



LIGO



ASI: can we use it to veto GW triggers?

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Louisiana State University

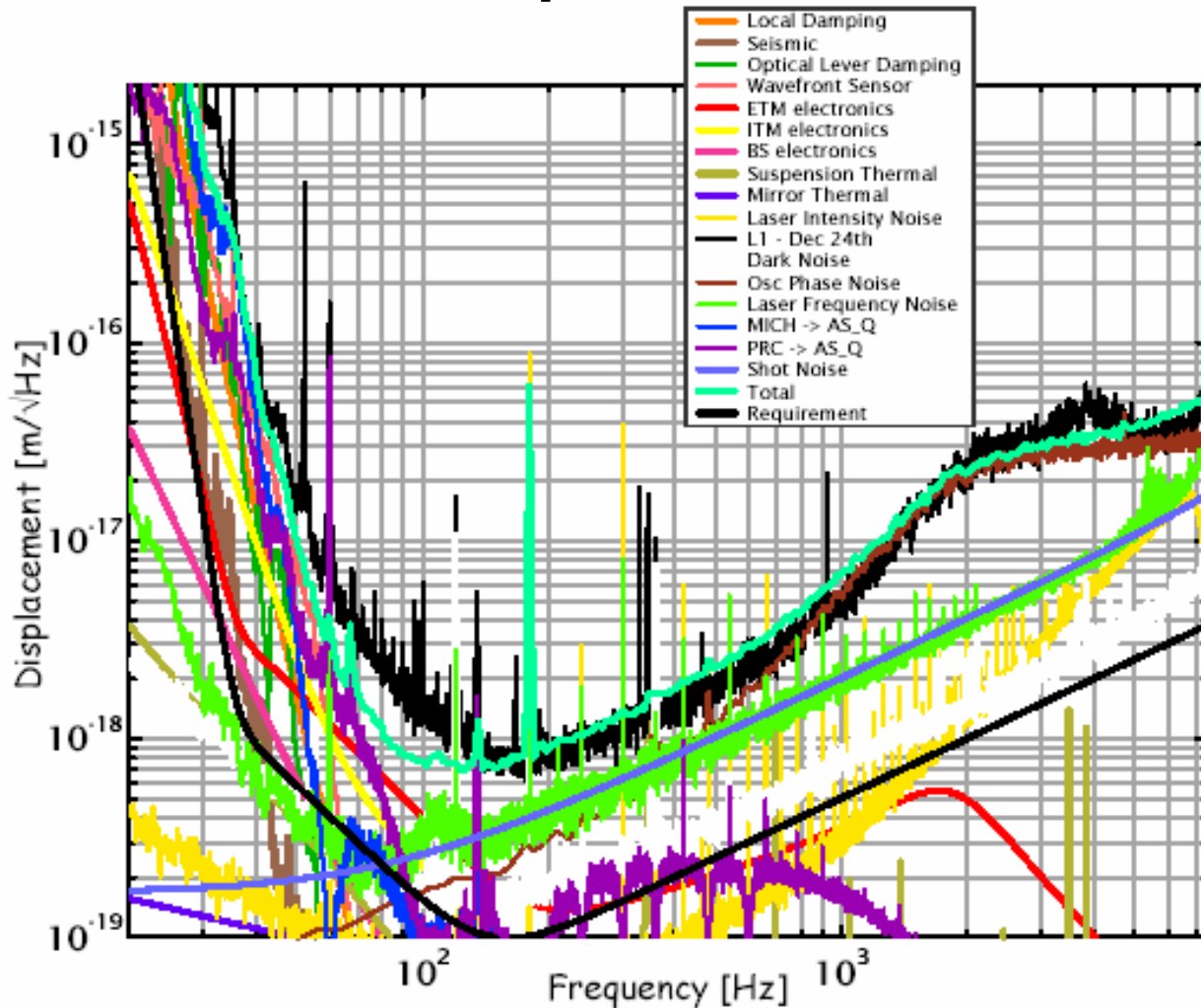
Alessandra Di Credico
Syracuse University

LIGO Science Collaboration meeting, August 17 2004

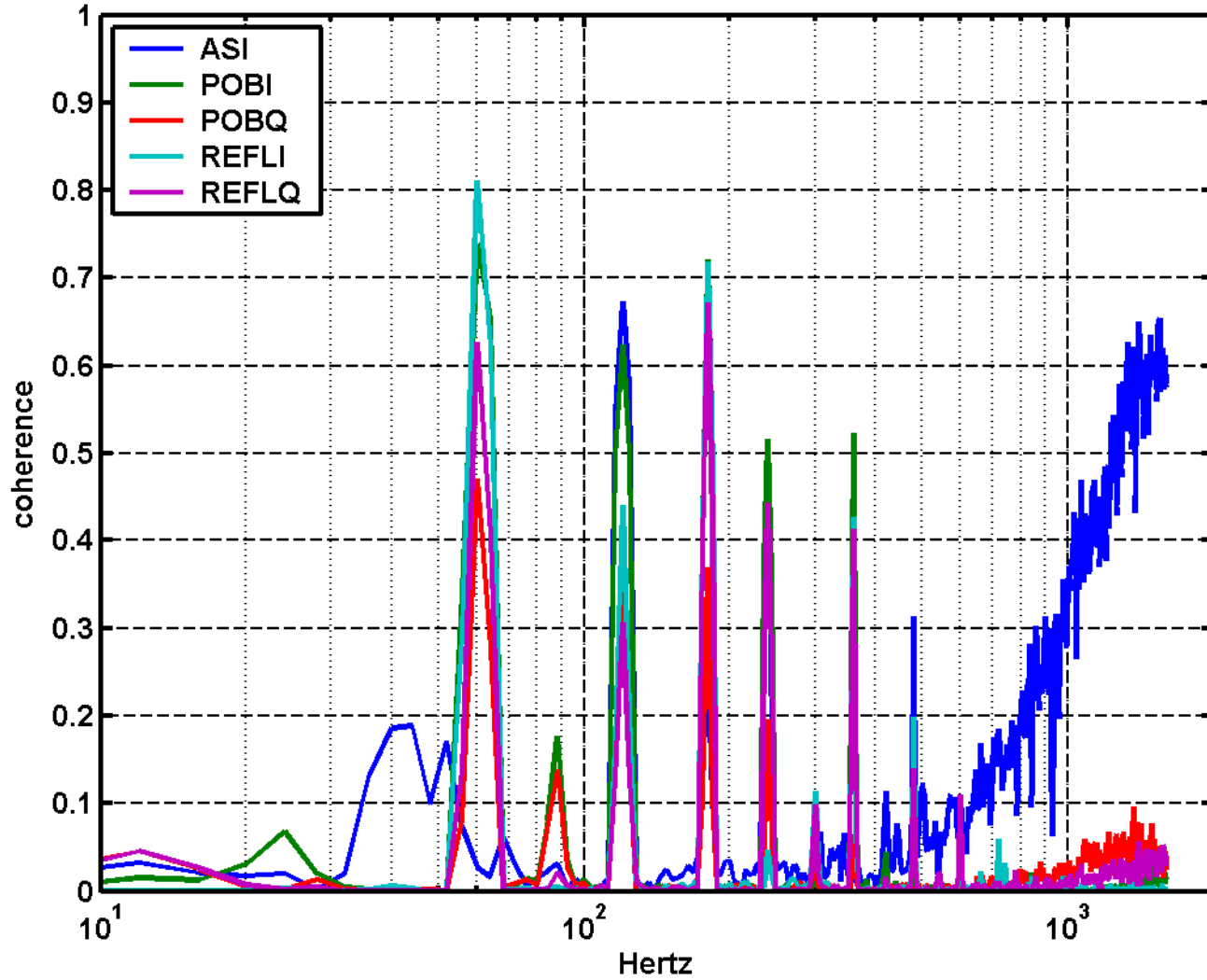
August 17, 2004

G040375-00-Z

Common noise source: oscillator phase noise

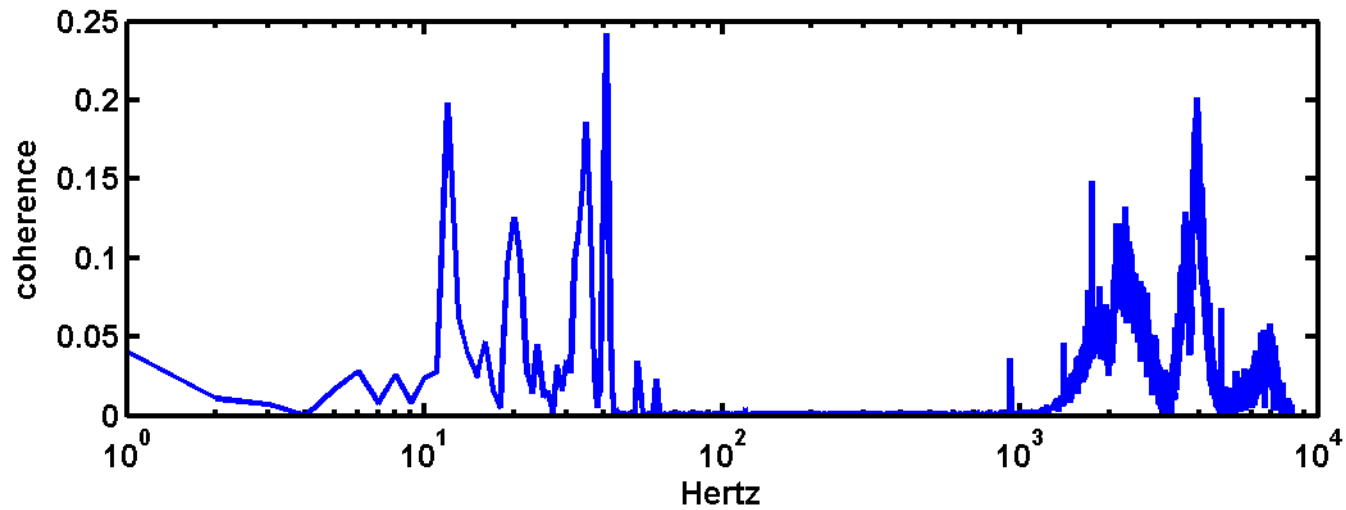
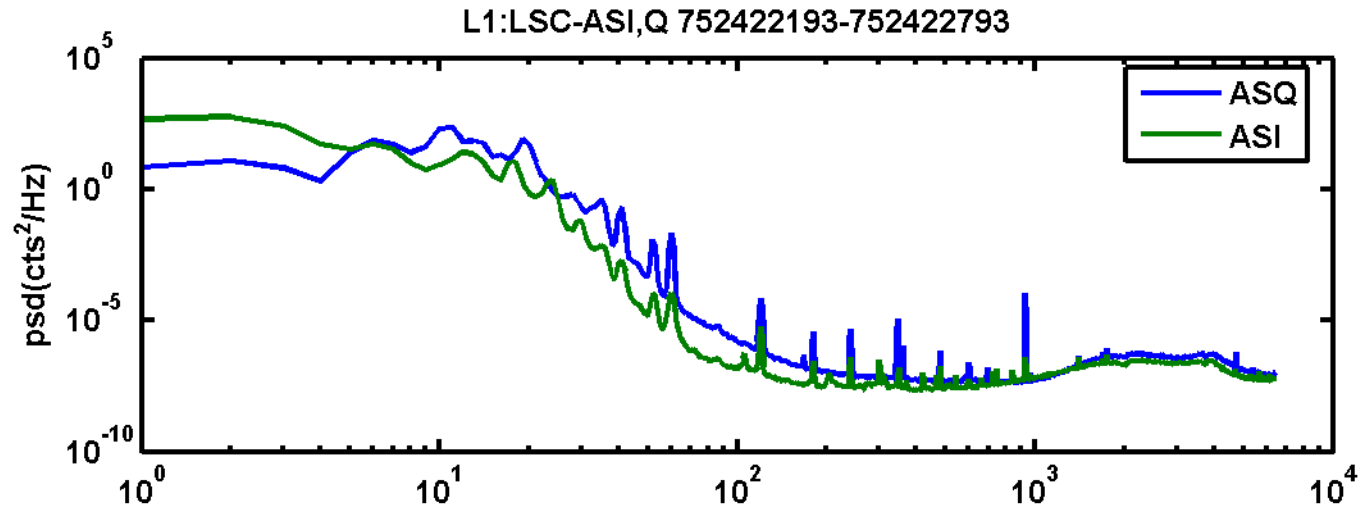


Coherence with L1:LSC-AS_Q, 752422563-752422633

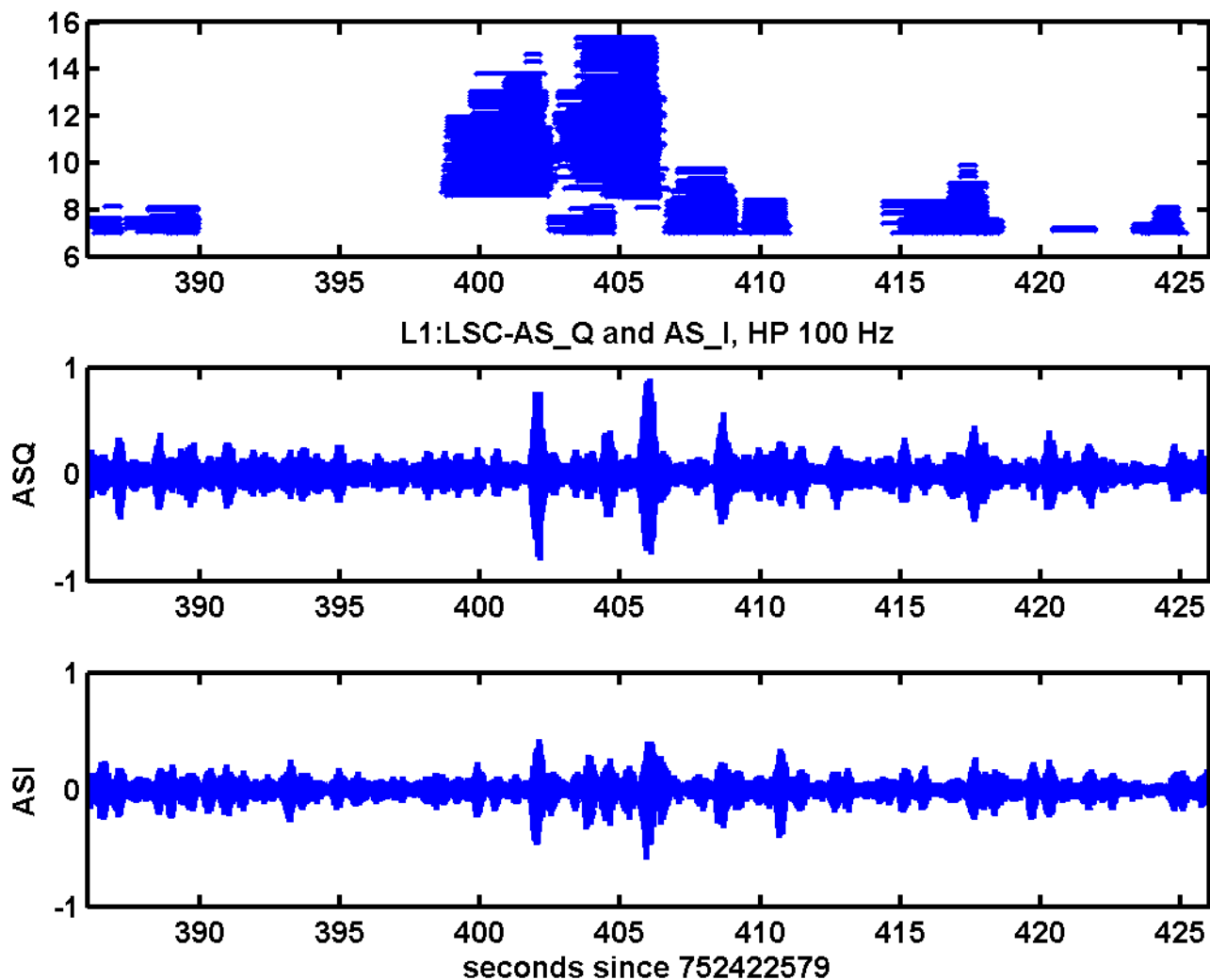


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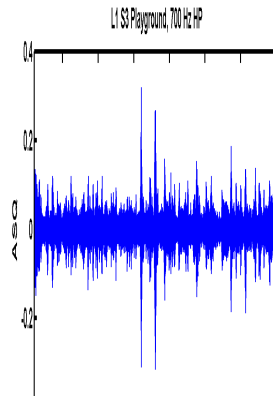


BNS loudest playground trigger

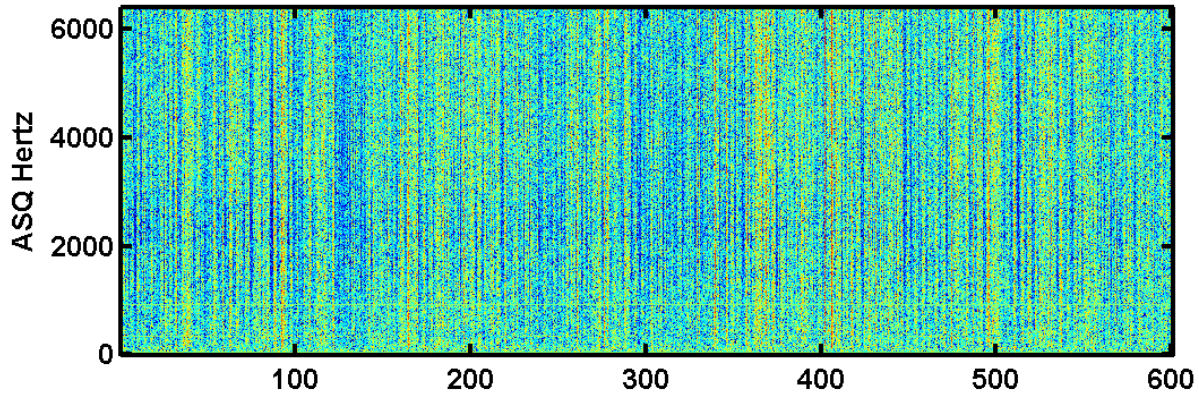


August 17, 2004

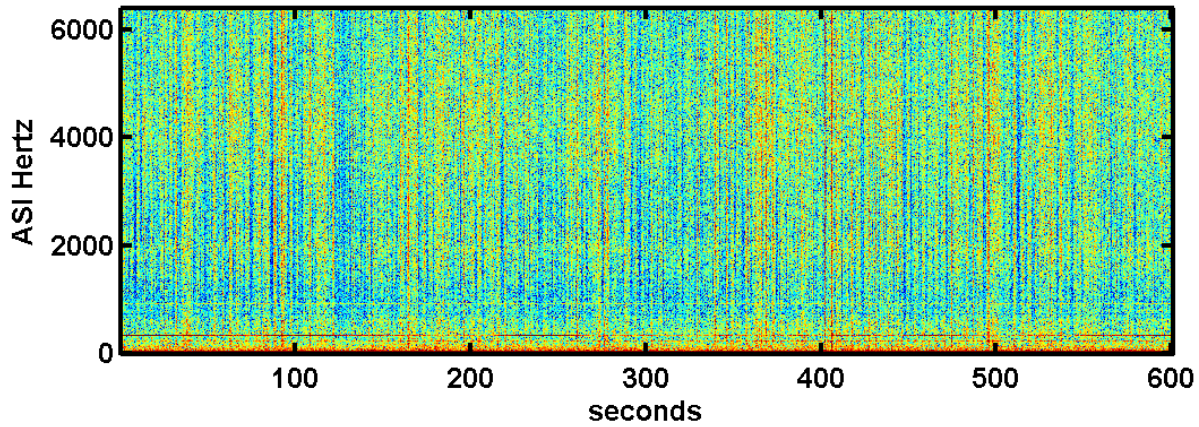
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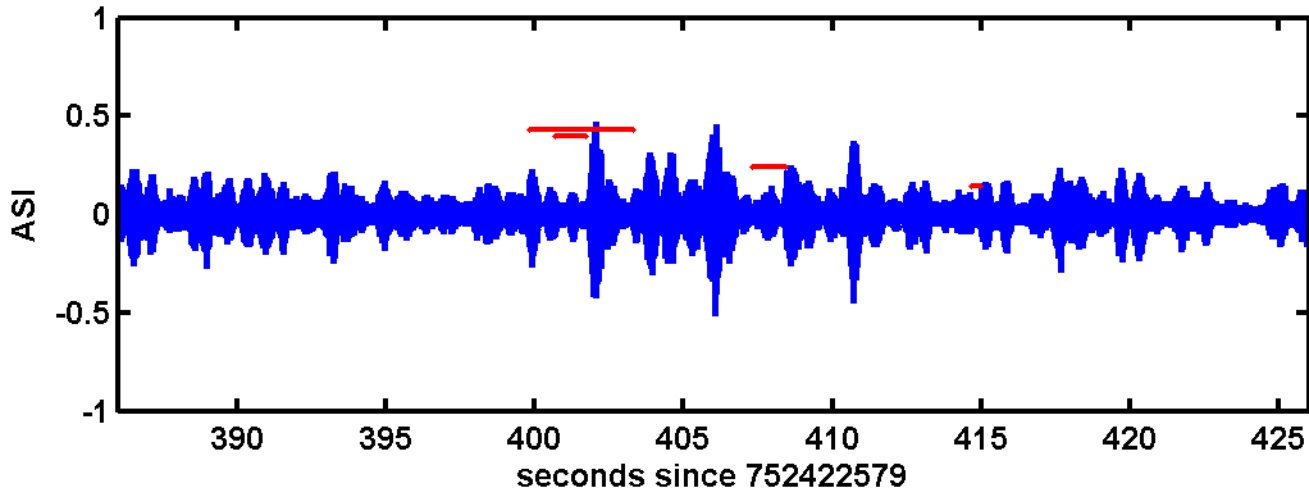
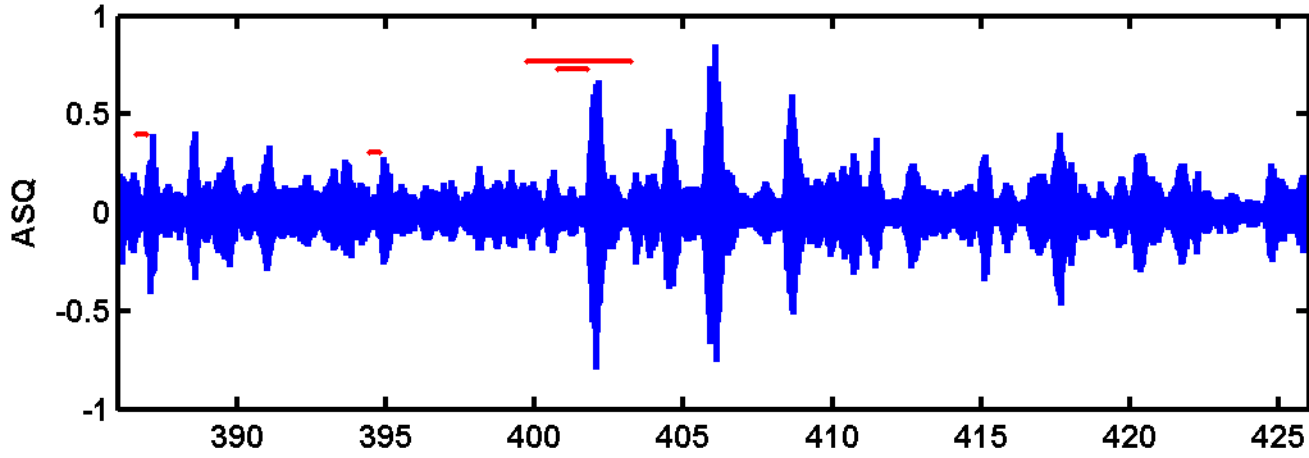
ASI,Q 752422193-752422793 normalized spectrogram



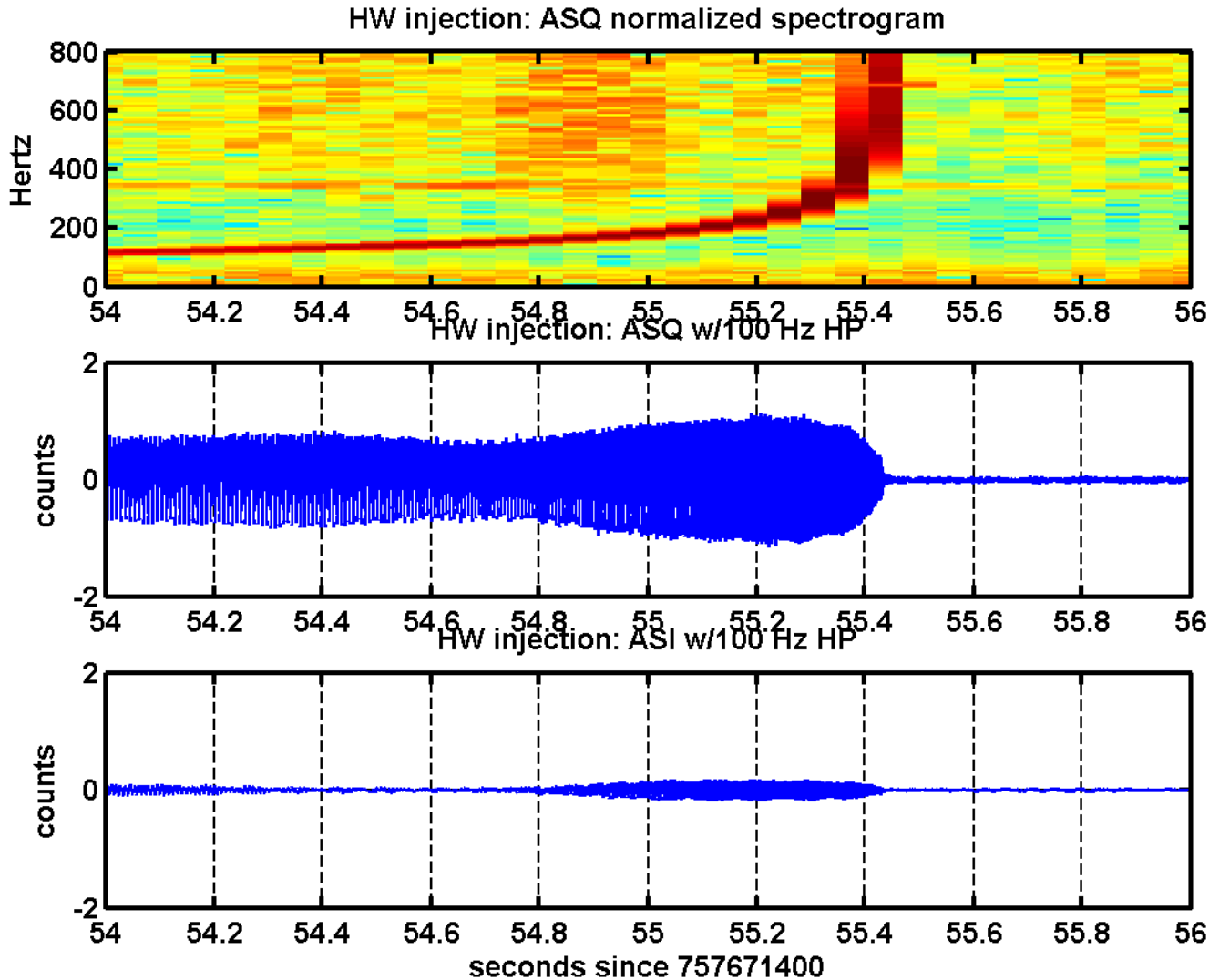
752422193-752422793 normalized spectrogram



L1:LSC-AS_Q and AS_I, HP 700 Hz

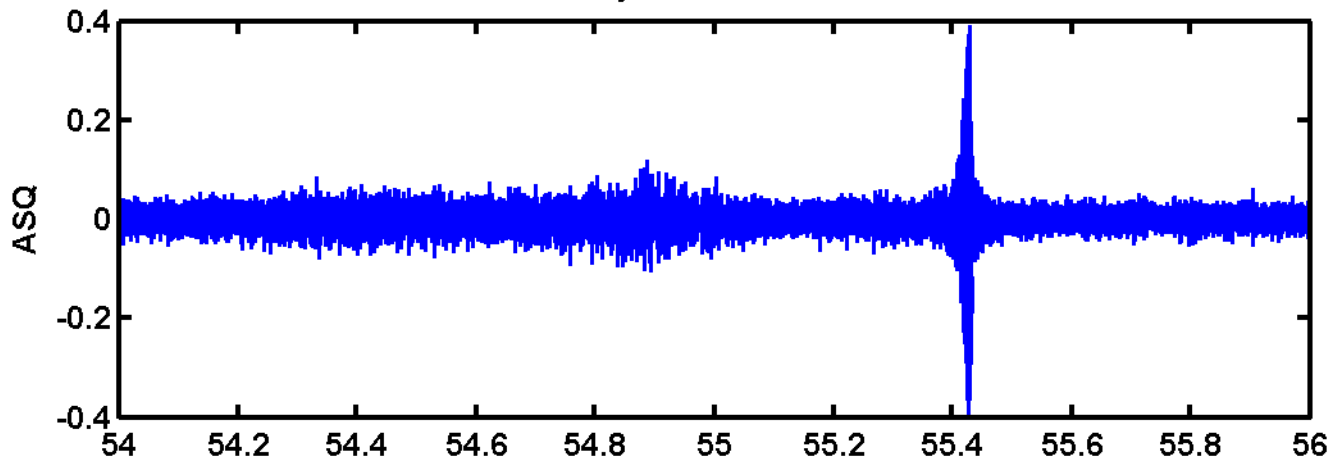


How safe is an ASI veto?

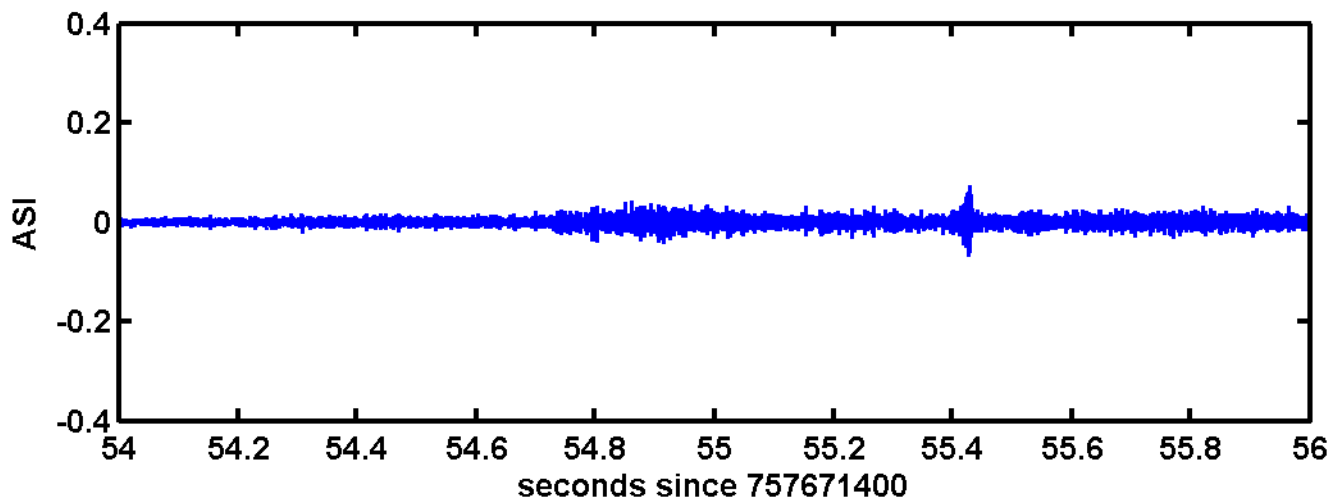


Largest BNS
hardware
injection

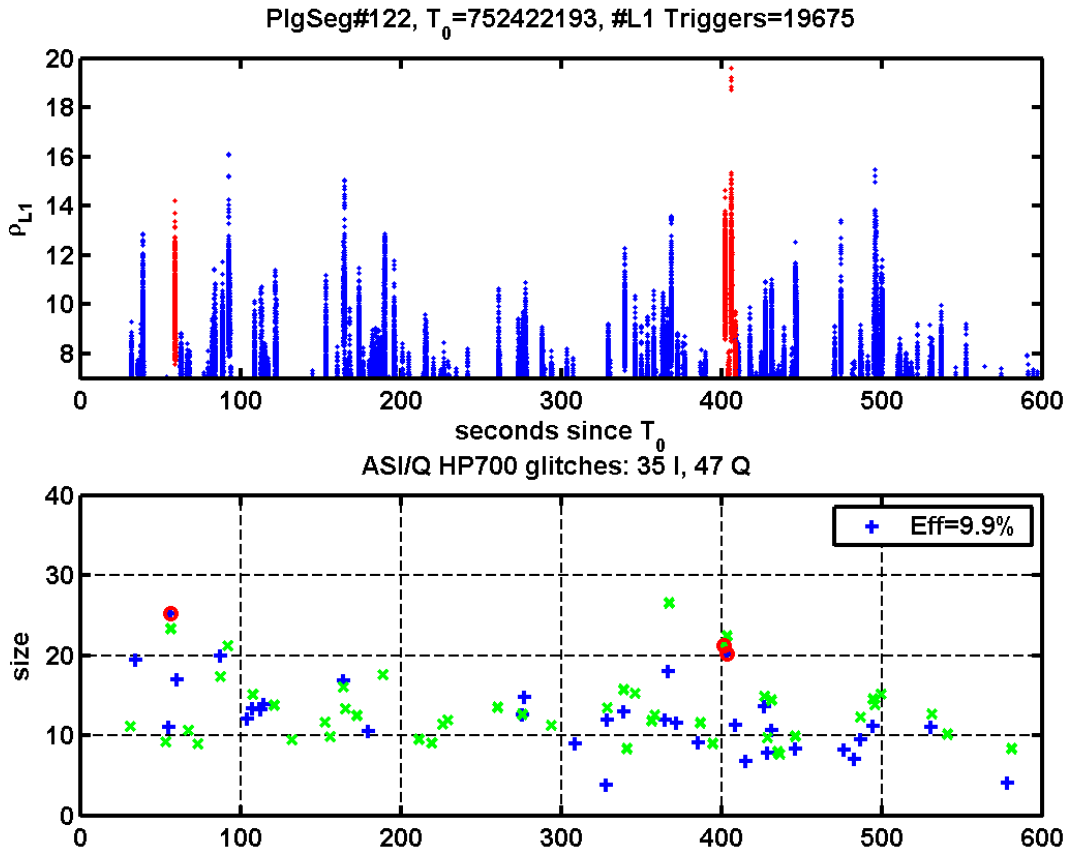
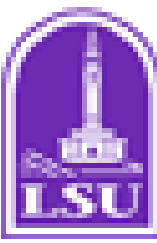
HW injection: 700 Hz HP



Largest BNS
hardware
injection

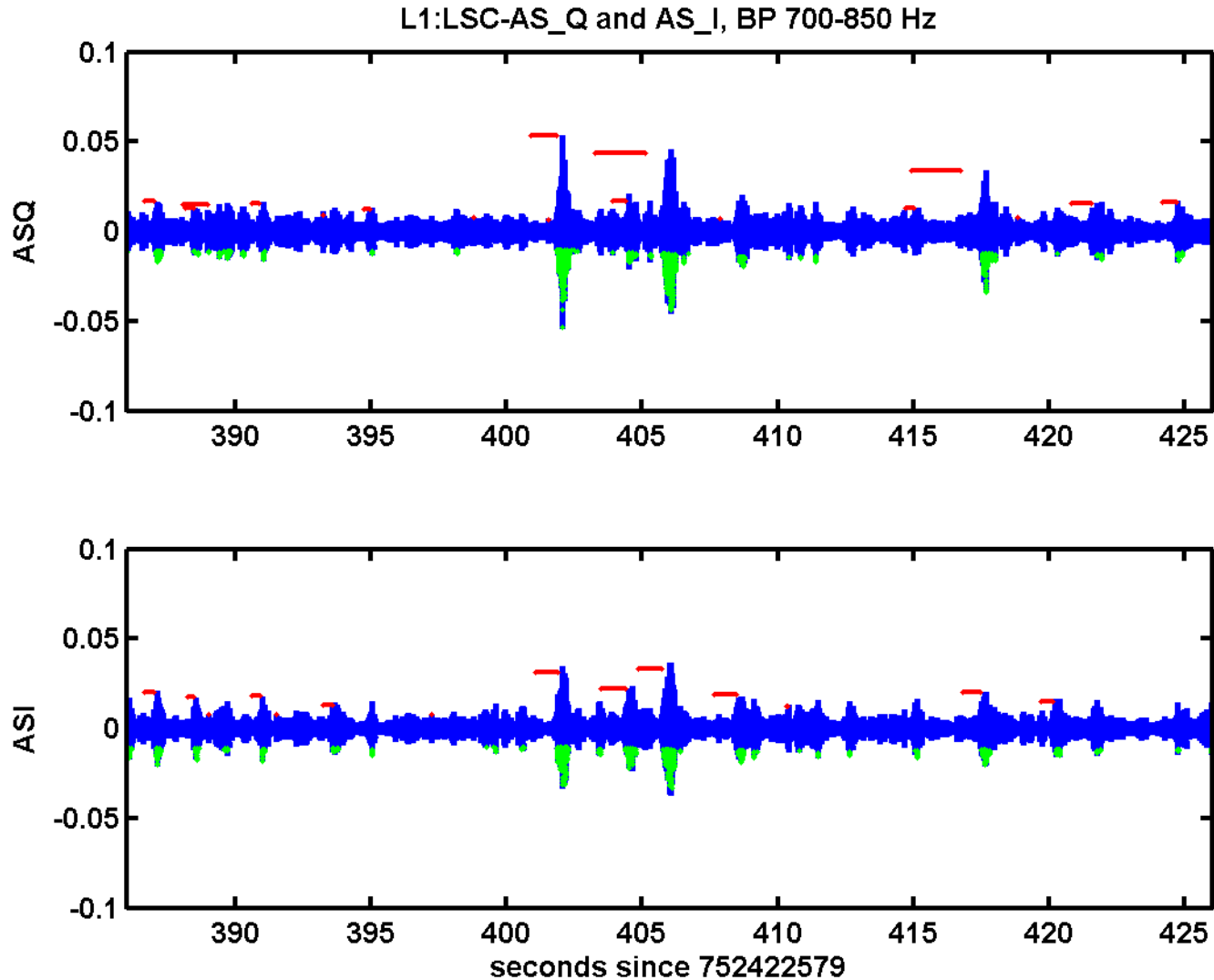


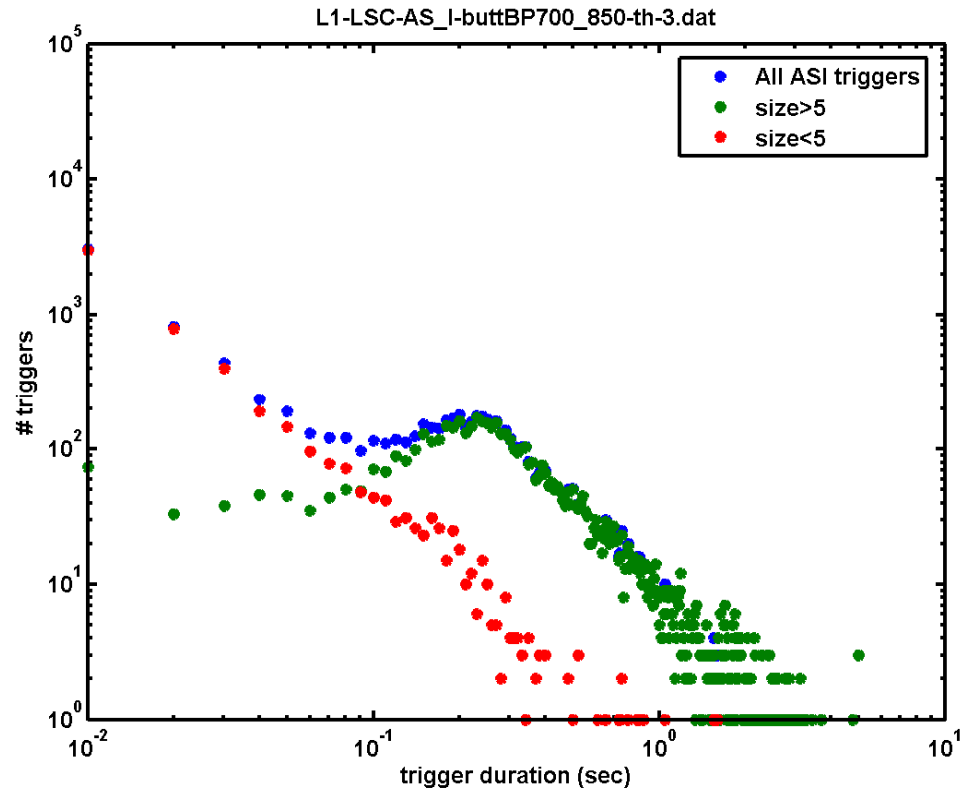
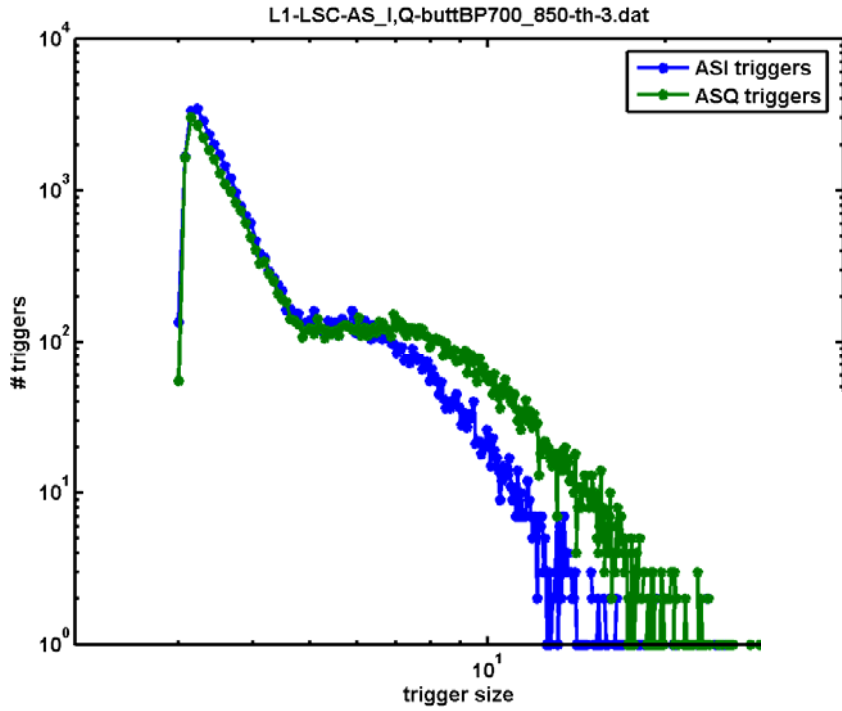
“Classical” veto strategy



Glitchmon
triggers:
ASI HP700 Hz
size>20
+2sec
3% efficiency
90% used
~0.1% downtime

Tuning the monitor

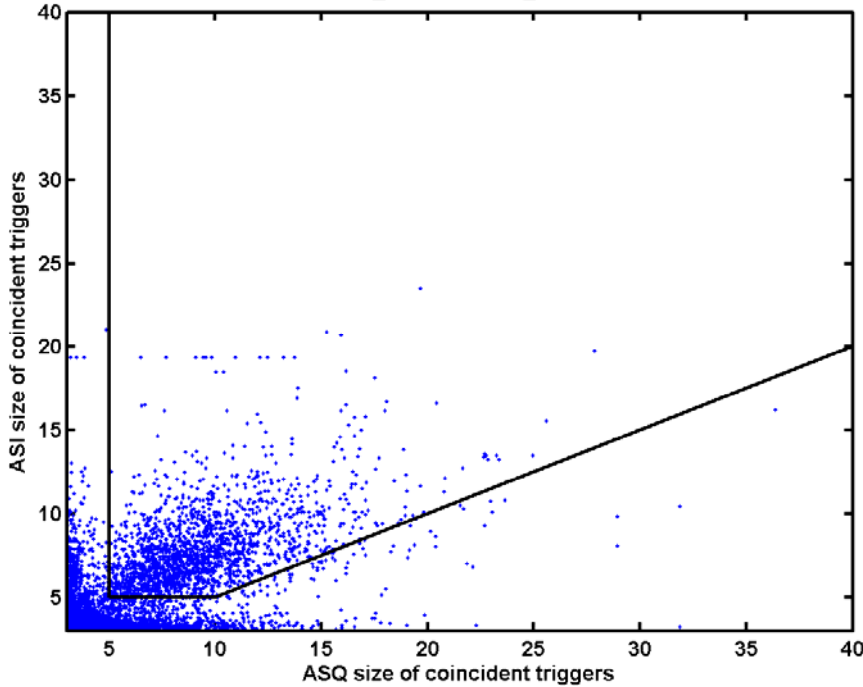




Veto conditional on ASQ?

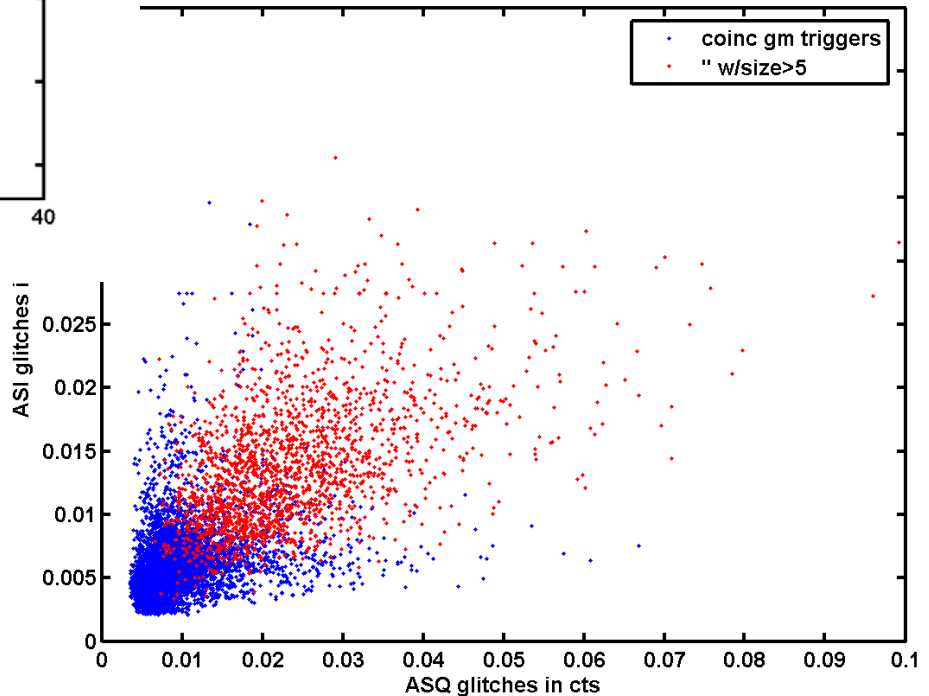


L1-LSC-AS_I,Q-buttpBP700_850-th-3.dat

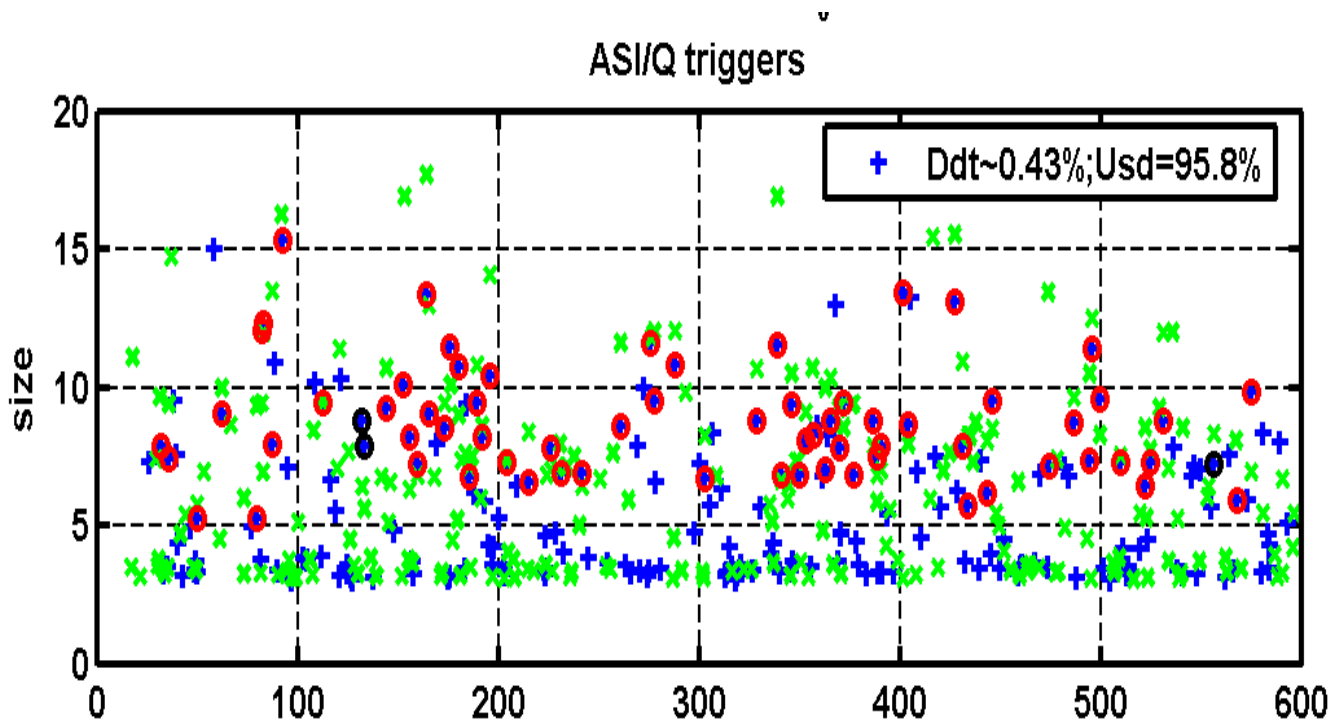


ASI/Q coinc (within 0.3 sec)
 size > 7
 Q/I ratio < 2
 22% efficiency
 63% used
 0.7% downtime

32,188 ASQ triggers size > 3
 31,184 ASI triggers size > 3
 3,958 coincident ASI/Q



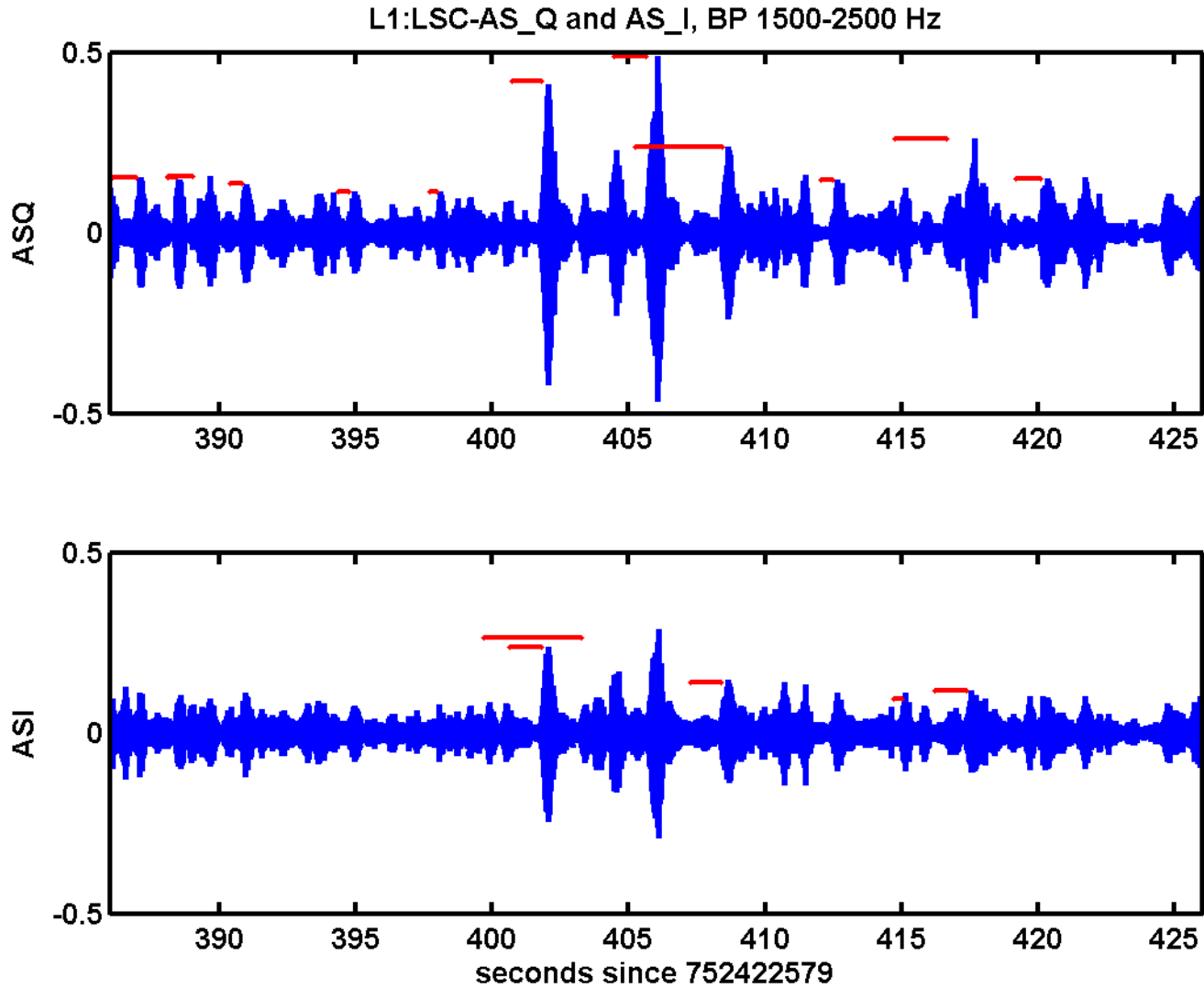
Veto conditional on ASQ?



700-850 Hz
Eff: 81%

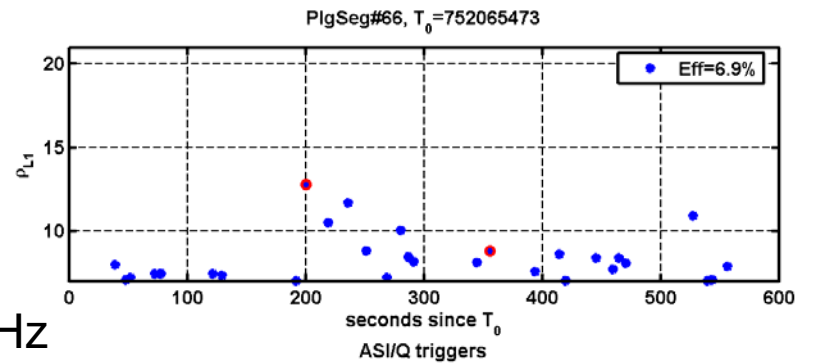
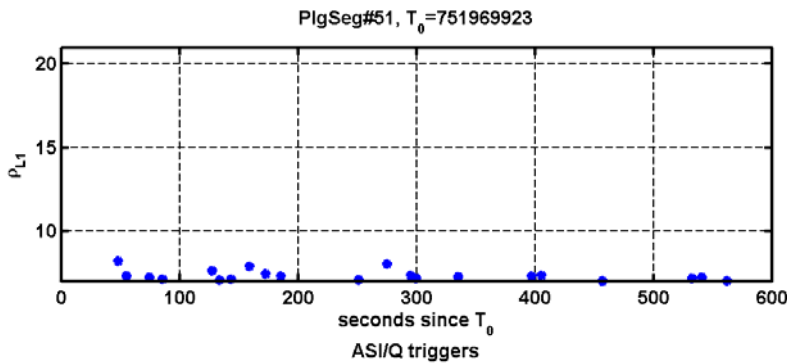
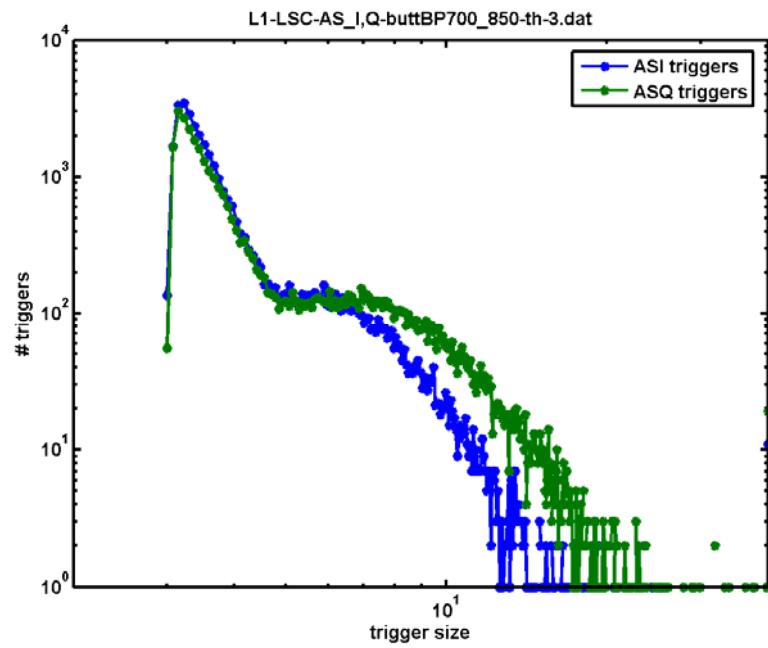
ASI/Q coinc
 size > 7
 Q/I ratio < 2
 22% efficiency
 63% used
 0.7% deadtime

More tuning, more conditions?

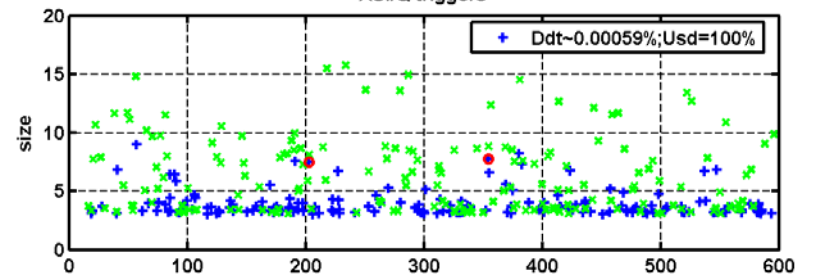
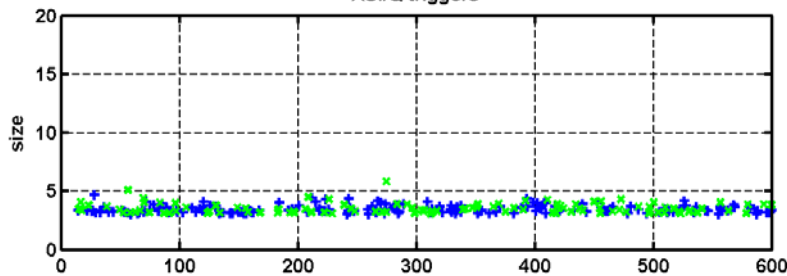




ASI/Q glitches: epochs?

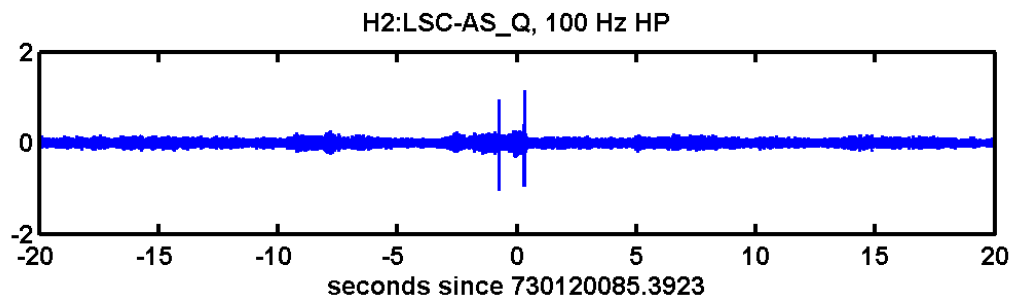
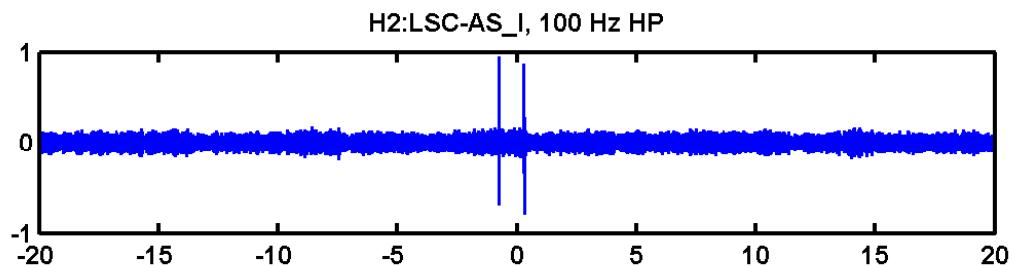
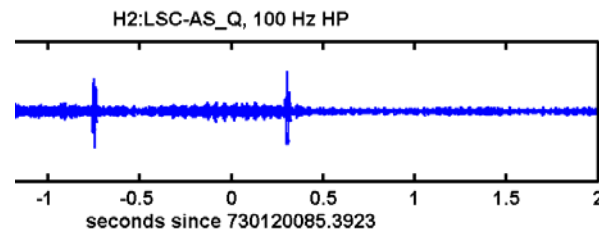
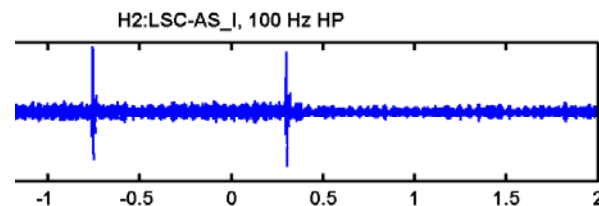
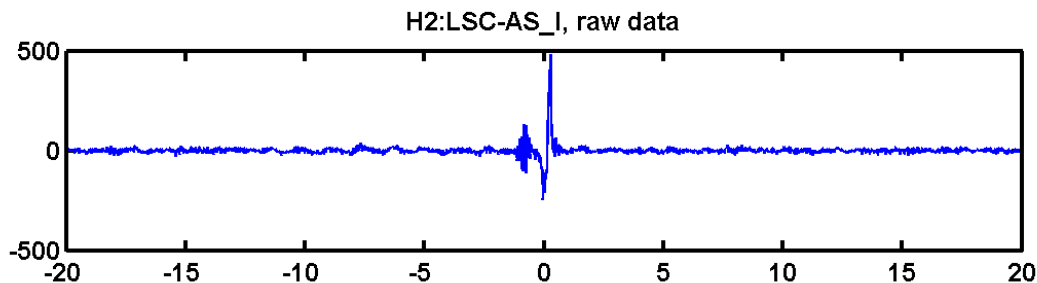
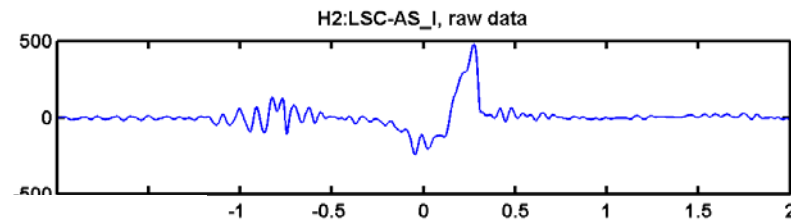


700-850 Hz



S2: ASI servo oscillation.

S3 ??



Work in progress!

Goal: find the ASI veto candidates that have a high “success factor” for vetoing ASQ triggers, without vetoing GWs.

“Unclassical” strategy:

- Tune glitch-finding algorithm
- Characterize ASI/Q glitches vs just-ASI glitches
- Use ASI/Q “conditional” veto
- Use ASI (oscillations, glitch rate) for DQ flags