# SWG Summary

LSC Meeting, Louisiana
19th -22nd March 2007

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G070190-00-R

# Joint OWG/SWG Session (21st March pm)

- S Reid (Glasgow): Charging experiments
  - Investigating mitigation of charging effects by making conductive surface on silica: Lithium hydroxide doping – negligible conductivity, tin oxide coating – conductivity OK, mechanical loss 1.1e-4, optical loss higher than acceptable so far. Considering how to coat suspension ribbons
- V Mitrofanov (Moscow): Test mass charging relaxation
  - Investigating decay of contact electrification from different materials. Capacitive probe, sensitivity 5k e/cm^2 in 10 secs. Charge transfer less from silica than viton by ~ x10. “Russian” silica sample - decay in air 0.5 to 10 hrs (adsorbed water). No decay in vacuum (relaxation time ~8000 hrs)
- D Ugolini (Trinity): Kelvin probe measurements
  - Developing vac. compatible probe, sensitivity 300k e/cm^2. Corning 7980 silica sample, charged outside and transferred into vac. 16 days data, decay time ~ 4000 hours. Possibly more surface contamination than Moscow sample. Discharged with UV lamp through glass port
- K-X Sun (Stanford): Update of UV charging mitigation
  - UV LED - spectral and power stability over 7800 hours. Set up with ball lens to illuminate 1 inch coated optic in vac system, 0.2 to 0.5 microW. Measuring optical losses before and after. Will look at potential damage versus power and wavelength.

# Joint ISC/SWG Session (22nd March am)

- B Slagmolen (ANU): Seismic Platform Interferometer
  - Reduce relative motion of ETM and ITM to lower acquisition force. Options including sensing between optics table (need to know susp. transfer function) or between TMs (need low sensor noise) – use 532 nm or carrier shifted 1064 nm
- J Greenhalgh (RAL): SUS Noise Prototype update
  - Almost all mech. parts procured, delivery (clean) to LASTI mid-April, electronics to follow. Configurable as all-metal, ETM w/ reaction mass, ITM w/ thermal comp. plate. Pulling ribbons (CO2 system)– laser stabilisation improved quality. Test plan - SUS+ISI (SUS all-metal, then with silica) + ring-heater thermal test
- R DeSalvo (Caltech): HAM SAS update
  - Summary of construction process, clean in-factory assembly procedure, welding problems overcome, baking facility developed. System installed at LASTI with triple pendulum payload (locked down). Looking at stability, damping. About to pump down.
- G Harry (MIT): Init & Enh LIGO Susp. Therm. Noise
  - If at susp. thermal noise limit in LIGO, phi 2.5 e-3, c.f. free wire measurement 1.5 e-4, violin modes worse. With hardened steel clamp free measurement 5e-5 (S Penn). Add tension, phi worse. Standoffs the problem? Fitting H1 S5 data (Syracuse) violin mode Qs 1.3 e5, better than time domain estimates
- R Mittleman (MIT): LASTI BSC prototype update
  - Suspended at full load, tested bolted structure works, understood ASI model, Tooling needing redone. Problem with position of actuator – redesigned. Non-linear compliance from friction reduced with rewiring. Now being cleaned.