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Detector Characterization; Triggers, code infrastructure; Followup Analysis for the UL groups

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LHO LSC

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Detector Characterization

- for each [Bursts, Inspirals, Periodic, Stochastic]:
- Identifying channels and signatures that must be watched
  - » PEM – microphones, accelerometers, seismometers, magnetometers, power lines
  - » Interferometer auxiliary channels – Mode Cleaner, other DOF
- Dealing with the fact that we do not yet have 'interferometer strain signals' whose behavior resembles closely that we expect to see in the final instrument
  - » Use of MC signal; defer final thresholds, etc. for last minute…
- The people to perform this initial canvassing
  - » do you have the knowledge of the machine that is needed,
  - » the people on site,
  - » the people back home?
- The tools to perform this initial canvassing
  - » DTT, trial versions of DMT triggers

Burst Signatures

- **Plan to run this set at the MDC in September**
  - » Or an example of each, worst case
- time/frequency evolution: airplanes, helicopters
- specific signatures:
  - » compressor transitions,
  - » LF seismic noise,
  - » lightening strikes
  - » voltage spikes
  - » interferometer auxiliary channel anomalies (line start/stop)
- excess power statistic
  - » channels TBD; PSL
  - » accelerometer/microphone
  - » mode cleaner signal

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Triggers, code infrastructure

- for each [Bursts, Inspirals, Periodic, Stochastic]:
- Status of coding suspects and approaches (Keith)
  - » Specific signatures, or ‘deviations from the norm’
  - » E.g., Bursts: passing airplanes, compressors; ‘incoherent XF’, excess power
  - » Documentation: propose a DCC document for each DMT process to be used
- Choosing thresholds
  - » Much must wait for better interferometer performance
- Writing to the database
  - » Capability of the code; capability of the database formats
- Coordination with LDAS processes:
  - » Do LDAS tasks require environmental analysis to have been performed and recorded in database?
  - » Use database segment entries to select sections to send to LDAS for analysis?

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Analysis

- for each [Bursts, Inspirals, Periodic, Stochastic]:
- Approach:
  - » Environmental signals analyzed in LDAS?
  - » Read from database into LDAS code?
  - » Post-analysis of LDAS and DMT output?
  - » Any two- or three-interferometer issues?
- Tools to visualize correlations between GW and environmental/auxiliary channels
  - » Daniel's initiative
- Re-analysis with more sophisticated triggers
  - » Plan on tuning of environmental analysis with some of the final data, then toss it out and analyze blind?
- Plans for end-to-end MDCs (LDAS + DMT → Database → analysis)
  - » Real data