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# Summary of Detector Characterization Sessions

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University of Michigan & LIGO Hanford Observatory

LIGO Scientific Collaboration Meeting

LIGO Livingston Observatory

August 17, 2000

Minutes will be posted on web  
(on talks for which I receive hardcopy or e-file!)

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## Commissioning:

Mavalvala (LIGO-MIT)      Status of LIGO I Commissioning

Rong(Florida)              Status of LIGO I Input Optics

## Environmental Monitoring:

Schofield(Oregon)        Source and Propagation of the Predominant  
1-50 Hz Seismic Signal from Off-site at  
LIGO Hanford

Kovalik(LIGO-LLO)        Audit of the PEM system at LLO

# Strom(Oregon)            Correlations between Tiltmeters  
& Arm Length

Some talks fall in more than one category

\* = April engineering data used in preparing report

# = April engineering data central to report

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## Data Monitor Tool Tasks:

- \* Zweizig(LIGO-CIT)      Status of the Data Monitoring Tool (DMT)
- Riles(Michigan)      Status of DMT Software Tasks
- Mauceli(Oregon)      Environmental Monitoring in the DMT
- \* Klimenko(Florida)      Wavelet Analysis & Line Removal in the DMT
- # Sylvestre(LIGO-MIT)      Transient Identification in Engineering Data
- \* Riles(Michigan)      Operational State Conditions and Servo  
Instability Detection in the DMT
- Whiting(Florida)      Comparison of Line Removal Techniques
- Sintes(AEI-Potsdam)      Coherent Line Removal in the DMT

# Status of Individual DMT Tasks

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## Performance Characterization

### Priority 1 Tasks

- Line Noise
  - A. Ottewill (B. Allen) Code given to John in April as DMT-compatible C functions
  - S. Klimenko Code given to John in July as DMT-compatible C++ classes (see report)
  - A. Sintes Code given to John in August as LAL-dependent C functions (see report)
- Seismic Noise
  - E. Daw Stand-alone monitor running continuously at Livingston. Code to be given to John in August.
- Inter-channel correlations
  - A. Ottewill (B. Allen) Code given to John in June as DMT-compatible C functions
- Bilinear cross-couplings
  - S. Penn Code under development (see report)
- Operational state conditions
  - K. Riles (R. Gustafson) Code given to John in June as DMT-compatible C++ classes (see report)

# Status of Individual DMT Tasks

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## Performance Characterization

### Priority 2 Tasks

- Band-limited RMS
  - E. Daw Stand-alone monitor running continuously at LLO. Code to be given to John in August.
- Time-frequency plots
  - S. Mohanty, S. Siddiqui Code given to John in June as DMT-compatible C++ classes callable from root
  - J. Sylvestre Code running at Hanford since June as part of stand-alone TID package for transient detection. GUI interface. (see report)  

Tutorial given to LHO operators
- Non-Gaussian noise
  - S. Finn, G. Gonzalez, M. Hsu Code under development (see report)

# Status of Individual DMT Tasks

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## Transient Analysis

### Priority 1 Tasks

- Power spectral transients
  - S. Mohanty, S. Siddiqui Time-frequency part delivered (above). Remaining code to be given to John by end of August.
- Servo instability
  - K. Riles, R. Gustafson Tool class code publicly available on Hanford computer. Dedicated monitor to be given to John by September 15. Tuned config files and display manager support by November 15. (see report)
- Event catalog
  - J. Sylvestre TID code running at Hanford & Livingston (above). Filter bank under development. Will work with JZ on integrating into DMT process manager environment. (see report)

# Status of Individual DMT Tasks

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## Transient Analysis

### Priority 2 Tasks

- Flickering optical modes – NO VOLUNTEER
- Transient detection using adaptive denoising methods
  - E. Chassande-Mottin Code under development. To be given to John by October 1.
- Impulse recognition – ~~NO VOLUNTEER~~  
(could be implemented as set of filter banks in event catalog)  
New volunteers: M. Ito (Oregon), N. Zotov (La. Tech)
- Magnetic field transients
  - E. Mauceli Code running at Hanford. To be given to John by August 31. (see report)

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## Data Set Reduction:

Strom(Oregon)

Status of Data Set Reduction

# Klimenko(Florida)

LIGO Data Compression with Wavelets

New volunteer to help: **Benoit Mours**

## Data Set Simulation:

Finn(PSU)

Status of Data Set Simulation

Subgroup's charge completed!

Maintenance of code from now on



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## Round table discussion - LSC participation at the Sites

- Consciousness raised!
- Commitments to increase steady-state presence at sites
- Lab concerned about training physicists for nought  
⇒ Would like commitment for  $\geq 1$  week out of six
- Lab willing to help with travel money in short term but only for substantial visits ( $\geq 2$  weeks)
- Scientific monitoring shifts (data taking shakedowns)
  - Opportunity for LSC groups to learn about IFO's  
⇒ Good training ground
  - Opportunity to demonstrate commitment to the project  
(Stan Whitcomb: Vote with your feet!)
  - Will post signup sheet on Web  
(Theorists very welcome too!)

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## Round table discussion - Off-site detector characterization

Began with presentation on analysis infrastructure and candidate interactive / scripting tools:

15' Shawhan(LIGO-CIT)      Offline Analysis Environments and Tools

Followed by sobering data access rate numbers from D. Sigg

Many issues raised: (most unresolved)

- Making online tools available off-site
- Integrating with LDAS data server off-site
- Tools for viewing trend & lightweight data
- Interactive / scripted analysis (detailed event investigation)  
⇒ Move to Matlab with C++ library?  
Peter will put together task list and clearinghouse web page
- Data access bottleneck for sequential frame analysis  
⇒ Striping of frames by channels
- Need for dedicated D.C. computers at CACR archive?  
LDAS workstations in present plan sufficient?