

Stochastic Analysis Group Overview

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LSC meeting, 20 Mar 2007

Current Papers

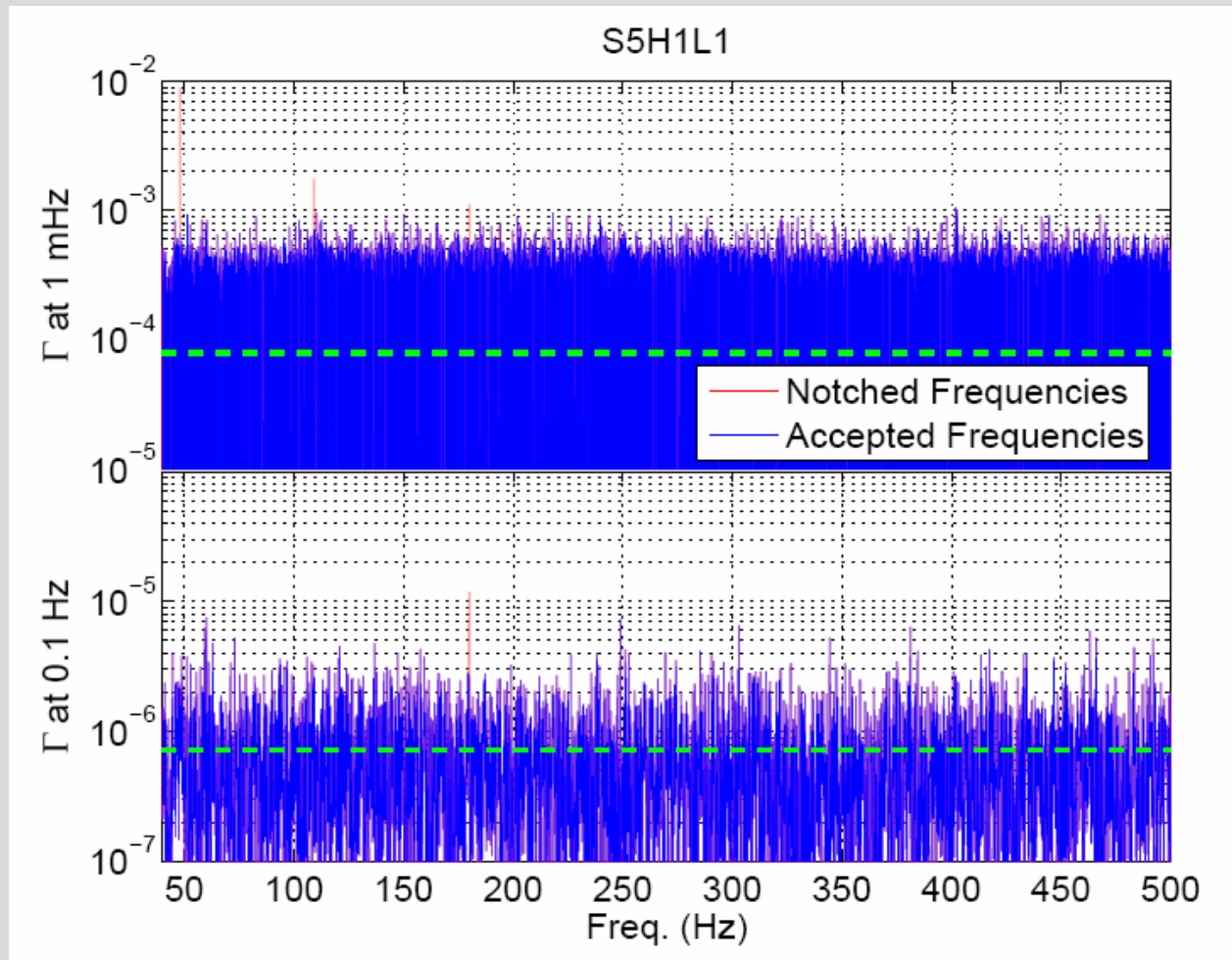
<i>S4 isotropic search</i>	$\Omega_0 < 6.5 \times 10^{-5}$	To be published in ApJ (proofs corrected)
<i>S4 L1-Allegro</i>	$\Omega_0 < 1$ @ ~900 Hz	LSC review complete, posted to gr-qc
<i>S4 Radiometer search</i>	Upper limit map; flat strain power spectrum: $< 10^{-48}-10^{-47}$ / Hz	LSC review complete, posted to gr-qc
<i>S4 FSR search</i>	$h < 10^{-22}/\text{rtHz}$ @ 37kHz	Under review by stochastic comm. & calibration comm.

In the coming year ...

- ❑ S5 radiometer search
 - Ph.D. thesis component for Rob Ward (CIT)
- ❑ S5 isotropic background: upper limits from H1-H2
 - Two methods to deal with instrumental correlations:
 - PEM-channel coherence (Nick F)
 - Time shift analysis (Vuk M)
- ❑ S5 FSR search
 - Timing information exists for fast channels
- ❑ Radiometer technique
 - Spherical harmonic decomposition
- ❑ LIGO-Virgo

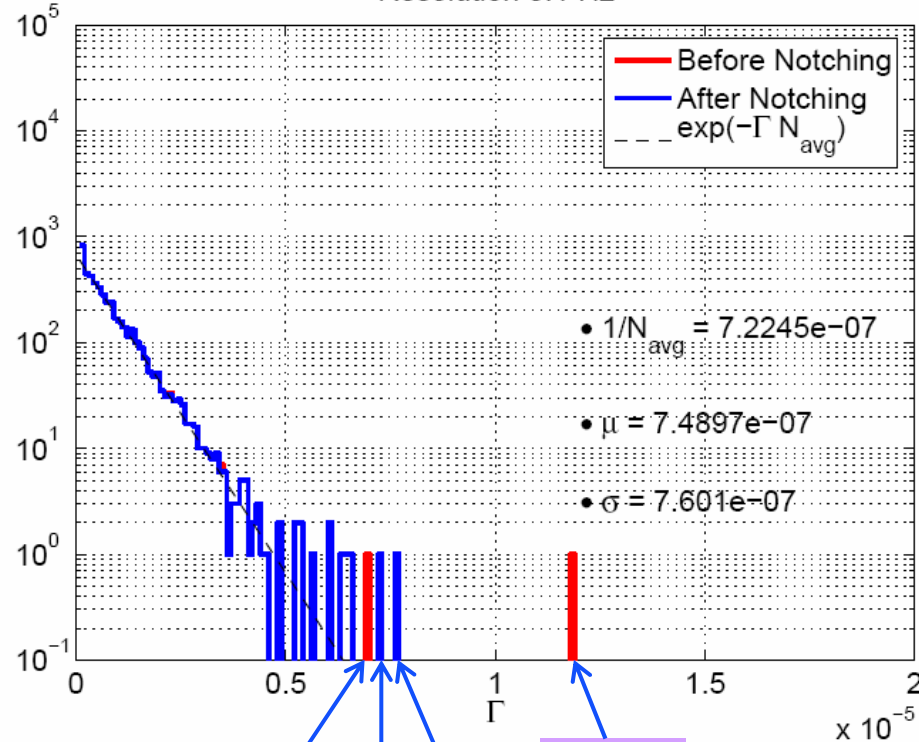
S5 H1-L1 cross-correlation

- They look pretty incoherent:



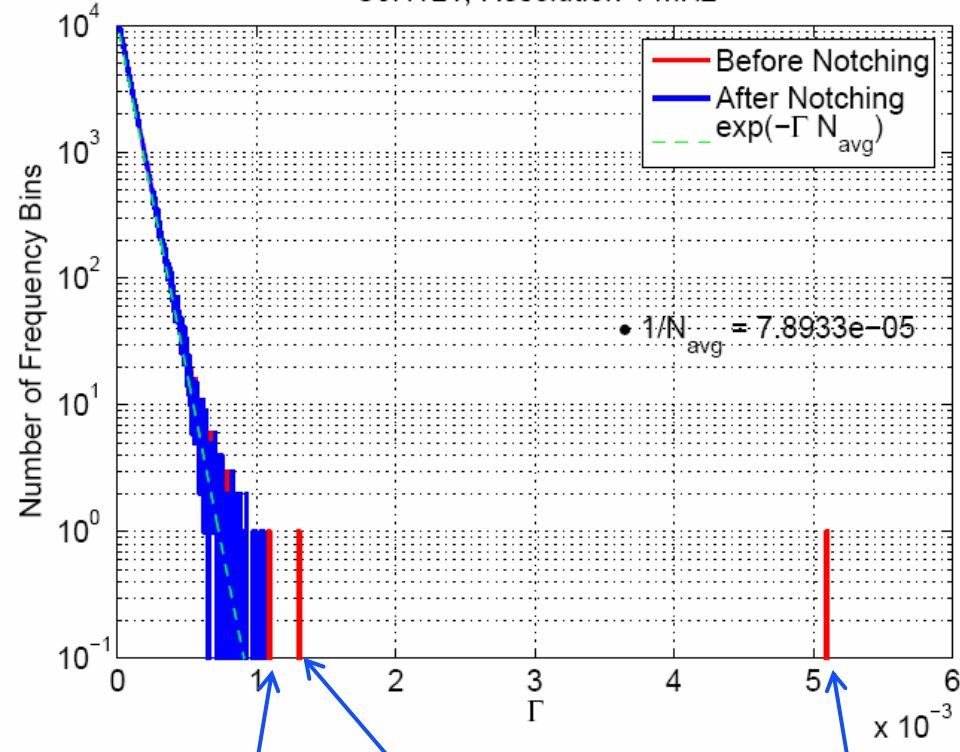
S5: H1-L1 coherence

Resolution 0.1 Hz



179.9
248.9
60.1
180.0

S5H1L1, Resolution 1 mHz



47.999
108.865
48.000
pulsar injection

Paper plans - S5 data

□ LHO-LLO cross-correlation

- Short paper including all-sky and (point source) radiometer results, for all of S5
- Current H1-L1 sensitivity: $\sigma_{\Omega} \approx 3 - 4 \times 10^{-6}$
- New limit could be ~2x below BBN bound

□ H1-H2 cross-correlation

- Long paper including methods of identifying instrumental correlations & search results, for all of S5

□ FSR (37.5 kHz) search, compared to S4 analysis:

- Timing information exists
- ~10x more sensitive

□ Radiometer: spherical harmonic decomposition