E7 Correlations

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LIGO-G020099-00-Z

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

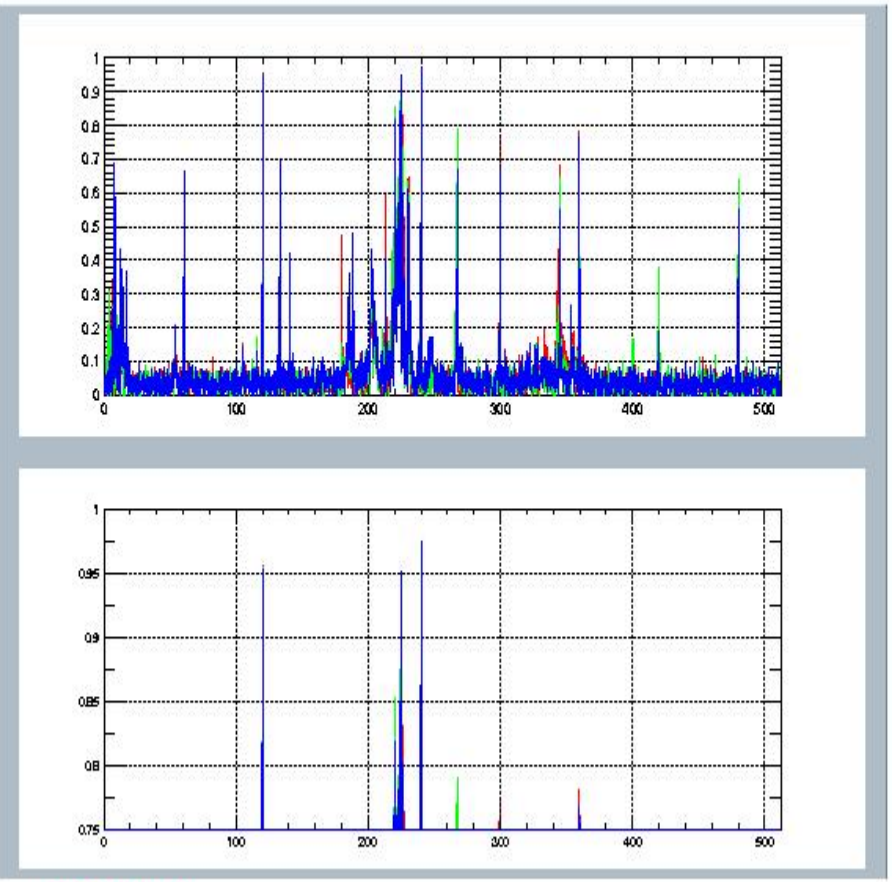
- Concentrate on H2:LSC-AS_Q and IOO-MC_F
- Dominant correlation among channels by far is with the PSL accelerometers
- PSL-Microphone and HAM accelerometers show correlations
- LVEA seismometers show lots of noise below 20 Hz in both MC_F and AS_Q -- no surprise there. There are a series of peaks in 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

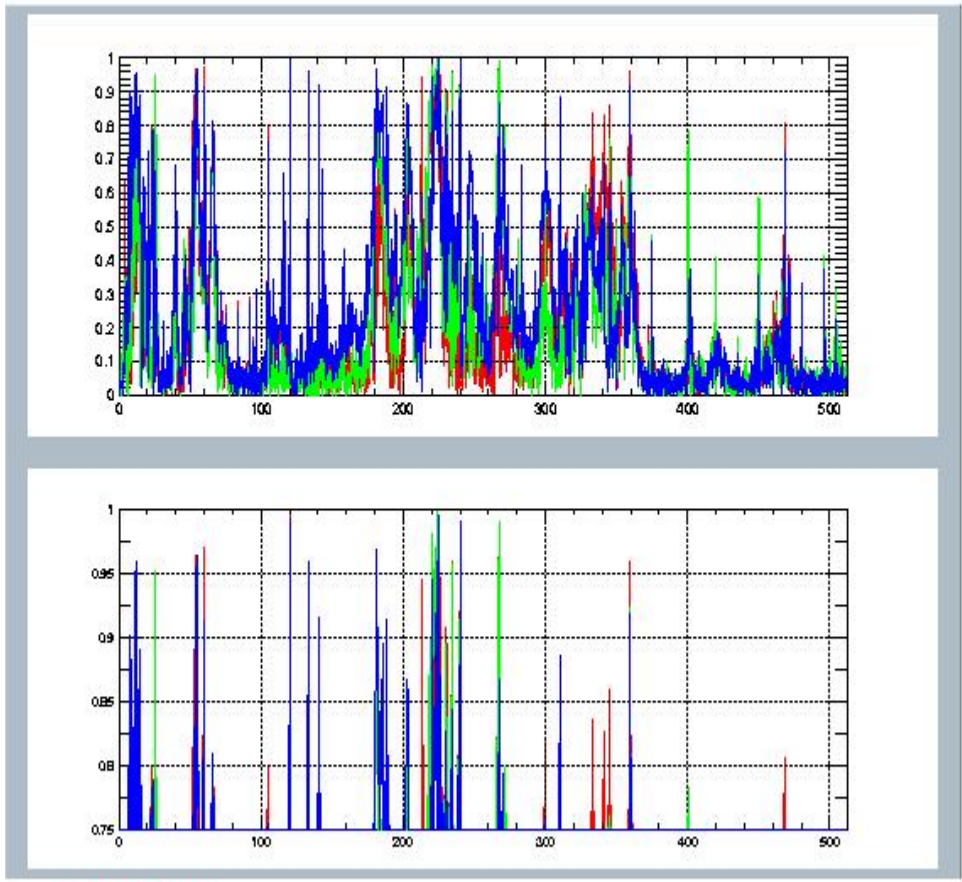
- One peak that seems to carry over into AS_Q with regularity is a somewhat-wide spike at about 230 Hz, which shows up in all of the accelerometers and the microphone. What's the source of this? VME crate fans???

- Most other channels show only 60 Hz & harmonics

PSL Accelerometers

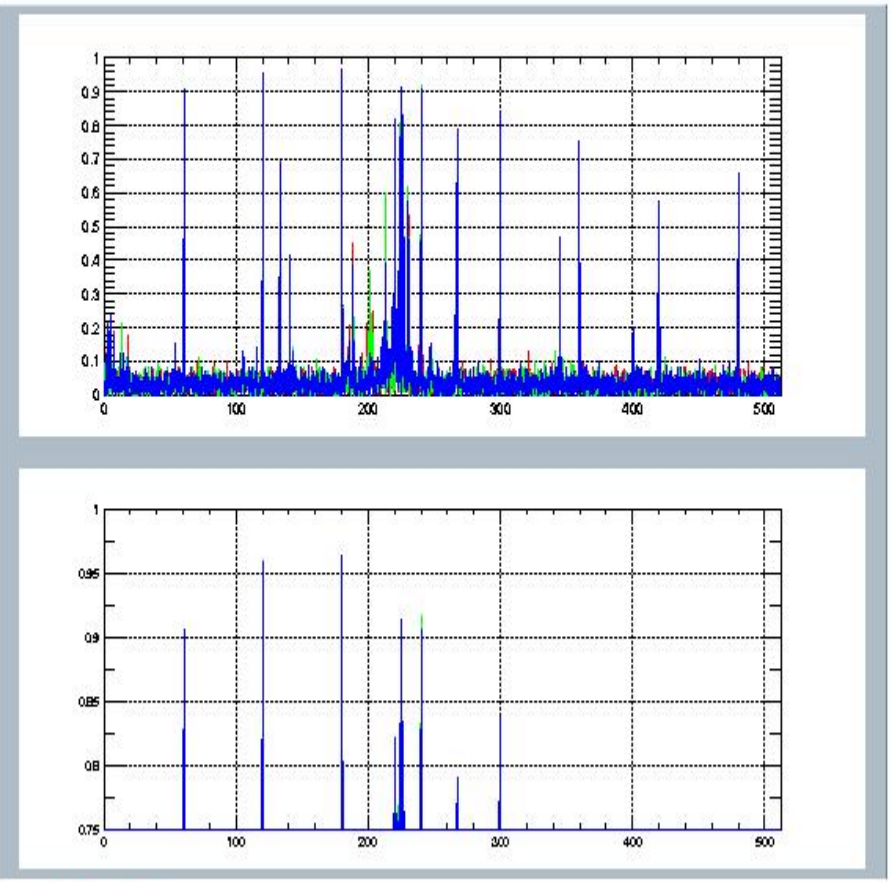


Interchannel Correlations with H2:LSC-AS_Q

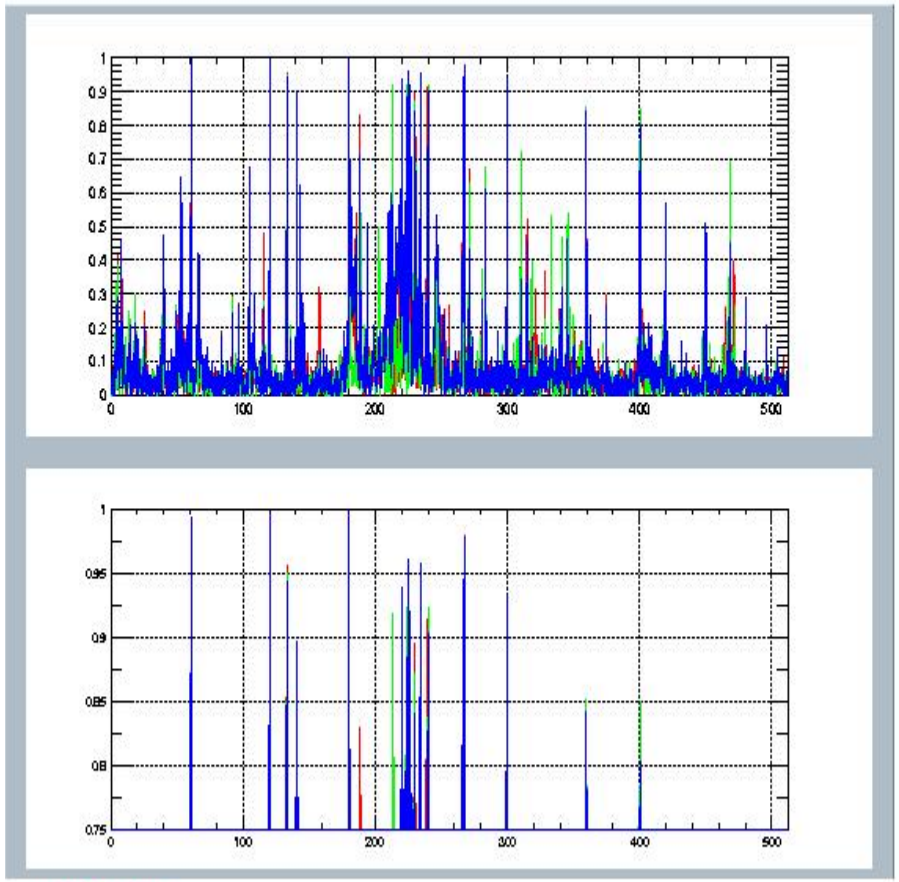


Interchannel Correlations with H2:IOO-MC_F

Microphones

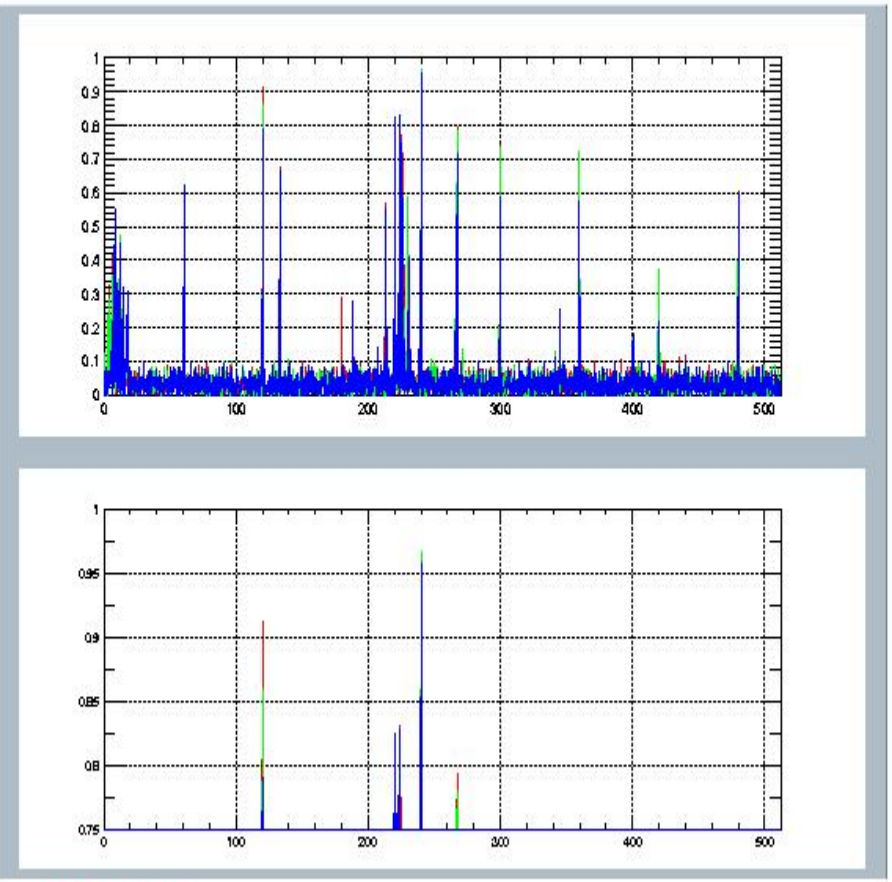


Interchannel Correlations with H2:LSC-AS_Q

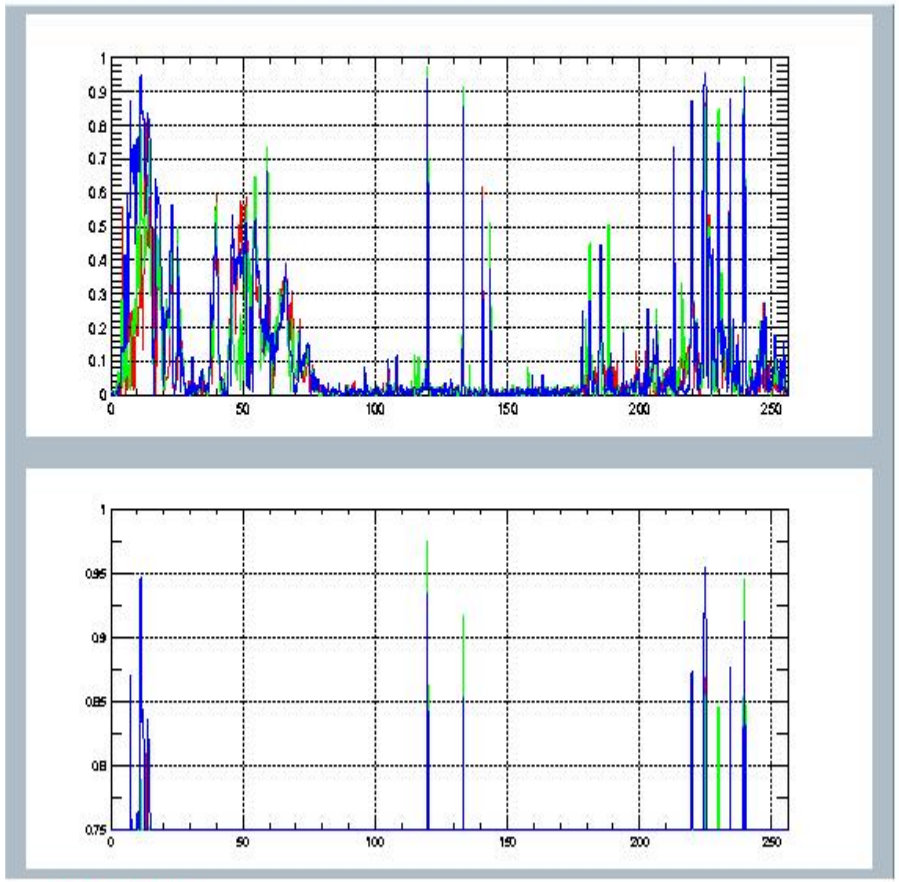


Interchannel Correlations with H2:IOO-MC_F

HAM Accelerometers

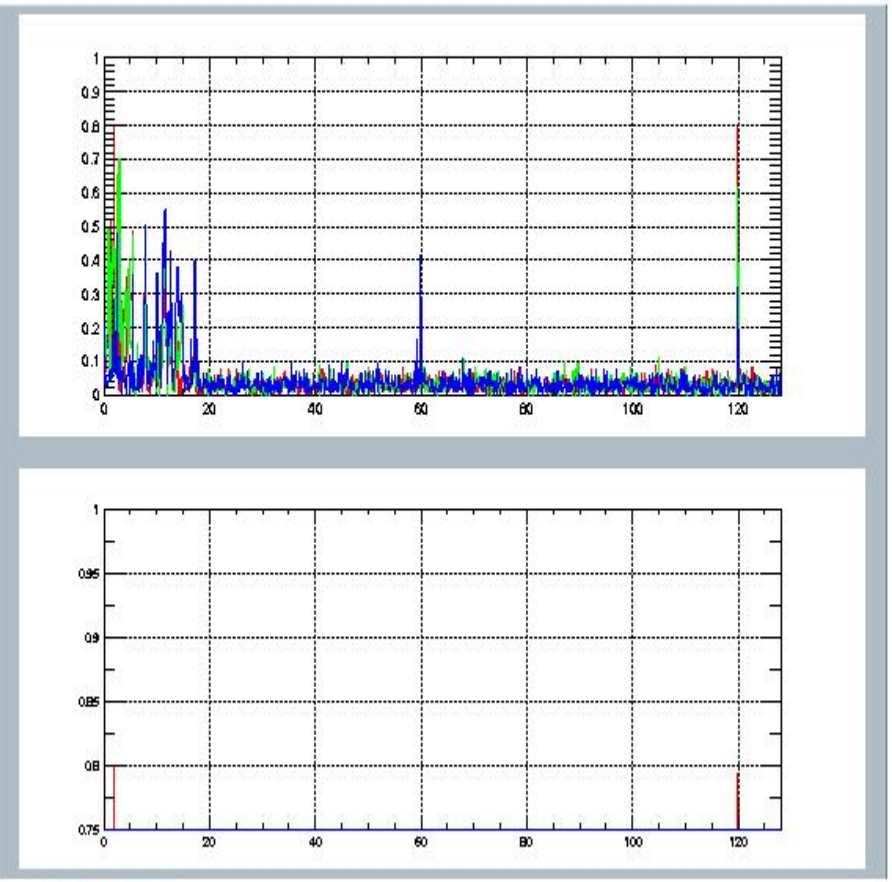


Interchannel Correlations with H2:LSC-AS_Q

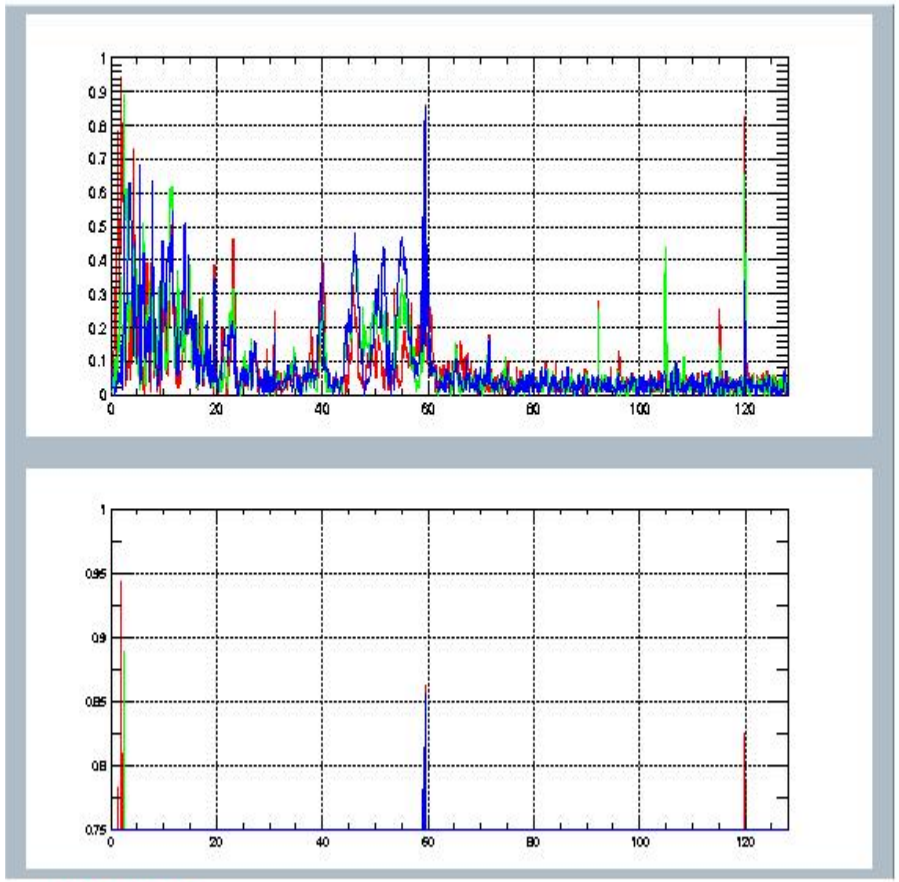


Interchannel Correlations with H2:IOO-MC_F

LVEA Seismometers



Interchannel Correlations with H2:LSC-AS_Q



Interchannel Correlations with H2:IOO-MC_F

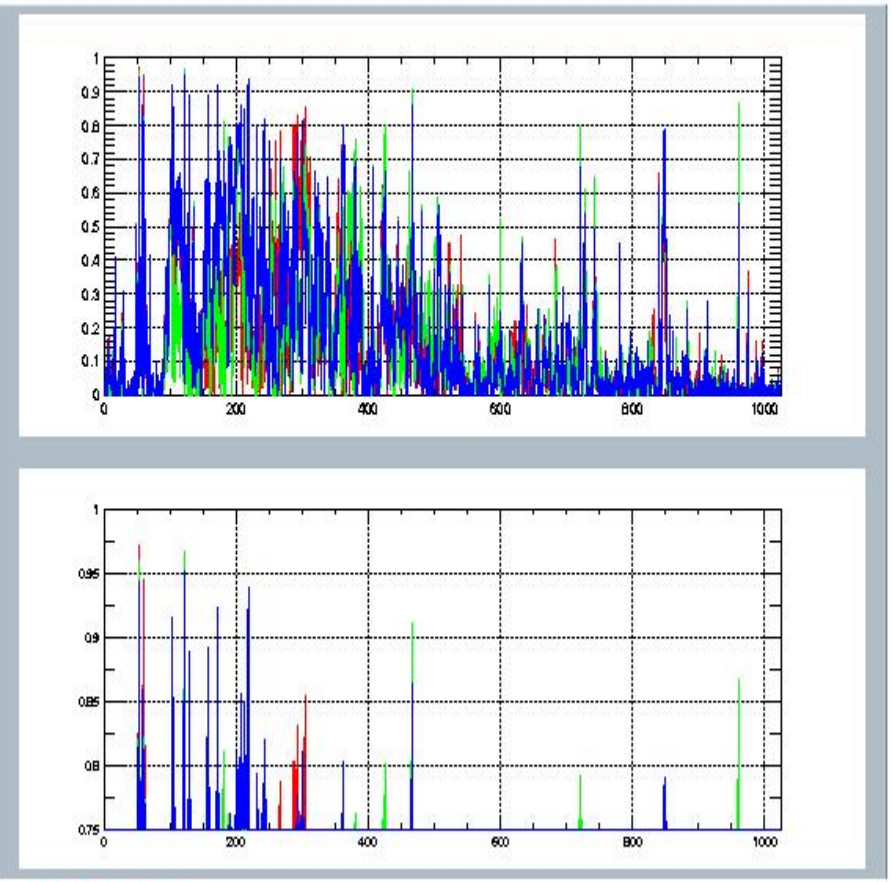
CorrMon Results LLO

- 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 ???

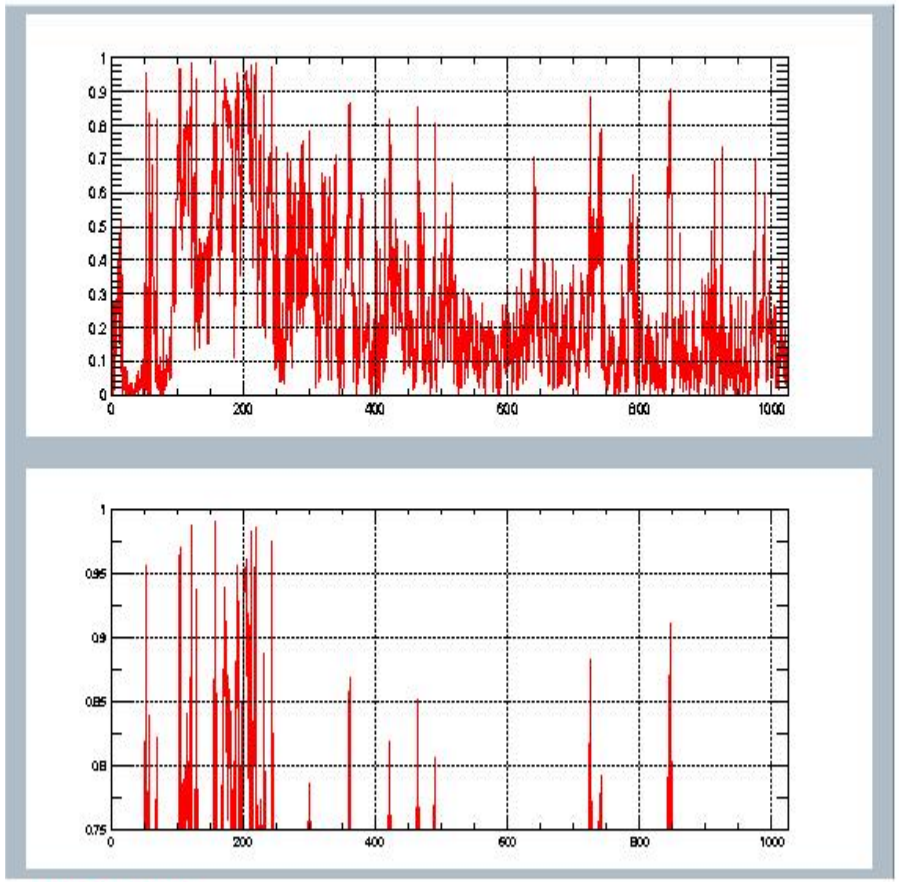
CorrMon Results LLO

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

PSL Accelerometers

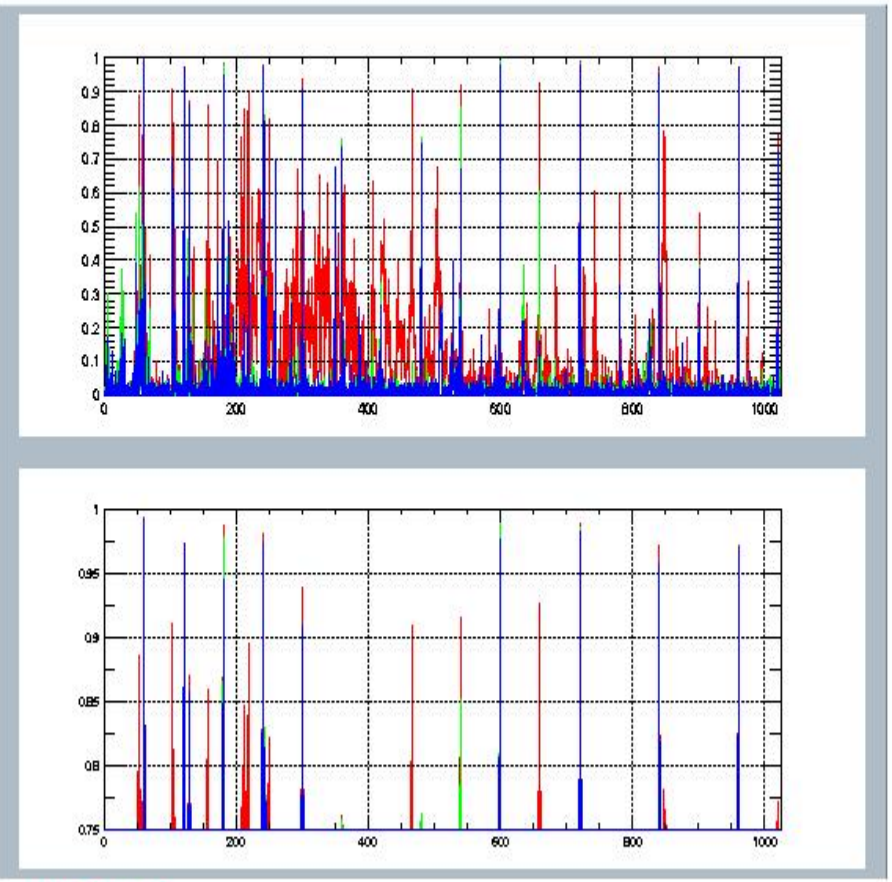


Interchannel Correlations with L1:LSC-AS_Q

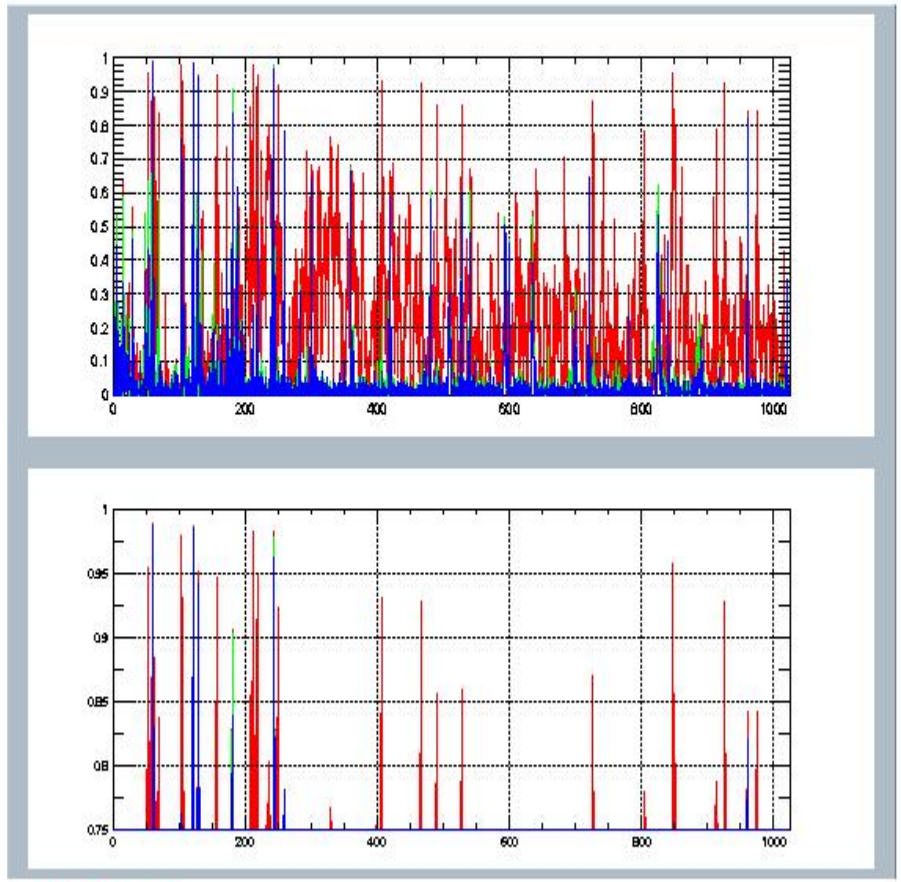


Interchannel Correlations with L1:IOO-MC_F

Microphones

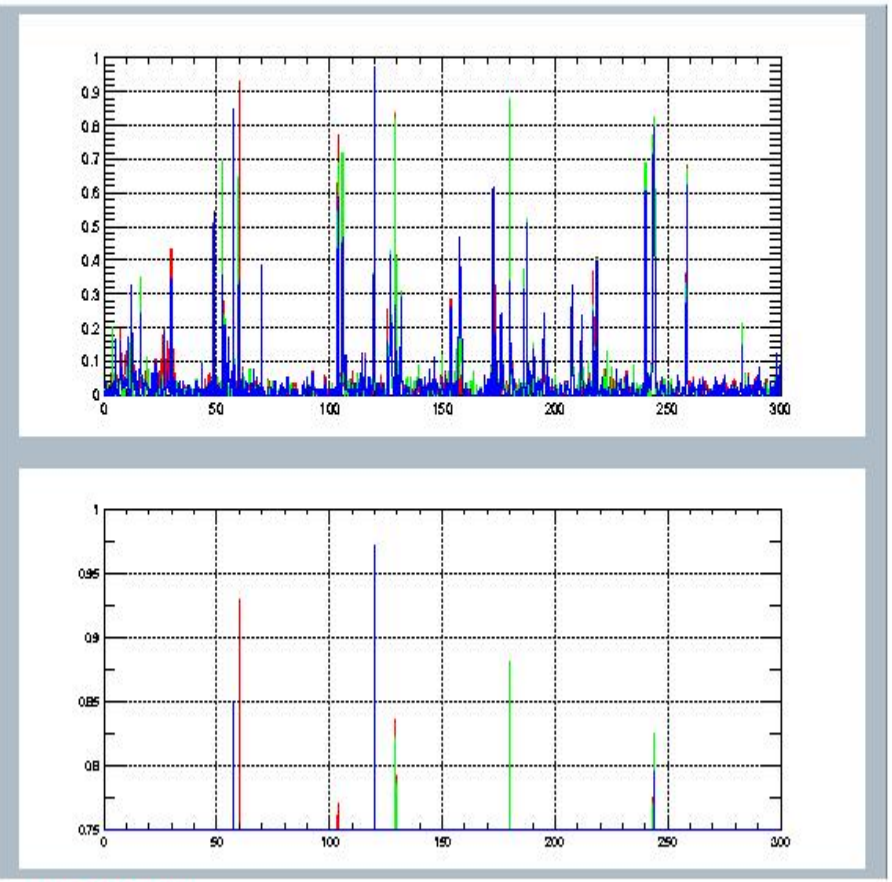


Interchannel Correlations with L1:LSC-AS_Q

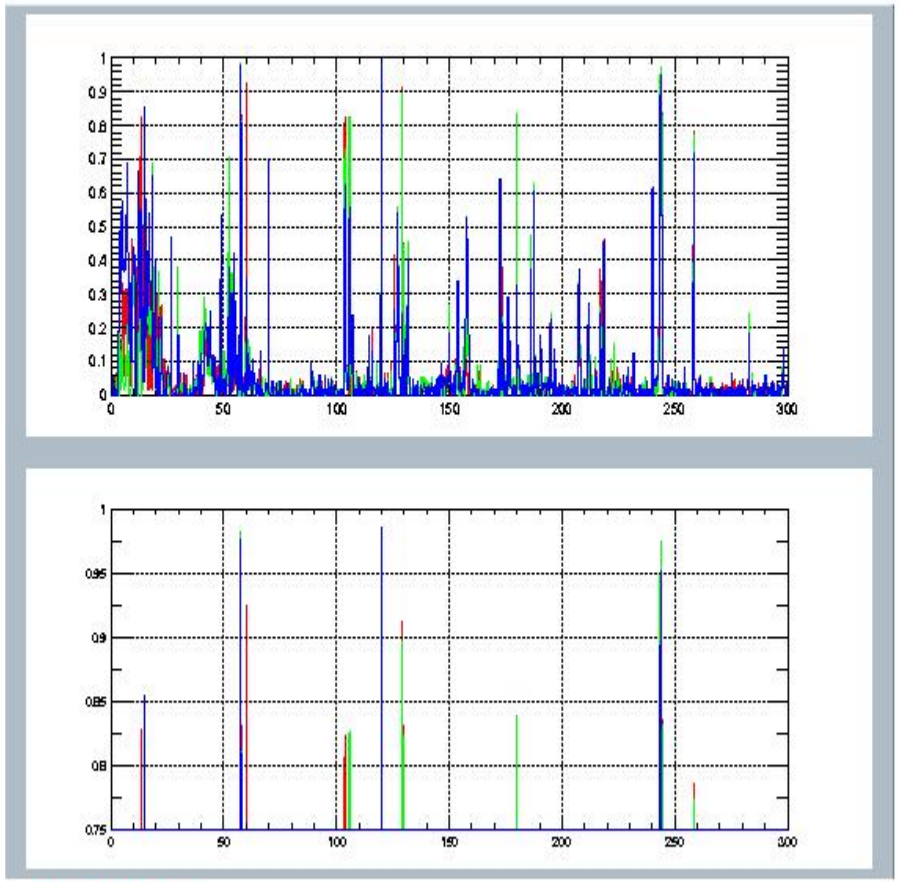


Interchannel Correlations with L1:IOO-MC_F

HAM Accelerometers

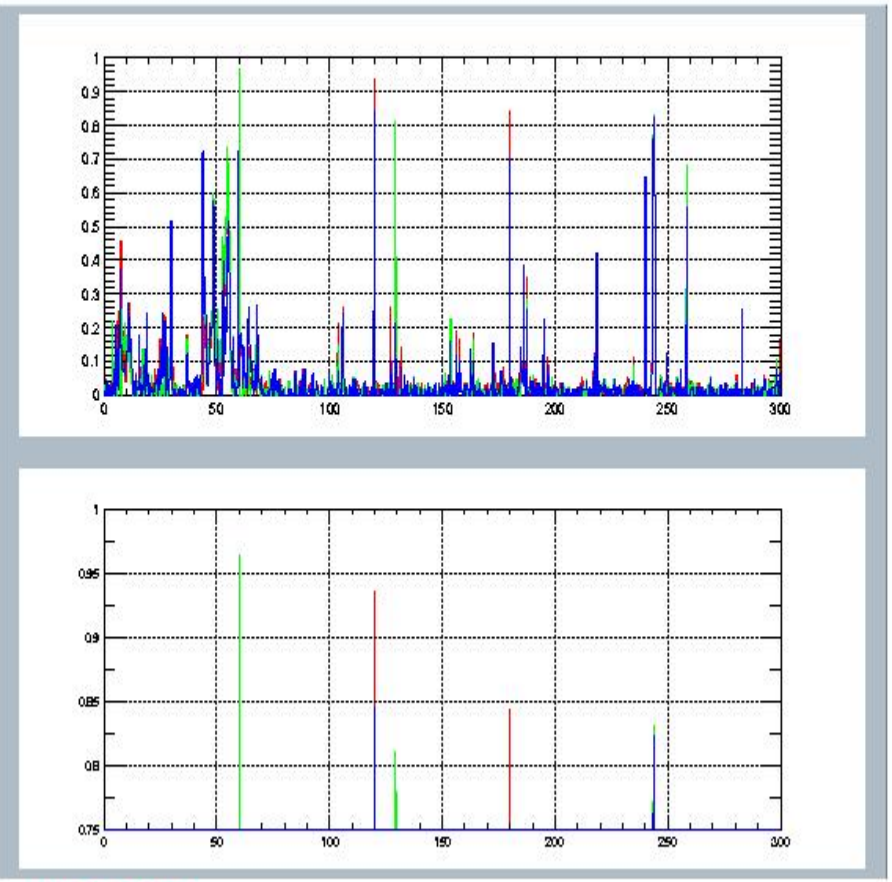


Interchannel Correlations with L1:LSC-AS_Q

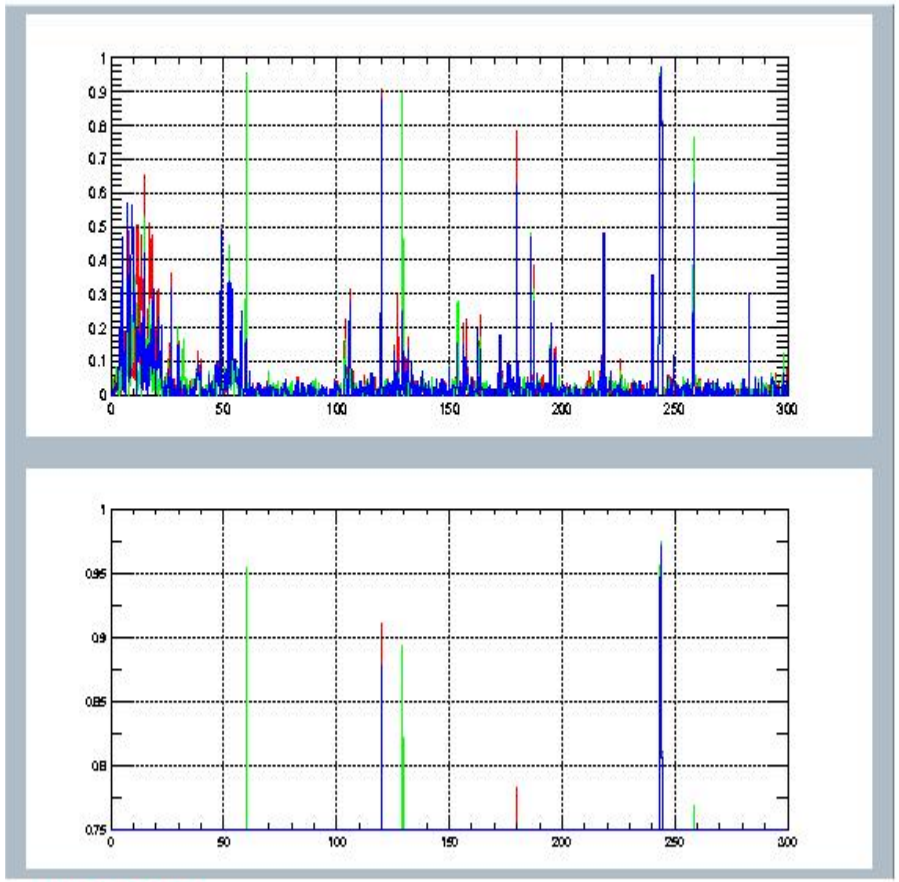


Interchannel Correlations with L1:IOO-MC_F

BSC Accelerometers

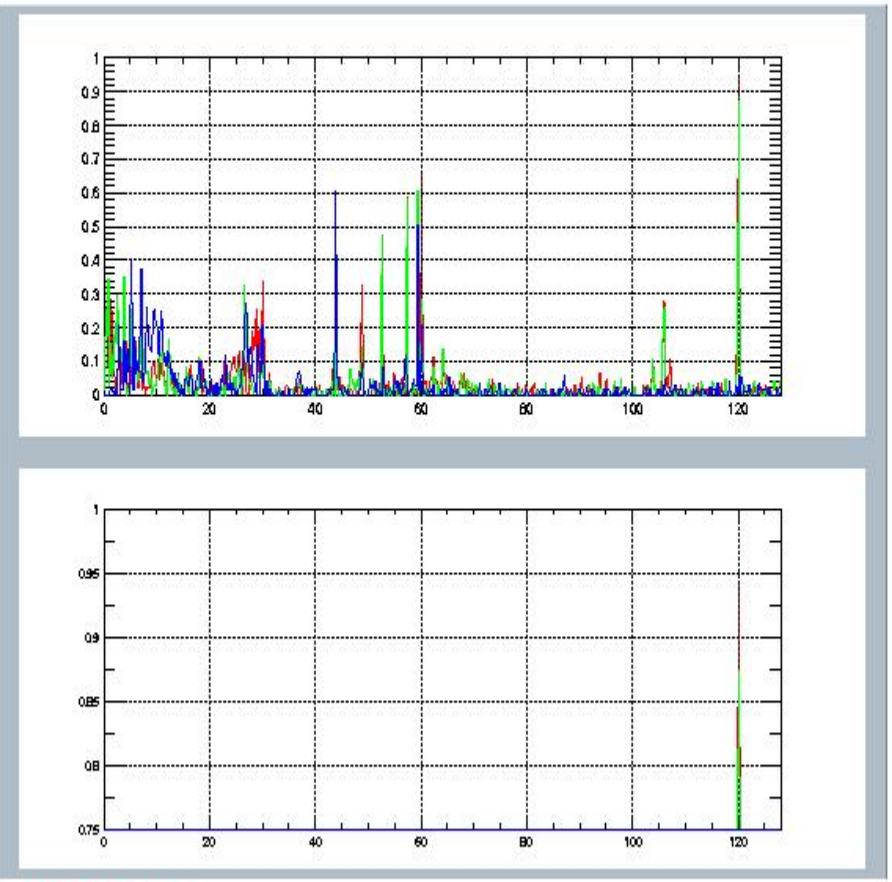


Interchannel Correlations with L1:LSC-AS_Q

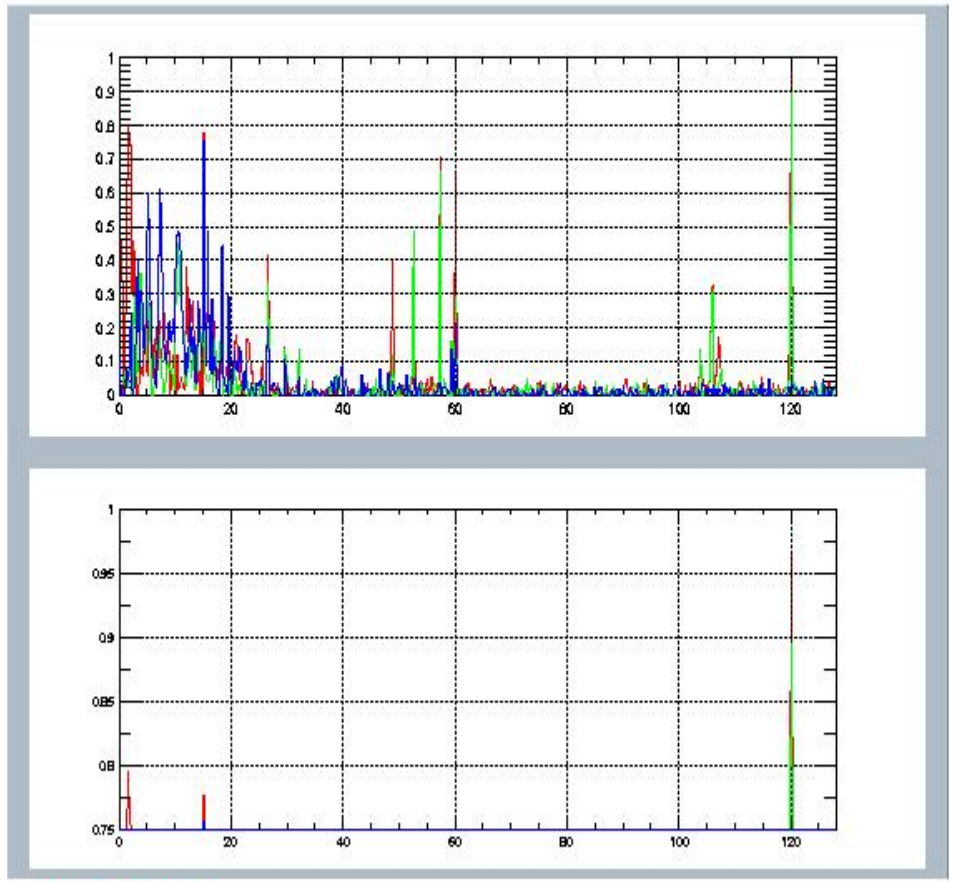


Interchannel Correlations with L1:IOO-MC_F

LVEA Seismometers



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