DETECTOR CHARACTERIZATION
LSC Working Group

Charter:

The purpose of the Detector characterization working group is to:
- develop and test algorithms and software for detector and environment characrterization to be used off-line and on-line
- develop flag and/or trigger algorithms and software for identification of "interesting events" for more refined analysis by the LDAS
- develop methods and software for improving detector control robustness
- assist in the implementation of the PEM and the IFO controls
- assist in the development of end-to-end models

The software developed by the group shall conform to LIGO standards but the installation of the software into the the LIGO system (e.g. GDS, PEM/DAQS, LDAS) is to be the responsibility of the LIGO laboratory.

The Detector Characterization group will maintain a Web page to deisseminate relevant data to the group and a configuration controlled software archive to capture the efforts of the group.

Sub-Groups

The Detector Characterization Group is segmented into 7 sub-group areas, as indicated in Table 1. The expressed principal interests of the groups are also identified in the Table.

PEM

The PEM system data is a key system in characterizing the environment in which the interferometer must operate and the sensitivity of the interferometer to the environment.

Non-Gaussian Event Characterization

Flag and Trigger Development

Interferometer System Identification & Control

Global Diagnostics System

End-to-End Modeling

Assist to Interferometer Lock Acquisition and Commissioning

Detector Characterization
Working Group Actions

General

1) Set up a Web page and links to LIGO SW style guide, PEM, LSC, ASC and GDS documents. D. Coyne /LIGO

2) Set up a software template and Archival mechanism. ?/LIGO

3)

4)

5)

6)

Interferometer System Identification and Control

1) Provide general model & description of the IFO and define potential uncertainties which could limit robustness. D. Coyne /LIGO
2) Coordinate a plan of action for this sub-group. D. Coyne/LIGO
3) Evaluate 40m data to see if it could be used for early system identification work, or determine what would be required to enable system identification algorithm check-out (off-line). M. Coles/LIGO, R. Gustafson/Uof Michigan, D. Coyne/LIGO
4) Define the suite of open loop and closed loop transfer function tests which should be supported by the GDS system. M. Pratt/LIGO, Danial Sigg/LIGO
5)

6)

7)

Flag/Trigger Development

1) Coordinate a plan of action for this sub-group.
   ?/?

2)

3)

4)

5)

Non-Gaussian Event Characterization
1) Coordinate a plan of action for this sub-group.
   F. Raab/LIGO
2)

3)

4)

5)

End-to-End Modeling

1) Coordinate a plan of action for this sub-group.
   H. Yamamoto/LIGO

2)

3)

4)

5)

DATA ANALYSIS
INSIDE OUT

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	LSC	ACIGA	U of Wis	U of FL	U of Oreg	U of Mich	PC	MC	HY	MP	DS	SM
								LIGO				
1) PEM					√						√	
instrument install.												
" debug												
site survey DS												
IFO instrument sens. to environment												
environmental site x-corr.	√		√									
40 m data exam												
2) Time-Domain Transient Charac.			√	√	√			√				
methods for classification	√											
40 m data												
LIGO data FR												
3) Stationary IFO Charac.							√	√				
System I'd. DC												
algorithm/code devel.												
control system robustness					√							
transfer function (OL & CL)												
40 m data use?												
4) End-to-End Modeling				√		√			√			
Development of the E2E HY												
Validation												
– 40 m												
– LIGO												
5) Assist Lock Acq. & IFO comm. –	√			√	√							
6) GDS MP/DS										√	√	
7) Flag (aka trigger) Development DC	√	√	√	√	√	√			√	√	√	√

Note 1, Linda Turner, 04/21/98 09:48:58 AM
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