

ISOTROPIC UPDATE & REVIEW

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FINAL TIME-SHIFTED RUN

DATA / DQ

- Analyzed full O2 run (cleaned frames)
- 1 s time shift
- 192s segments, 1/32 Hz bins
- Removed CAT1 veto from CBC veto definer file
- Notch list, Job File, Supercut
- Links to standard plots: a0, a2thirds, a3

RESULTS

*Results include 1.06 bias factor

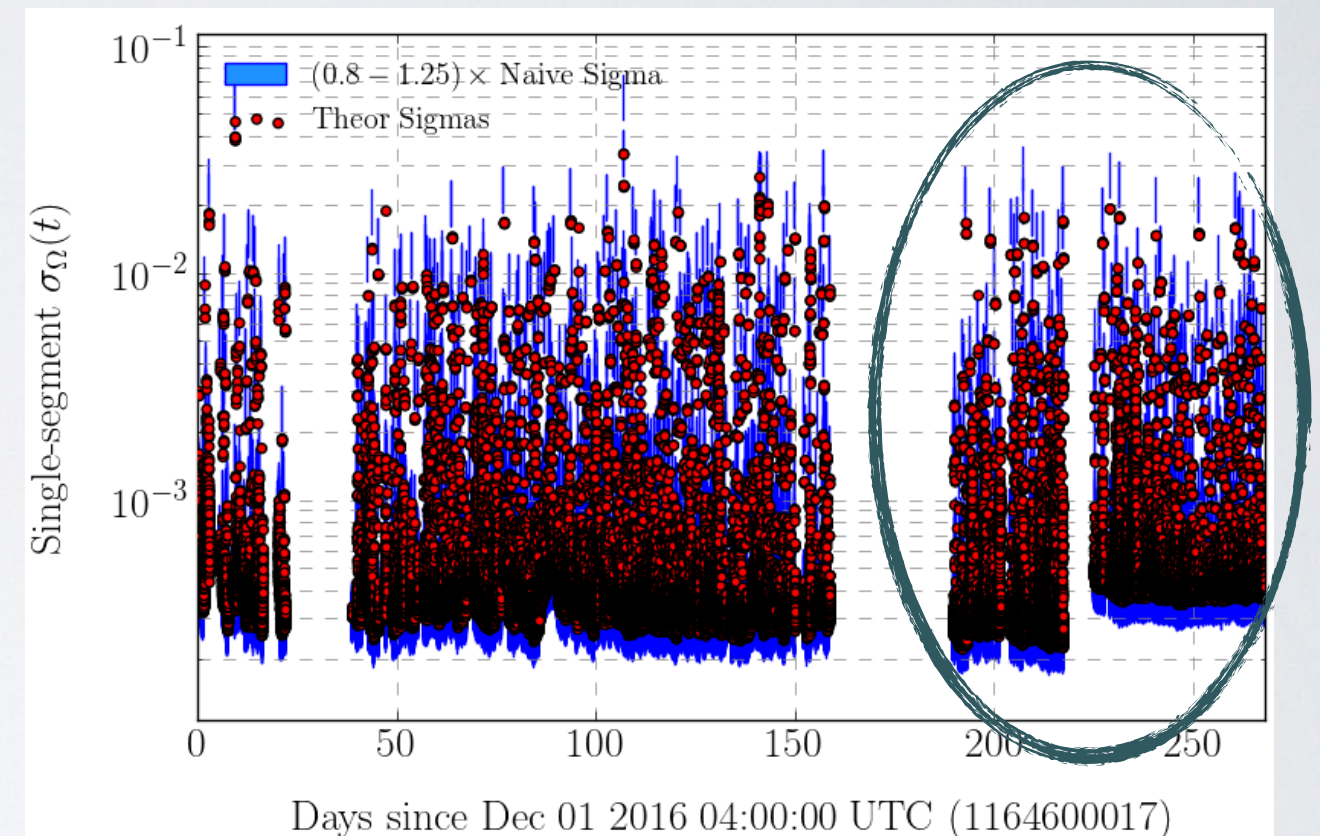
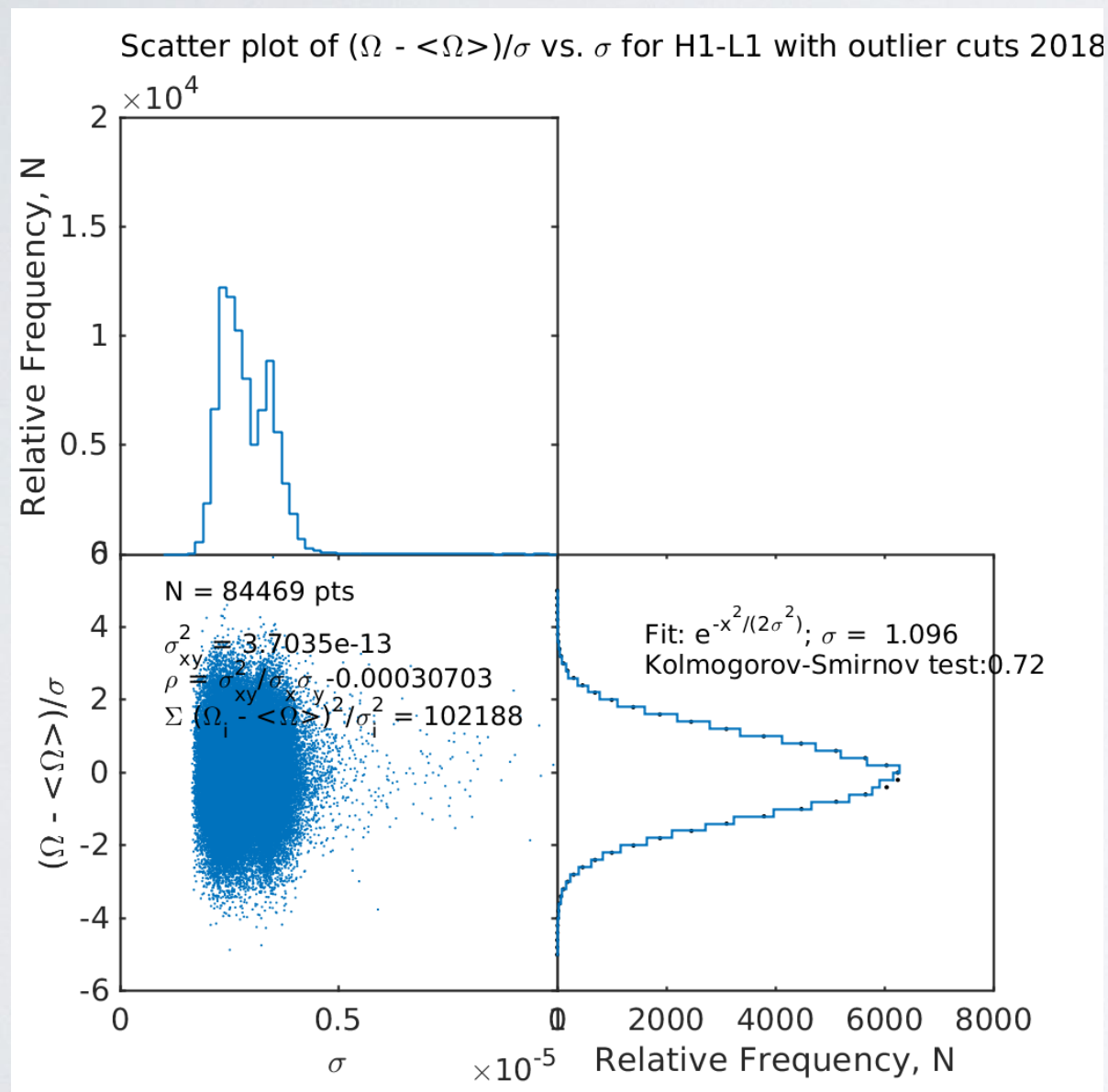
Spectral Index α	$Y/10e-8$	$\sigma /10e-8$	SNR
0	1.40	1.00	1.40
2/3	1.03	0.76	1.36
3	-0.03	0.13	-0.23

SENSITIVITY OF O1 + O2

- Hubble scaling: $\sigma_{O2} \rightarrow \sigma_{O2}/h_0^2 = 2.16 \times 10^{-8}$
- Since $\sigma_{O1} = 5.9 \times 10^{-8}$ then,
$$\sigma_{O1+O2} = \left(\sigma_{O1}^{-2} + \sigma_{O2}^{-2} \right)^{-1/2} = 2.03 \times 10^{-8}$$
- Improvement = $\sigma_{O1}/\sigma_{O1+O2} = 2.91$
- Compare to C00 data which saw an improvement of ~ 2.40
[[aLOG 339644](#)]

FOLLOWING UP ON ODDITIES

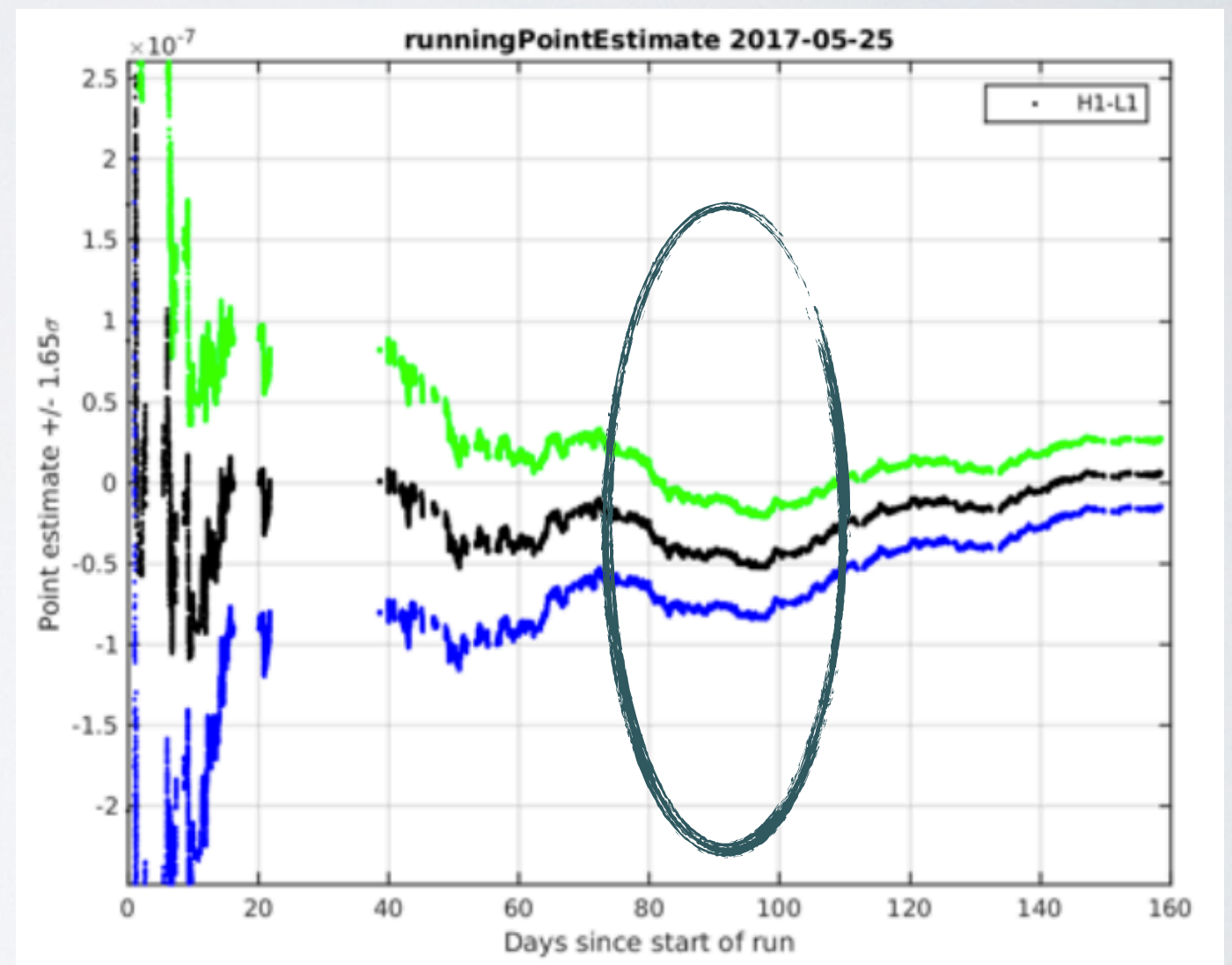
BIMODAL SIGMA DISTRIBUTION



Systematic jump in sigma around July caused by earthquakes near Hanford, WA

DIP IN POINT ESTIMATE

- Ran post-processing on days 70-90. Found SNR of -2.7
- Removing lines with $|\text{SNR}| > 2$ results in an SNR of about -2
- Dip could just be a statistical fluctuation



O2 ZERO-LAG RUN

DATA / DQ

- Analyzed full O2 run (cleaned frames)
- NO TIME SHIFT!
- 192s segments, 1/32 Hz bins
- Removed CAT1 veto from CBC veto definer file
- Notch list, Job File, Supercut
- Links to standard plots: a0, a2thirds, a3

ZERO-LAG RESULTS

*Results include 1.06 bias factor

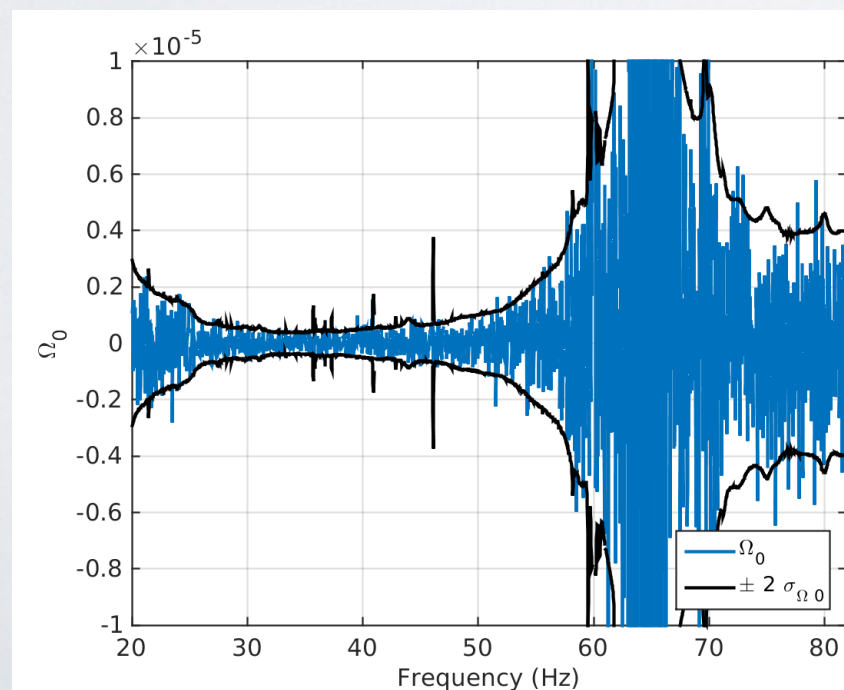
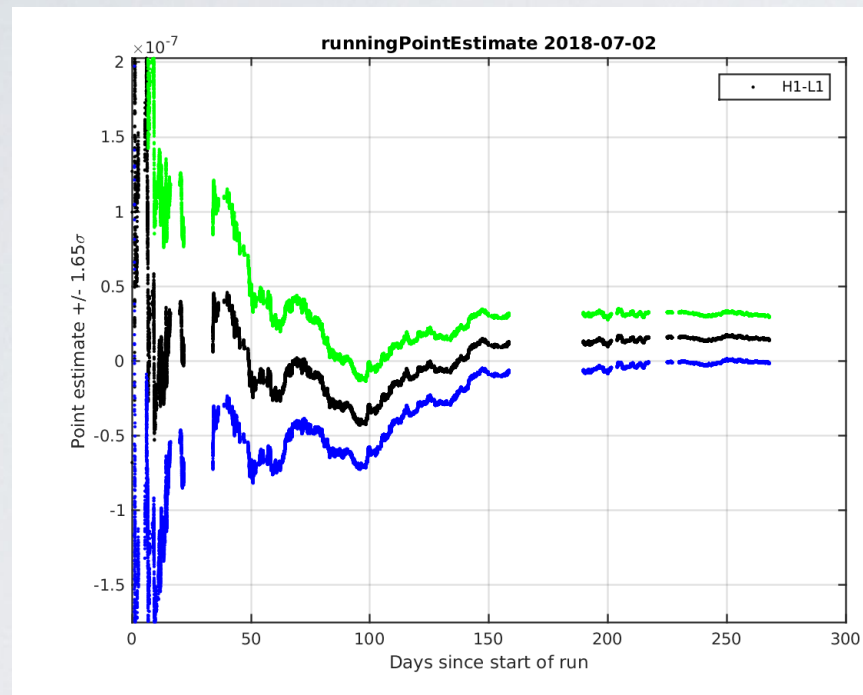
Spectral Index α	$Y/10e-8$	$\sigma / 10e-8$	SNR
0	1.03	1.00	1.03
2/3	0.93	0.76	1.22
3	0.16	0.13	1.25

ZERO-LAG QUICK POINTS

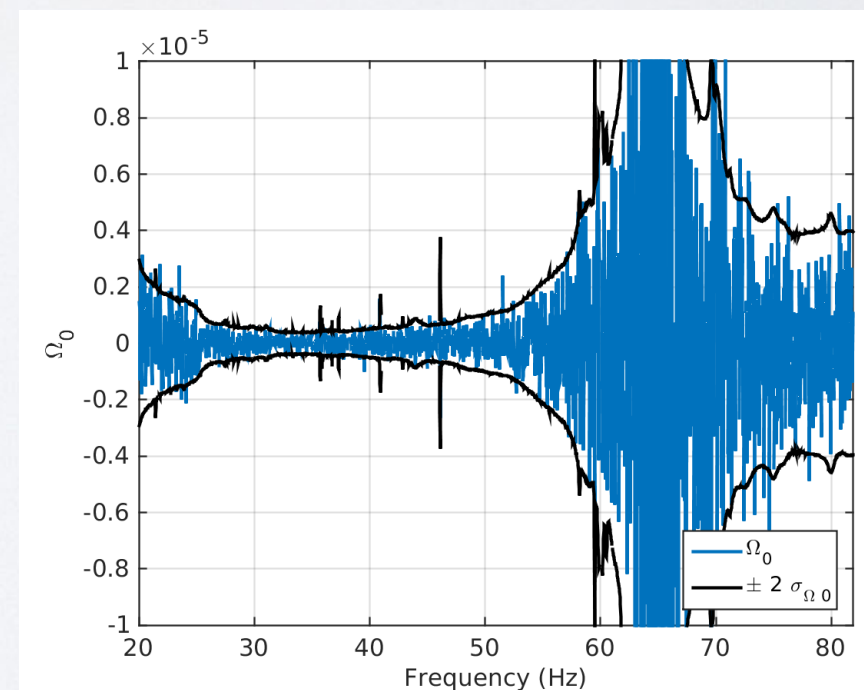
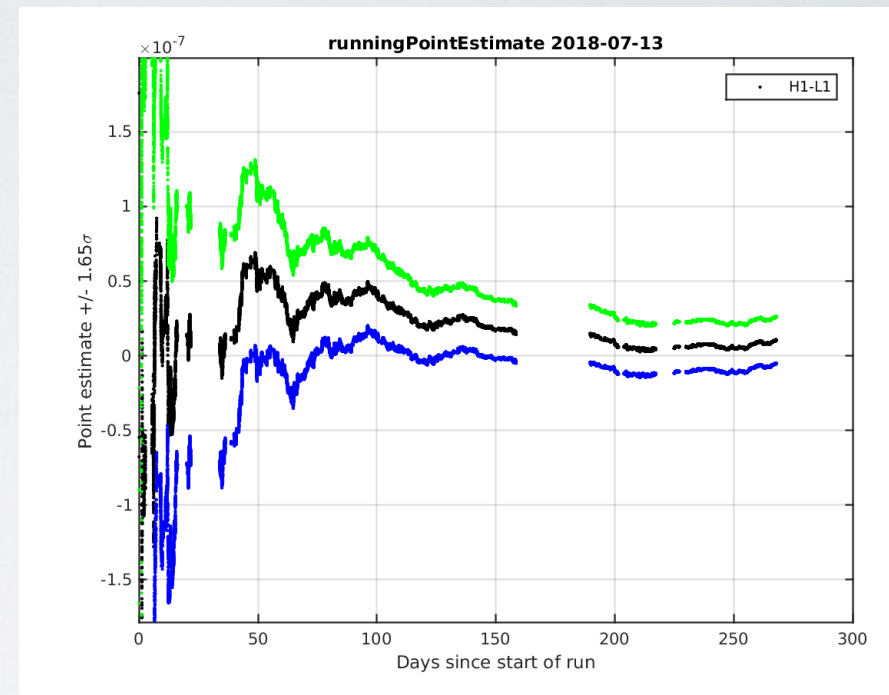
- Consistent with expectations from time-shifted run
- K.S. test of 0.92
- Bimodal sigma distribution
- Point estimate looks good - dip in time-shifted run is probably inconsequential

TIME-SHIFT VS. ZERO-LAG I

Time Shifted



Zero Lag



TIME-SHIFT VS. ZERO-LAG 2

* Results include 1.06 bias factor
* ZL="Zero Lag, "TS="Time Shifted"

Spectral Index α	$Y/10e-8$ (ZL / TS)	$\sigma / 10e-8$ (ZL / TS)	SNR (ZL / TS)
0	1.03 / 1.40	1.00 / 1.00	1.03 / 1.40
2/3	0.93 / 1.03	0.76 / 0.76	1.22 / 1.36
3	0.16 / -0.03	0.13 / 0.13	1.25 / -0.23

THANKS!