

6 Month Report to the LSC - August 15, 2000

Outline

Highlights

Meeting Agenda

LIGO Scientific Collaboration Lasers and Optics Working Group

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LIGO-G000251-00-D

Highlights

Request for a Letter of Intent from Laser Manufacturers
Visits to Lightwave Electronics Inc. , TRW and LZH
(Boeing)

100 watt Laser Demonstrations (are we on track?)

Sapphire Program

Optical homogeneity, coatings (vs T), absorption, material constants (vs T)
and post growth processing

MELODY 3.1

Thermoelastic distortions, FEA beamsplitter model and more spatial modes

LIGO Scientific Collaboration Lasers and Optics Working Group

Wednesday Schedule

Morning 9:00 - 12:00

Lasers and Optics Working Group (9:00 - 9:30)

Impurities in sapphire - Stephen C. Mcguire (20 min.)

Charge to the troops - Gary Sanders (5 min.)

Joint Session with AIC and SWG (9:30 - 12:00)

MELODY - Ray Beausoleil (30 min.)

Laser and PSL - Benno Willke (30 min.)

Modulation Schemes - Peter & Ken (30 min.)

Sapphire Development - Jordan Camp (30 min)

Non-Gaussian beams & thermal noise - Kip Thorne (15)

Afternoon 1:00 - 6:00

Lasers and PSL Subgroup Meeting
- Rick Savage

Afternoon 1:00 - 3:00

Modulators, Isolators, Mode
Cleaners, Telescopes and Photodiode
Subgroup Meeting - David Reitze

Afternoon 3:00 - 5:00

Core Optics Subgroup meeting
- Jordan Camp

Thursday Schedule

Thursday Morning 8:30 -12:00

Lasers and PSL Subgroup Meeting - Rick Savage

Thursday Afternoon 1:00-3:00

Lasers and Optics Working Group

Review of work and preparation for wrap up

LIGO Scientific Collaboration Lasers and Optics Working Group

Laser and PSL Agenda

- Wednesday 1:00 – 5:00

PSL-related Talks

- 1:00 M. Gray “Tilt Locking”
- 1:25 I. Zawischa “Status of the GEO Laser System”
- 1:50 B. Willke “NPRO Frequency Stabilization via Pump Laser Current Control”
- 2:15 J. Zweizig “Options and Plans for PSL Performance Monitoring Using the Data Monitoring Tool”
- 2:50 B. Zamft “Analysis of PSL Frequency Sensor Noise Using the LIGO End-to-End Simulation Package”
- 4:15 R. Savage “Proposal for Improved IO/PSL Optical Table Layout”
- 5:00 Working session – LIGO II IO/PSL Optical Table Layouts

- Thursday 8:30 – 12:00

LIGO II PSL Concept

- 8:30 R. Savage “Overview of Requirements and Concept”
- 9:00 T. Rutherford “The LIGO II Laser”
- 9:30 D. Ottaway “Intensity Noise Suppression”
- 10:00 P. Veitch “Options for Laser Performance Enhancements”
- 10:30 B. Willke “Options for Frequency Stabilization Enhancements”
- 11:00 Working session – LIGO II PSL Conceptual Design

- Thursday 1:00 – 3:00

The LIGO II Laser

- 1:00 P. Veitch “Status of High-power Laser Development at the Univ. of Adelaide”
 - 1:25 T. Rutherford “Status of High-power Laser Development at Stanford”
 - 1:50 G. Sanders “Status of the LIGO II Laser Procurement Process”
 - 2:15 Working session – LIGO II Laser Procurement
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Modulators, Isolators, Mode Cleaners, Telescopes & PD/ Core Optics Agenda

Wed. 1:00-3:00 Modulators, Isolators, Mode Cleaners, Telescopes and Photodiodes - David Reitze

1:00-1:25 Guido Mueller - Measurements of thermal lensing in isolator crystals TGG at high powers; methods for passive compensation of thermal lensing using $-dn/dT$ materials.

1:25-1:50 David Reitze - Reference Design for the LIGO II Input Optics; mode cleaner requirements and design performance.

1:50-2:15 David Jackrel - Photodiode Development for LIGO II

Wed. 3:00-5:00 Core Optics - Jordan Camp

3:00-4:00 - Alex Alexandrovski - Status of Sapphire Absorption Studies