Low Frequency H1 DARM glitch DQ flag

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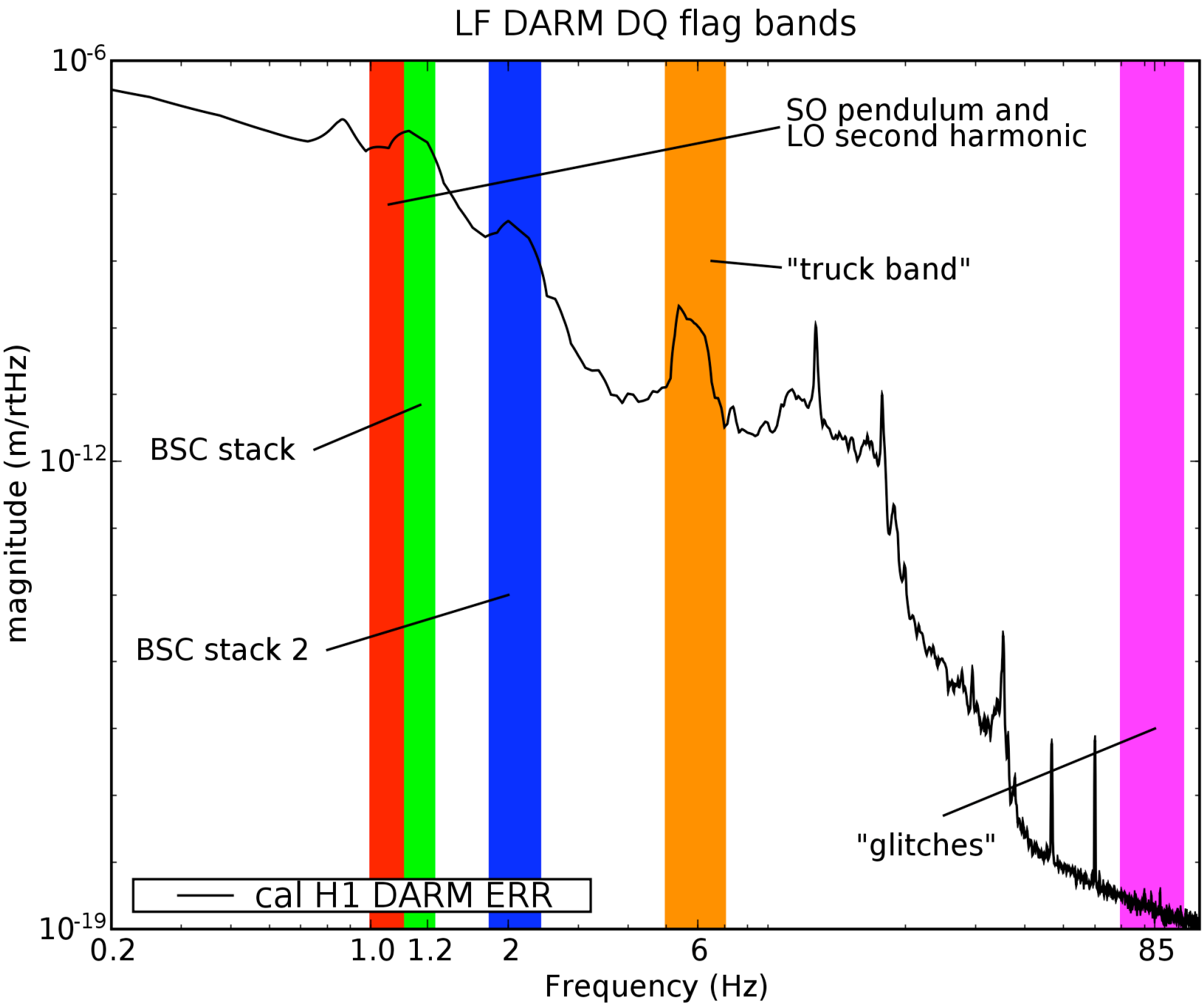
Motivation

- Seismic upconversion veto
- Simple, requires no knowledge of mechanism

Method (overview)

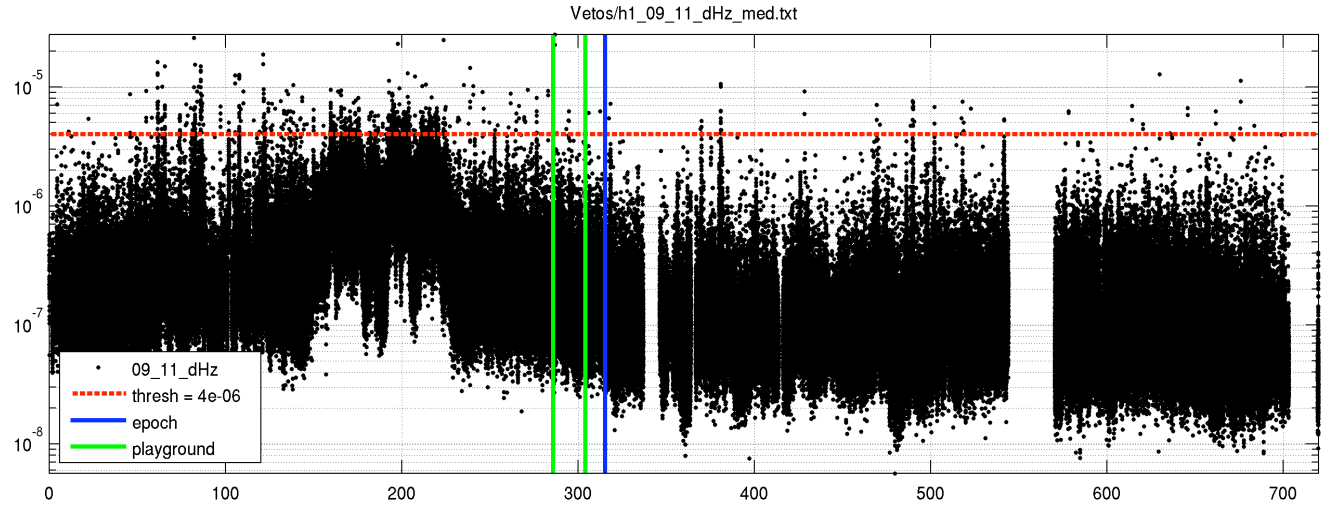
- Decide what we call a glitch
- Pick a playground (day ~300)
- Pick some frequency bands to see if they correlate
- Generate trends
- Select useful bands, thresholds
- Generate all of S5 trends
- Extract DQ flags and submit to data base

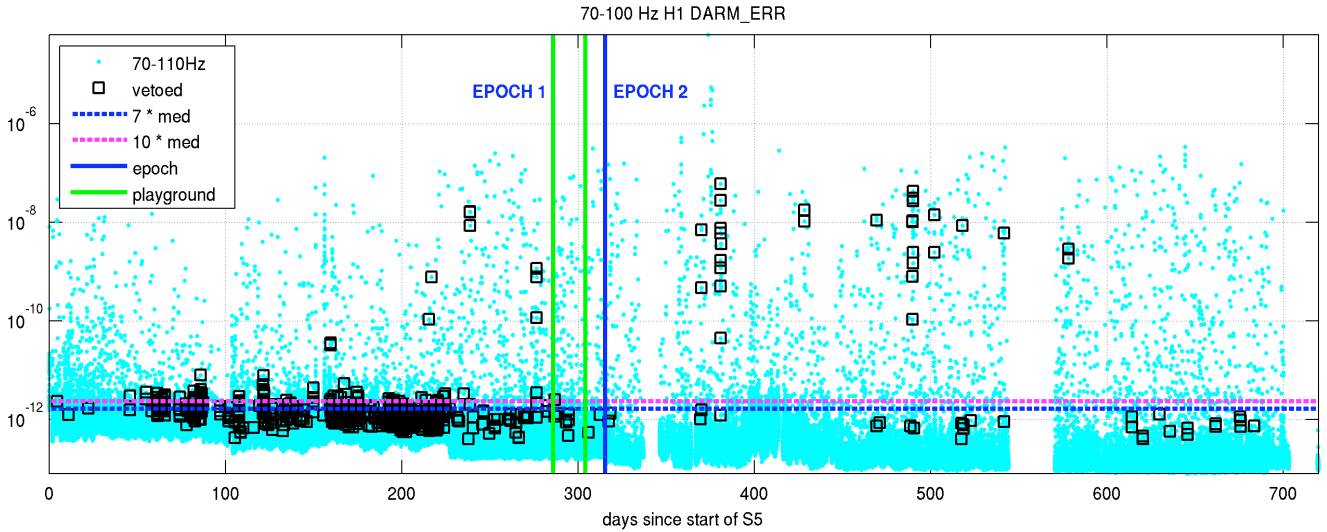

LF DARM DQ flag bands
10-6
10-12
10-19
magnitude (m/rtHz)
SO pendulum and
LO second harmonic
"truck band"
BSC stack
BSC stack 2
"glitches"
cal H1 DARM ERR
0.2
1.0
1.2
2
6
85
Frequency (Hz)

Method (specifics)

- Minute trends generated with PSLmon
  - Max in minutes used
- Veto selection done with Matlab
- Channels like:
  DARM_09_11_dHz_LOWTHRESH

Results


Vetos/h1_09_11_dHz_med.txt
09_11_dHz
thresh = 4e-06
epoch
playground


70-100 Hz H1 DARM_ERR
70-110Hz
vetoed
7 * med
10 * med
epoch
playground
EPOCH 1
EPOCH 2
days since start of S5

Results

- Truck band was best
- Relatively useful flag
  - Category 3 flag
  - Has one of the lowest dead times for getting 2-14% of CBC triggers (from Jake's page)
- Effectiveness changed when some hw changes were made (epoch boundaries)

Future Work

- Improve DQ flag granularity
  - Currently minute trends
  - Minute boundary problem
- Use published glitch list
- Make it online
- Remove hardware injections
- Understand glitch selection of this veto
- Maybe examine more bands

Time for questions

Related Work

- Masahiro Ito's coil current DQflag (U of O)
- See S5 DQ flag info page: http://gallatin.physics.lsa.umich.edu/~keithr/S5DQ/flaginfo.html
- This works home page: http://ldas-jobs.ligo-wa.caltech.edu/~justing/DarmGlitch/
- PSLmon page: http://www.ligo.caltech.edu/~jzweizig/dmt/Monitors/PSLmon/index.html
- Jake Slutsky's page: http://lsc.phys.lsu.edu/jslutsky/FirstYearSummary_FM/S5VetoTable_new2.html