

SWG Summary

David Shoemaker - LSC - 15-Aug-00

G000202-00-R

TAMASAS (Soft Isolation system applied to Japanese detector)

- progress in characterizing monolithic filters, controls
- plans for integration with TAMA suspension; fall '00 time scale

TNI (Thermal Noise Interferometer)

- simplification of laser control system
- significant momentum, hold to program of characterizing silica, then sapphire substrates

ITNI (International TNI)

- to target low-frequency noise; mirrors mounted on SAS
- physics rather than trial designs; adapt parameters to test models

Penultimate mass motion monitor

- notion of an interferometer accelerometer to look at non-gaussian motion

Suspension point interferometer: Fun!

Suspensions: need to try to fix some designs now

GEO-600 our first serious look at suspensions

- Autumn installation of fused-silica suspensions, complete system operational in a year

problem: suspension group cannot make both sapphire and silicon designs

- time pressure from LASTI
- parameterization not practical
- try to fix on an Mode Cleaner design now, look at schedule for possible delay in Test Mass suspension design/prototyping
- try to fix PRM, SRM size; common design with MC? Common performance requirements? Go for double suspension for both?
- what is the minimum interval from substrate material decision and ability to deliver a 'Controls' (dummy mass) prototype?
- Can some parallelization (at a cost) help us?

Sapphire-Silica decision

- dhs works with Eric G on technical issues
- Next LSC meeting: joint critical discussion
 - talking points in advance
- Astrophysics input - complete by November?
- How quickly can a decision be made?

Isolation System: next prototyping phase under way

No big surprises from prototypes

- all 12 loops closed but not with all sensors at MIT
- learned some things about blade springs, translation-tilt coupling

Design status

- continue with TAG document requirements for now
 - meets or exceeds newer requirements
- need to know DC and moving mass SOON
- (could accommodate a change in optical table heights)

Next big step: Prototype of HAM at Stanford ETF

- non-optics optics table, bolt on mass - skeleton?
- Challenge to get design to point of refinement required for RFQ

LASTI

Review of test plan for suspensions and isolation systems

- sequence leading up to complete test mass and mode cleaner cavity tests

Challenge: Thermal Noise

- short cavities
- sapphire sensitivity means noise test relatively uninformative
- fused silica test masses are tested well

Cartridge test on first BSC test

- does this fit in LASTI? Under study
- maybe partial disassembly

Additional tests:

- Mode Cleaner --- all in place, unambiguously a good idea
- LIGO II Laser: possibly, needs detailed discussion

Schedule

- must be reviewed both for interactions with subsystems
- ...and for end dates

Etc.

Loss measurements

- Fused silica looks very competitive for simple loss measurements
- Impact of Coatings TBD

Coatings

- probably a significant source of loss
- will develop detailed aggressive plan to pursue
- will require a significant number of coating runs (~10)

Actuators

- 1 Hz UGF for auxiliary sensing - wonderful!
- For main channel - force and BS requirements are critical
- Do we actuate on the test mass? Probably should hold on to this for now
- Electrostatics: GEO will do a design for GEO '600
- NEED input from Configurations....

Bottom line:

- **NEED input from Configurations....**