

**LSC MEETING -
HANFORD**

LIGO

Hanford Washington State Site

March 12-14, 1998

LSC MTG HANFORD

Attendees

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March 12-14, 1998

ATTENDEES

Bruce Allen - University of Wisconsin
Stuart Anderson - Caltech/CACR
Warren Anderson - University of Wisconsin
Steve Augst - Caltech
Hong S. Bae - Stanford
Barry Barish - Caltech
David Berley - NSF
Peter Beyersdorf - Stanford
Kent Blackburn - Caltech
Patrick Brady - Caltech
Jim Brau - University of Oregon
Robert Byer - Stanford
Jordon Camp - Caltech
Robert Caldwell - University of Washington
Harry W.K. Cheung - Fermilab
Mark Coles - Caltech
Dennis Coyne - Caltech
Peter Csatorday - MIT
Daniel DeBra - Stanford
Riccardo DeSalvo - INFN Pisa
Ron Drever - Caltech
Marty Fejer - Stanford
Sam Finn - Northwestern University/Caltech
Eanna Flanagan - Caltech/Theory
Masa-Katsu Fujimoto - NAO/TAMA
Joseph Giaime - University of Colorado/JILA
Gabriela Gonzales - MIT
Eric Gustafson - Stanford University
Dick Gustafson - University of Michigan
Wonill Ha - Stanford
Bill Hamilton - Louisiana State University
Charles Harb - Stanford University
Jim Hough - University of Glasgow
Jonathan How - Stanford University
Richard Isaacson - NSF
Matt Husman - Stanford University
Warren Johnson - LSU
Peter King - Caltech
Steve Koonin - Caltech
Jonathan Kurz - Stanford University
Matthew Lawrence - Stanford
Albert Lazzarini - Caltech
Ju Li - University of Western Australia
Ken Libbrecht - Caltech
Walid Majid - Caltech
Justin Mansell - Stanford
Alex Marin - MIT
Frederique Marion - L.A.P.P.
Syd Meshkov - Caltech
Gene Mitselmakher - University of Florida
Damien Mudge - University of Adelaide
Adrian Ottewill - University College, Dublin
Mark Pratt - MIT
Tom Prince - Caltech
Jorge Pullin - Pennsylvania State University
Fred Raab - Caltech/Hanford
David Reitze - University of Florida
Keith Riles - University of Michigan
Sheila Rowan - University of Glasgow
Albrecht Rudiger - Max Planck Institute
Todd Rutherford - Stanford
Gary Sanders - Caltech
Peter Saulson - Syracuse University
Rick Savage - Caltech/Hanford
Bernard Schutz - Max Planck Institute
Susan Scott - Australian National University
David Shoemaker - MIT
Daniel Sigg - Hanford
Stefan Seel - Caltech
Robin Stebbins - Univ. of Colorado/JILA
Kenneth Strain - University of Glasgow
David Tanner - University of Florida
Kip Thorne - Caltech
Steve Vass - Caltech
Peter Veitch - University of Adelaide
Andrea Vicere - INFN/VIRGO
Rai Weiss - MIT
Stan Whitcomb - Caltech
Benno Willke - Stanford
Alan Wiseman - University of Chicago
Hiro Yamamoto - Caltech
Mike Zucker - MIT

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THURSDAY March 12

- 08:30 Organization and Announcements
- 09:00 Tour of the Hanford Facilities *Fred Raab*
- 10:30 State of the LIGO Project *Barry Barish*
- 11:00 State of the Collaboration and Plans for the Meeting *Rainer Weiss*
- Reports from the Development Sub-Groups
- 11:30 Stochastic Forces – Isolation Systems and Suspensions *David Shoemaker*
- 11:45 Lasers and Optics *Eric Gustafson*
- 12:00 Interferometer Configurations *Albrecht Rudiger*
- 12:15 Working Lunch
- 13:15 The View from the NSF *David Berley*
- 13:30 Report from the Publication and Presentations Policy Sub-Committee
Discussion of Draft Publication and Presentation Policy
David Tanner, William Hamilton, Stan Whitcomb, Rainer Weiss
- Presentations of the LIGO and GEO Plans in Data Management, Hardware, Analysis, Diagnostics and Modeling
- 13:45 Data Acquisition and Archiving Architecture *Rolf Bork*
- 14:15 Detector Diagnostics *Daniel Sigg/Mark Pratt*
- 14:45 Data Analysis System *Al Lazzarini*
- 15:15 Break

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|-------|-------------------------------------|-----------------------|
| 15:30 | Software Standards and Data Formats | <i>Kent Blackburn</i> |
| 16:00 | Communication Network | <i>Al Lazzarini</i> |
| 16:15 | 40 Meter Data Acquisition System | <i>Mark Coles</i> |
| 16:30 | End to End Modeling | <i>Hiro Yamamoto</i> |
| 17:00 | GEO Data Analysis Program | <i>Bernard Schutz</i> |
| 18:30 | LSC Dinner – Ray’s Golden Lion | |

FRIDAY March 13

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|-------|--|--------------|
| 08:30 | Formation and Charter for the Three Data Groups | Rainer Weiss |
| 09:00 | Divide into Various Individual Group Meetings
Advanced Research Development Groups
New Data Sub-Groups | |
| 12:00 | Working Lunch | |
| 15:30 | LSC Forum on Criteria for the Detection of Gravitational Waves | |
| 16:30 | Preliminary Reports from the Sub-Groups | |
| 18:30 | Executive Committee Supper | |

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SATURDAY March 14

08:30 Further Sub-Group Meetings

10:30 Additional Reports From The Sub-Groups

Proposed Groups on Data Analysis, Detector Characterization, Modeling and Validation.

The groups initially have a chair and a liaison to the LIGO laboratory. The liaison to the LIGO laboratory provides a coupling to the on going work in the laboratory.

The initial choice of chairs and committee functions have been made somewhat arbitrarily. The expectation is that once the groups get organized and into operation (probably a year), the chairs will become elected and the functions better defined. As the scientific effort comes into its own, it may well turn out that more sub-groups with different functions will be needed.

The initial charge to the sub-groups is to develop a set of priorities for the collaboration and to determine the most effective roles for the collaborators in the various areas.

GRP 1 Astrophysical Source Identification And Signatures

Proposed topics for the group:

Development of techniques to search for posited sources - templates, filters and algorithms for:

- a) Compact binary inspirals
- b) Impulsive sources: supernova core collapse, black hole formation
- c) Periodic sources
- d) Stochastic background
- e) Development of techniques to search for unknown sources
- f) Source statistics - LogS/LogN estimation
- g) Determination of on-line and off-line functions

Chair *Bruce Allen*
Lab Liaison *Tom Prince*

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GRP 2 Detector Characterization
Proposed topics for the group

Development of statistical descriptions in time and frequency domains
Design of event catalogs
Correlation with environmental measurements
Correlation with internal detector parameters
Determination of variance and covariance analysis
Correlation of noise between interferometers
Correlation of noise between sites
Determination of on-line and off-line functions
End-end models of the detector

Chair Bill Hamilton
Lab Liaison Daniel Sigg

GRP 3 Detection Confidence and Statistical Analysis
Proposed topics for the group

Development of techniques to assess detection confidence and uncertainties in
astrophysical parameters - Monte Carlo models, Bayesian analysis.
Multi-interferometer analyses
Correlation with other gravitational wave and particle detectors
Development of overall analysis system tests - simulated time series, software tests.
Determination of on-line and off-line functions

Chair Sam Finn
Lab Liaison Albert Lazzarini

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Transparency Presentations
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LIGO Status Report	<i>B. Barish (Caltech)</i>
LSC Issues	<i>R. Weiss (MIT)</i>
Suspensions/Isolation Working Group	<i>D. Shoemaker (MIT)</i>
LIGO Lasers and Optics Working Group	<i>E. Gustafson (Stanford)</i>
Interferometer Configurations	<i>A. Rudiger (Max Planck)</i>
LIGO – The View from NSF	<i>D. Berley (NSF)</i>
LSC Publications and Presentations Policy	<i>R. Weiss (MIT)</i>
Principles Behind a LIGO Publication Policy	<i>R. Weiss (MIT)</i>
LIGO Data Acquisition System	<i>R. Bork (Caltech)</i>
Global Diagnostics System	<i>R. Bork et. al. (Caltech)</i>
LIGO Data Analysis System (LDAS)	<i>A. Lazzarini (Caltech)</i>
LIGO Data Analysis System Software Design	<i>K. Blackburn (Caltech)</i>
40 M DAQS	<i>W. Majid (Caltech)</i>
End to End Modeling	<i>H. Yamamoto (Caltech)</i>
Data Analysis and Data Handling I GEO600	<i>B. Schutz (Max Planck)</i>
Criteria for Detection of Gravitational Waves	<i>R. Weiss (MIT)</i>
Goals of Isolation/Suspension Subsys. Modeling	<i>J. Giaime (JILA)</i>
LIGO Suspension and Seismic Attenuation System	<i>R. DeSalvo (INFN)</i>
Mechanical Losses Assoc. w/Tech. Of Silicate....	<i>S. Rowan et. al. (Stanford)</i>
ACIGA (AIGO)	<i>J. Li (UWA)</i>
Cryogenic Suspension and Isolation	<i>W. Johnson et. al. (LSU)</i>
Thermal Impedance	<i>P. Csatorday (MIT)</i>
Deformable Optics and Wavefront Sensing	<i>J. Mansell (Stanford)</i>
Intensity Noise and the Pre Mode Cleaner	<i>B. Willke (Stanford)</i>
Photodiodes for Initial and Advanced LIGO	<i>P. Csatorday et. al. (MIT)</i>
The LIGO Pre-Stabilized Laser (PSL)	<i>(Hanford/Caltech/Stanford)</i>
ACIGA High Power Laser Proposal	<i>P. Veitch (INFN)</i>
High-Power Diode-Laser Pumped CW Nd:YAG....	<i>D. Mudge et. al. (UA)</i>
Setting the Optical Specs for LIGO	<i>S. Whitcomb (Caltech)</i>
Sagnac Issues	<i>P. Beyersdorf (Stanford)</i>
CEGG Progress Report	<i>R. Drever et. al. (Caltech)</i>
TAMA300 Timetable	<i>M.-K. Fujimoto (NAO)</i>
Experimental Demo. Resonant Sideband.....	<i>D. Shaddock et. al. (ANU)</i>
GEO Work on Interferometry	<i>W. Strain et. al. (UoG)</i>
Data Analysis Minutes of Meeting	<i>B. Allen (UoW)</i>
LIGO Data Catalogue	<i>A. Lazzarini (Caltech)</i>
Detector Characterization	<i>D. Coyne (Caltech)</i>
Detection Confidence and Statistical Analysis	<i>S. Finn et. al. (Caltech)</i>