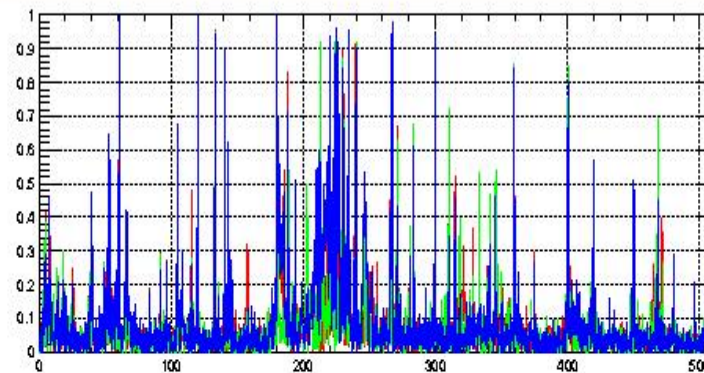
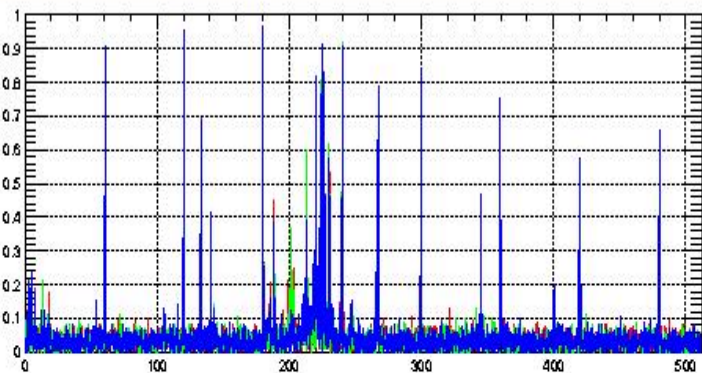
Ho:PEM-PSL2_ACCX
Ho:PEM-PSL2_ACCY
Ho:PEM-PSL2_ACCZ

Ho:PEM-PSL2_ACCX
Ho:PEM-PSL2_ACCY
Ho:PEM-PSL2_ACCZ

Interchannel Correlations with H2:LSC-AS Q

Interchannel Correlations with H2:100-MC F

Microphones



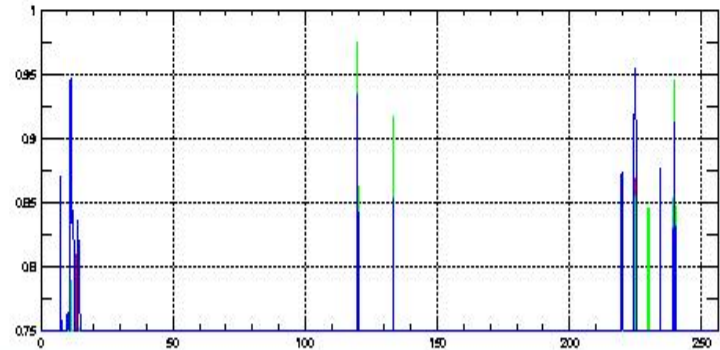
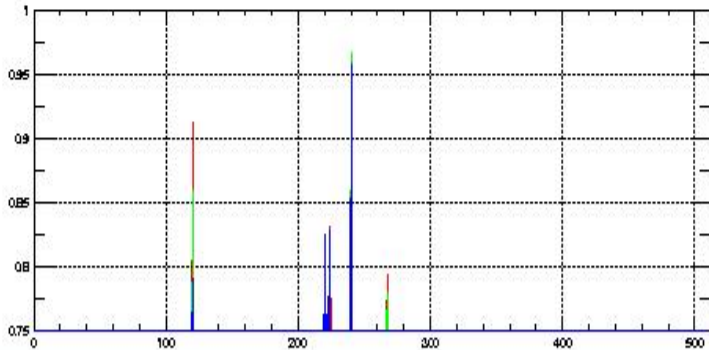
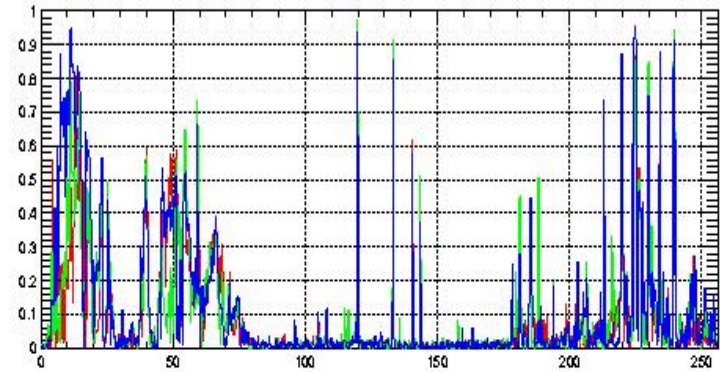
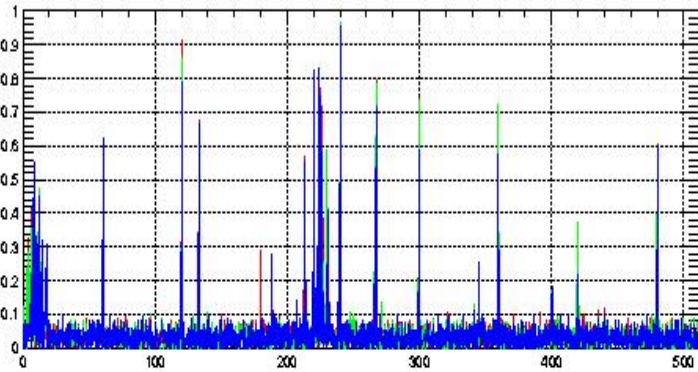
H0:PEM-HAM7_MIC
H0:PEM-HAM8_MIC
H0:PEM-PSL2_MIC

H0:PEM-HAM7_MIC
H0:PEM-HAM8_MIC
H0:PEM-PSL2_MIC

Interchannel Correlations with H2:LSC-AS Q

Interchannel Correlations with H2:IOO-MC F

HAM Accelerometers



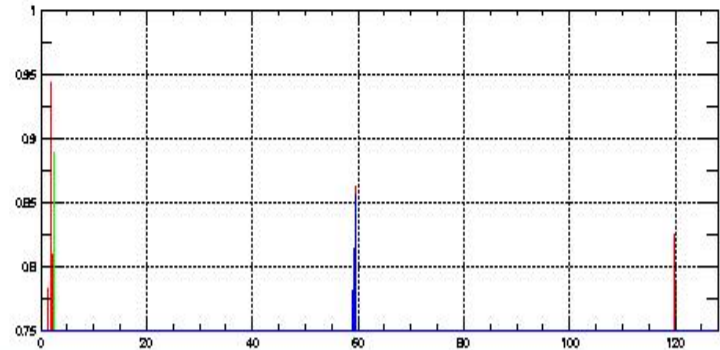
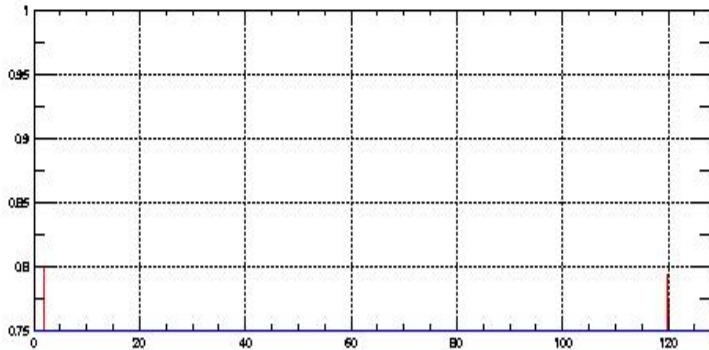
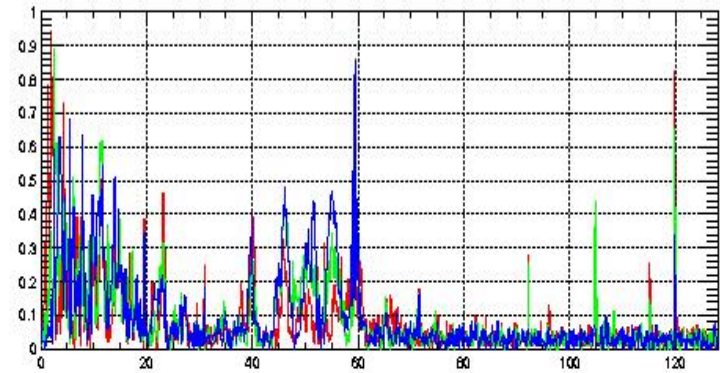
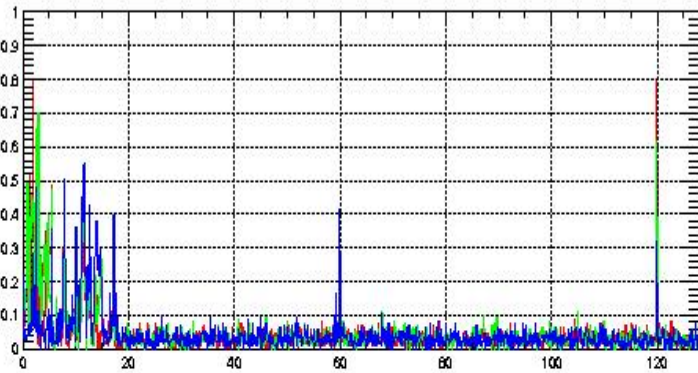
Ho:PEM-HAMs_ACCX
Ho:PEM-HAMs_ACCY
Ho:PEM-HAMs_ACCZ

Ho:PEM-HAM7_ACCX
Ho:PEM-HAM7_ACCY
Ho:PEM-HAM7_ACCZ

Interchannel Correlations with H2:LSC-AS Q

Interchannel Correlations with H2:IOO-MC F

LVEA Seismometers



Ho:PEM-LVEA_SEISX
Ho:PEM-LVEA_SEISY
Ho:PEM-LVEA_SEISZ

Ho:PEM-LVEA_SEISX
Ho:PEM-LVEA_SEISY
Ho:PEM-LVEA_SEISZ

Interchannel Correlations with H2:LSC-AS Q

Interchannel Correlations with H2:IOO-MC F

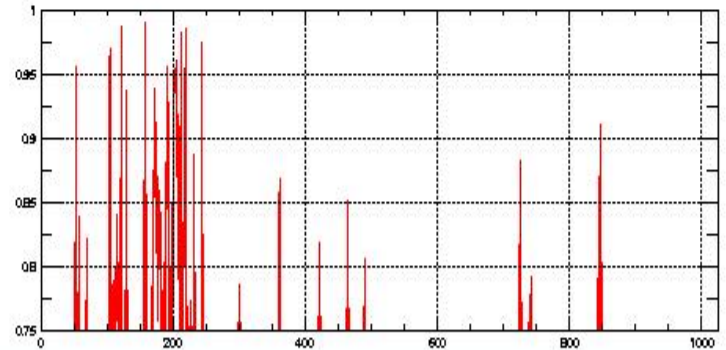
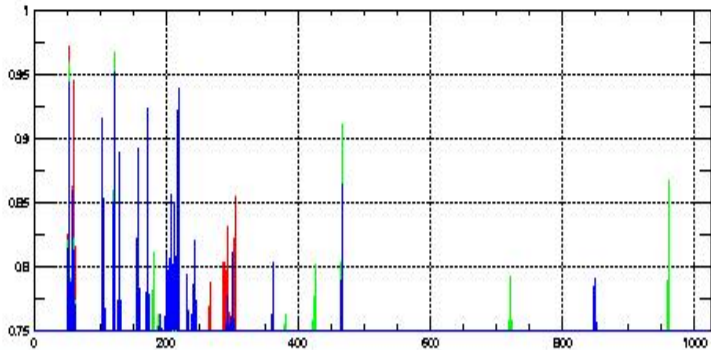
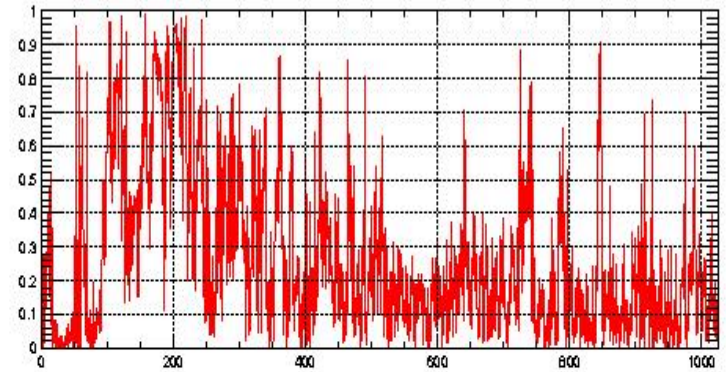
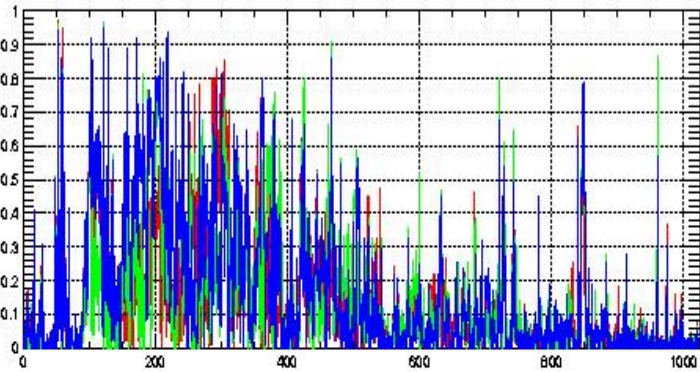
CorrMon Results LLO

- Concentrate on H2:LSC-AS_Q and IOO-MC_F
- Again - Dominant correlation among channels by far is with the PSL accelerometers (noisier than LHO). 200 Hz bump, PSL periscope (Rana's talk)
- Again- PSL Microphone and HAM accelerometers show correlations
- LVEA seismometers show lots of noise below 20 Hz in both MC_F and AS_Q -- no surprise there. See a series of peaks in MC_F at 44, 48, 52, 57, and 59 Hz that NOW DO show up at in AS_Q. They are sharper than the LHO peaks. ceiling fans ???

CorrMon Results LLO

- Consistent noise correlations seen in AS_Q with accelerometers around 50 Hz.
- Most other channels show only 60 Hz & harmonics

PSL Accelerometers



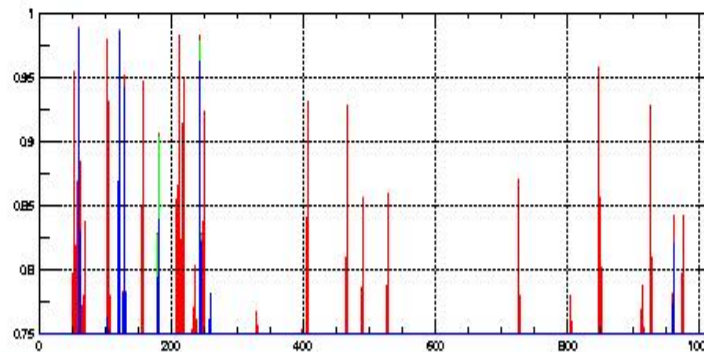
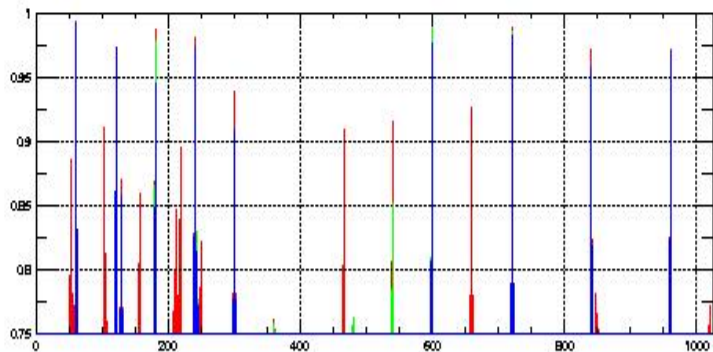
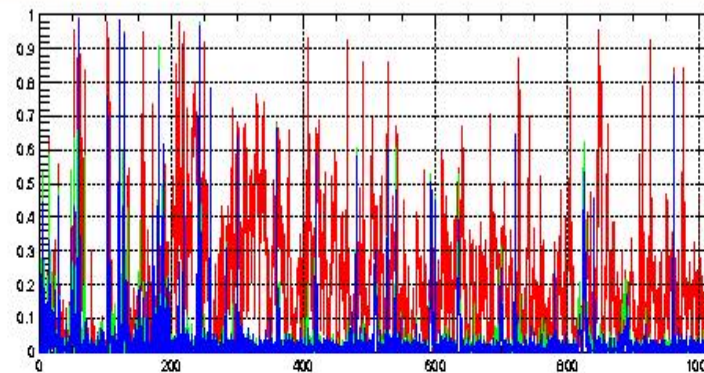
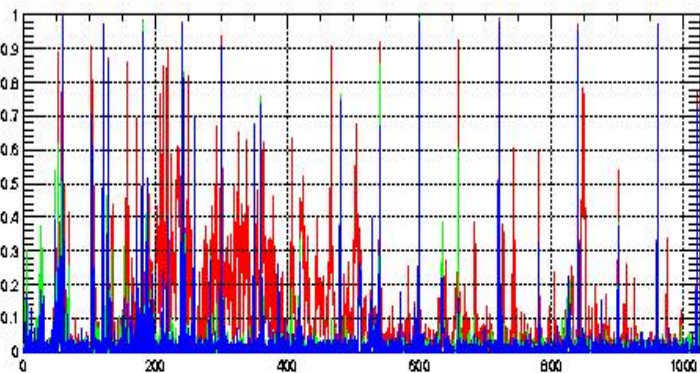
Lo:PEM-PSL1_ACCX
Lo:PEM-PSL1_ACCY
Lo:PEM-PSL1_ACCZ

Lo:PEM-PSL1_ACCZ

Interchannel Correlations with L1:LSC-AS Q

Interchannel Correlations with L1:IOO-MC F

Microphones



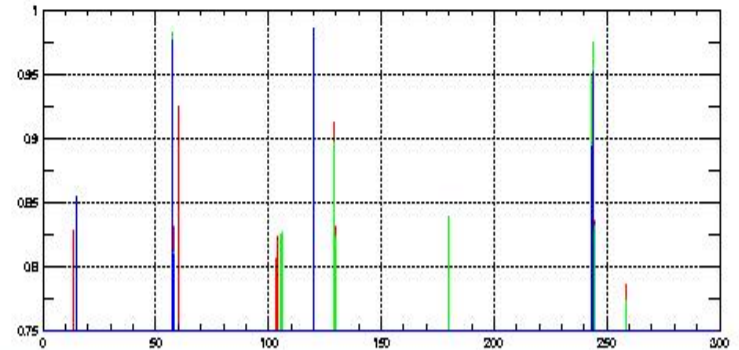
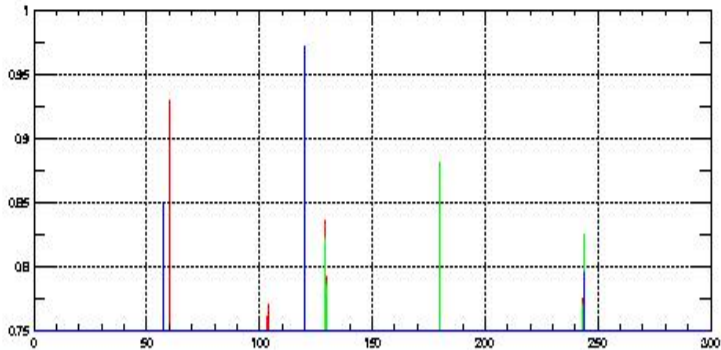
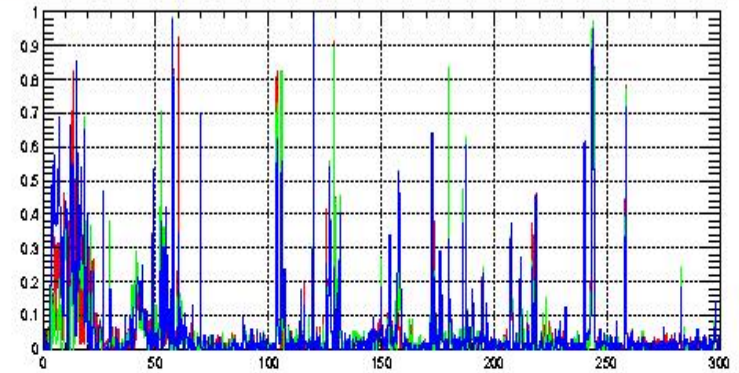
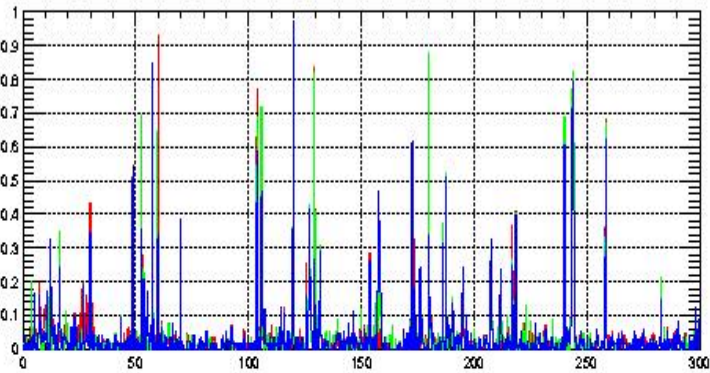
Lo:PEM-P&S1_MIC
Lo:PEM-HAM1_MIC
Lo:PEM-HAM2_MIC

Lo:PEM-P&S1_MIC
Lo:PEM-HAM1_MIC
Lo:PEM-HAM2_MIC

Interchannel Correlations with L1:LSC-AS Q

Interchannel Correlations with L1:IOO-MC F

HAM Accelerometers



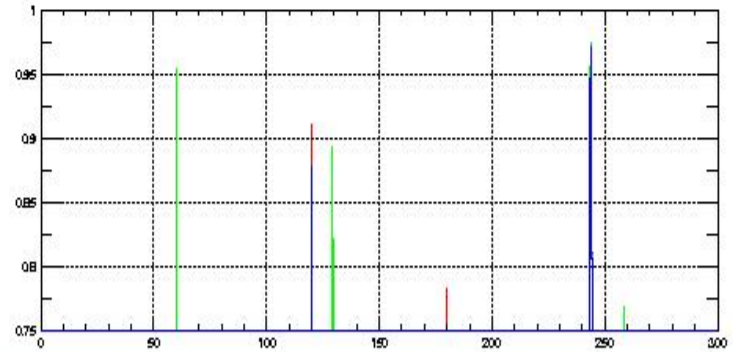
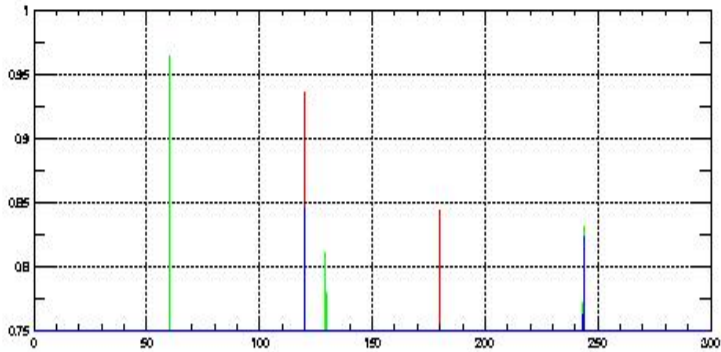
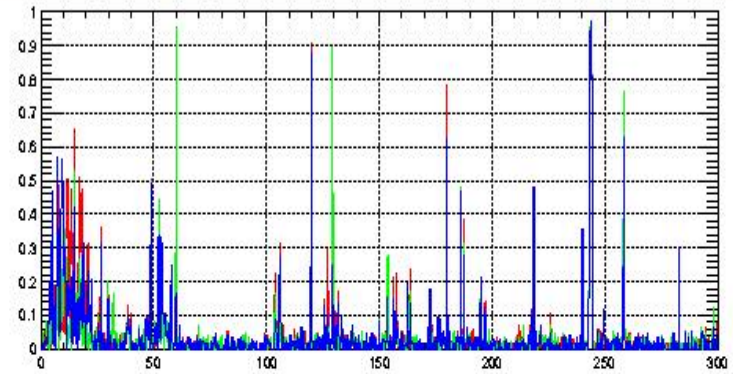
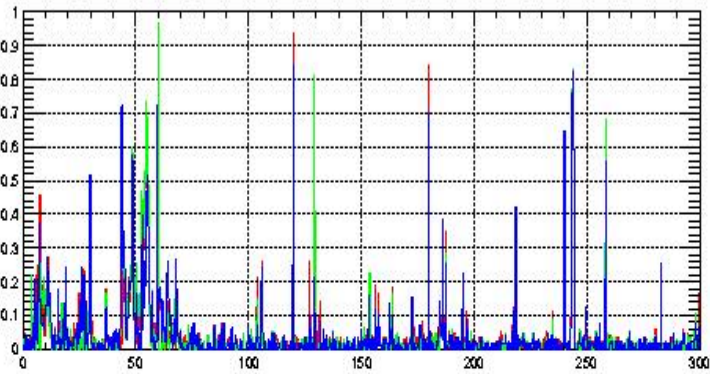
Lo:PEM-HAM1_ACCX
Lo:PEM-HAM1_ACCY
Lo:PEM-HAM1_ACCZ

Lo:PEM-HAM1_ACCX
Lo:PEM-HAM1_ACCY
Lo:PEM-HAM1_ACCZ

Interchannel Correlations with L1:LSC-AS Q

Interchannel Correlations with L1:IOO-MC F

BSC Accelerometers



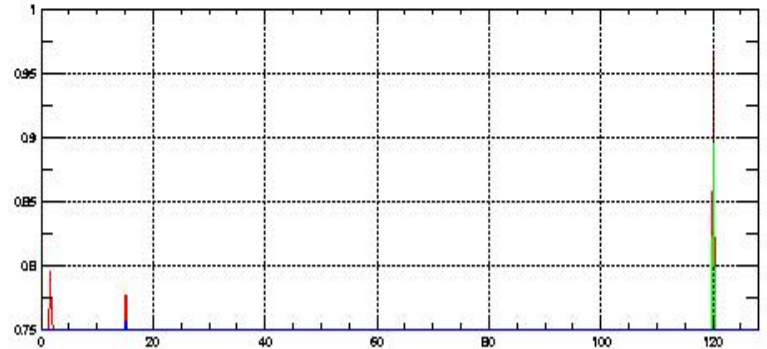
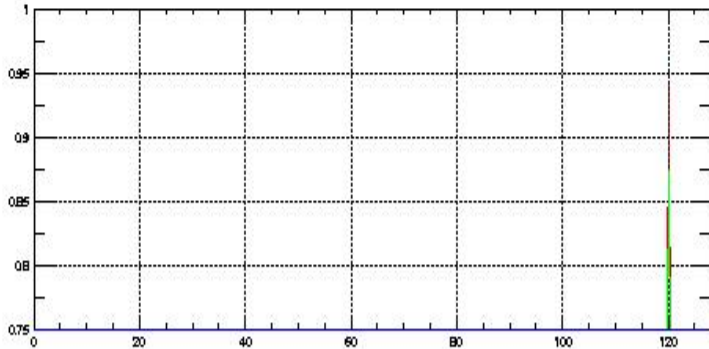
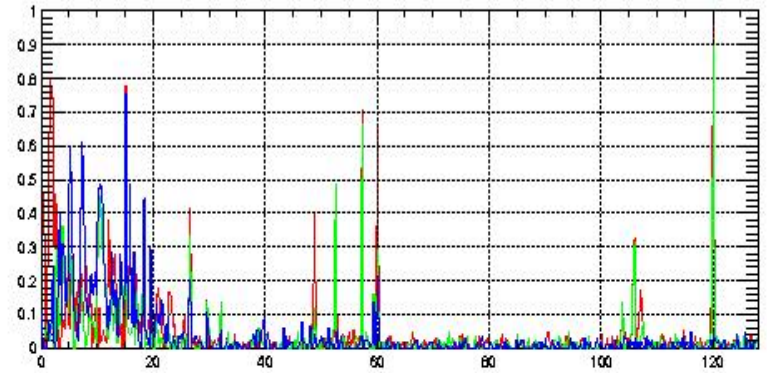
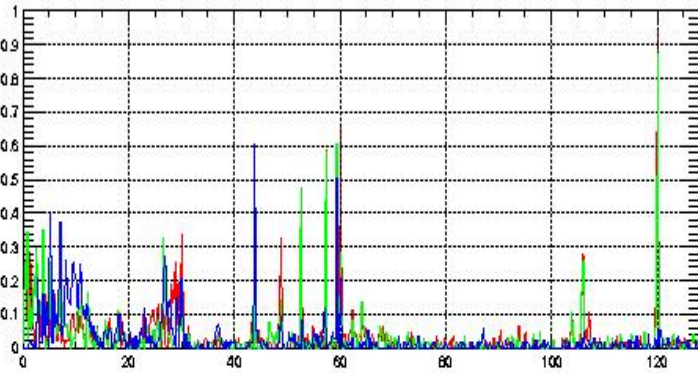
L0:PEM-B8C2_ACCX
L0:PEM-B8C2_ACCY
L0:PEM-B8C2_ACCZ

L0:PEM-B8C2_ACCX
L0:PEM-B8C2_ACCY
L0:PEM-B8C2_ACCZ

Interchannel Correlations with L1:LSC-AS Q

Interchannel Correlations with L1:IOO-MC F

LVEA Seismometers



L0:PEM-LVEA_SEISX
L0:PEM-LVEA_SEISY
L0:PEM-LVEA_SEISZ

L0:PEM-LVEA_SEISX
L0:PEM-LVEA_SEISY
L0:PEM-LVEA_SEISZ

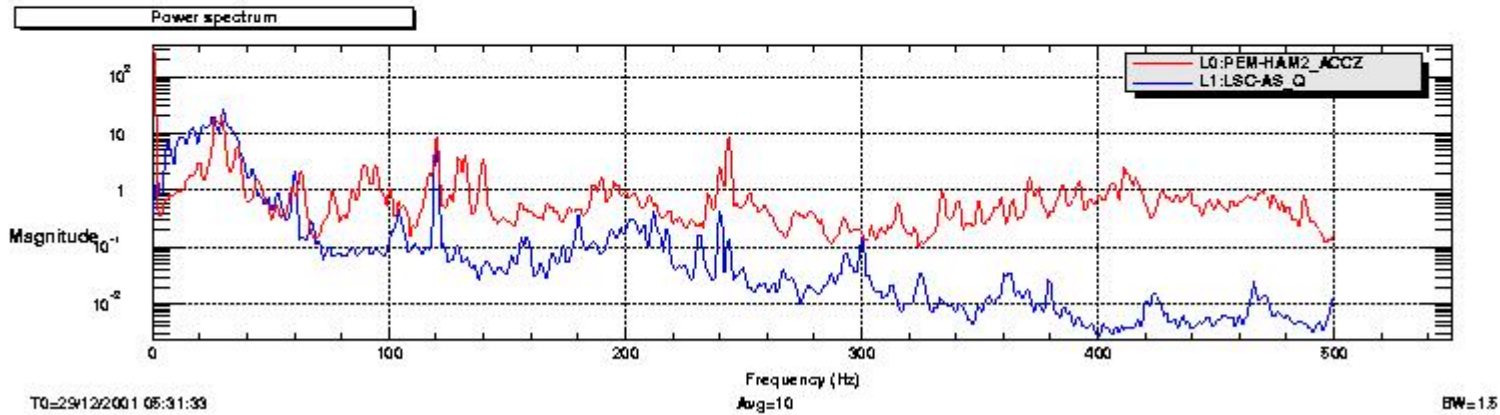
Interchannel Correlations with L1:LSC-AS Q

Interchannel Correlations with L1:IOO-MC F

Bicoherence Enters The Correlation Game

- Steve Penn's program XBIC (hear his talk)
- A process to hopefully identify non-linear upconversion
- Bicoherence will be a central part our correlation investigation

Bicoherence Example



X-Bicoherence: L0:PEM-HAM2_ACCZ, L1:LSC-AS_Q

