

S5 Coherence Studies

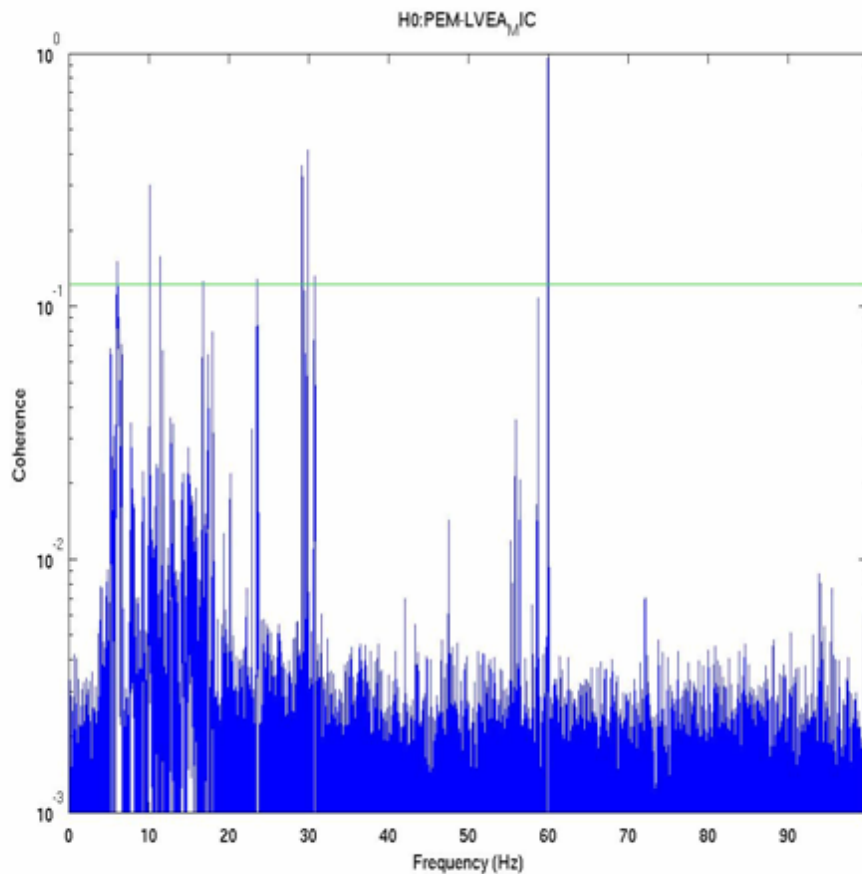
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S5 Coherence

- Calculate Coherence between DARM_ERR and PEM channels
- Calculated in 1024 s chunks ($\Delta f = 0.977$ mHz)
- Calculated month by month, ~2000 averages per month
- mat file output for every month, every PEM channel. All S5 months have been analysed.
- <http://virgo.physics.carleton.edu/Hans/coherence/peaks/>

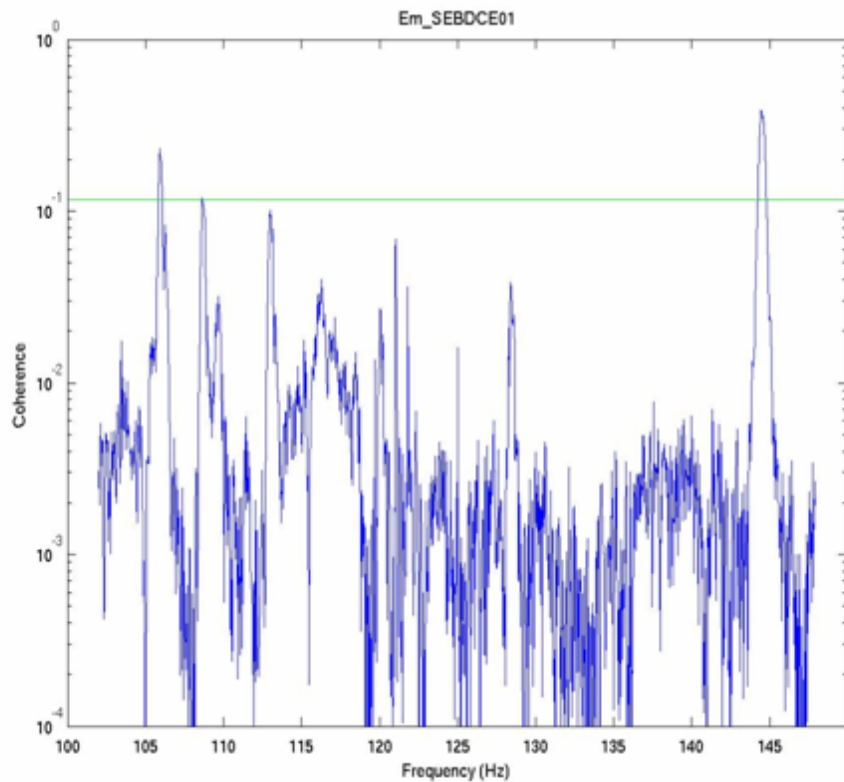
S5 Coherence



- Calculate and record “large” peaks
- 3 ♦ significance calculated over 30 Hz about the line

Similar Code and Studies at Virgo

- Irene Fiori at EGO
- [Coherence for VSR1](#)
- Similar code, similar presentation

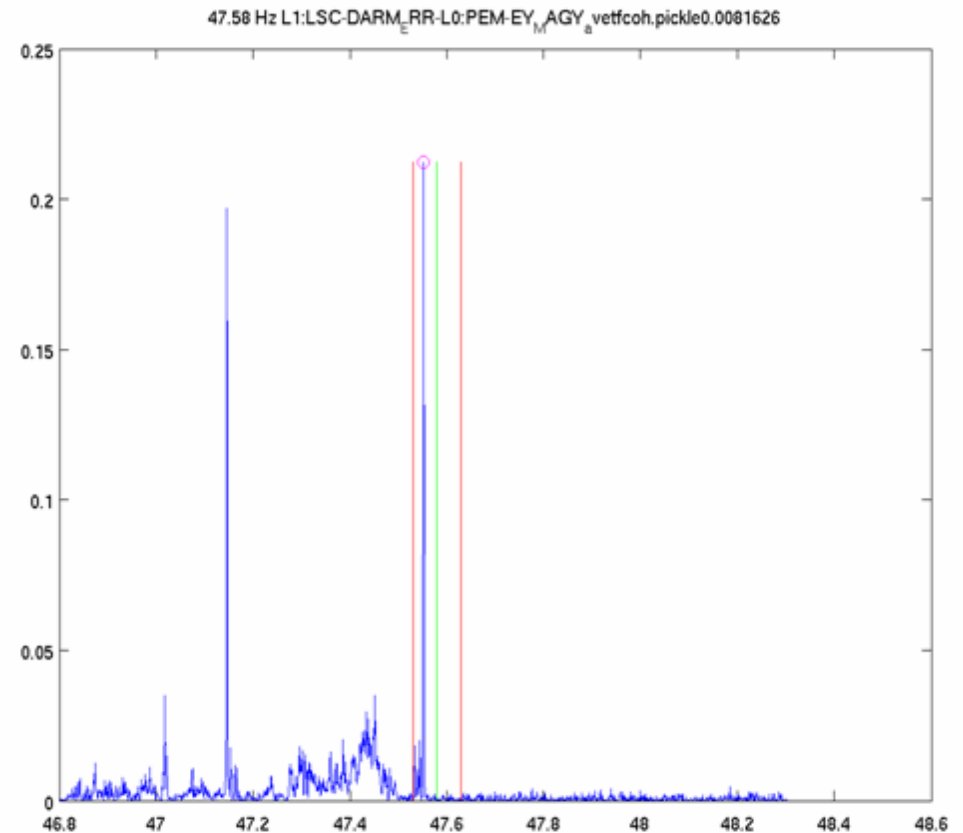


S5 Coherence: Mine Results

- Month by month search for source of noise lines
- Part of S5 line search effort
- Search for potential source of line identified by CW and Stochastic searches
- Record all months when line is > 3 ♦

S5 Stochastic Lines

- 47.58 Hz line appears in S5 stochastic analysis
- Line appears in coherence with L0:PEM-EY_MAG_x for a few months



S5 CW Lines

- Search for lines that appear in CW searches
- Note channel, and month by month significance
- Veto lines uncovered by the searches

Future Effort

- Stochastic H1-H2 Analysis
- New coherence code from Nick Fotopoulos
- Calculate LHO PEM coherences month by month, week by week, day by day
- Identify necessary frequency regions for removal
- Analyse S5, be ready to go “real time” for S6