

Thermal Noise Workshop

Agenda V01r00

Monday 10:45-11:20

25 minutes for an introductory talk in the plenary session

- Introduction to the workshop targets and structure

10 minutes of discussion

Tuesday: 09:00-10:30 – Session A: Thermal noise solutions adopted in 2G detectors (aLIGO, AdV)

Targets: very short term upgrades?

- G. Hammond: Advanced detectors solutions for low thermal noise suspensions (20'):
 - Current solutions and their limitations
 - Short term upgrades
 - Open questions
- S. Penn: Advanced detectors solutions for low thermal noise test masses (20'):
 - Current solutions and their limitations
 - Short term upgrades
 - Open questions
- Discussion on performances, limits and possible small improvements

Tuesday: 11:00-12:30 – Session B: Thermal noise modelling

Targets: is our model of the thermal noise complete? Are Non-Equilibrium effects significant?

- I. Pinto: Modelling the thermal noise (20'):
 - Current models and their implementation in GWINC
 - Limitations and possible improvements
 - Open questions
- L. Conti: thermal noise and Non-Equilibrium effects (20'):
 - What's that?
 - Why it does matter?
 - What we need to know?
- 20 min of bottom-up talk?
- Discussion

Tuesday: 16:00-18:00 – Session C: Cryogenics and materials

Target: cryogenic detector, where we are and what are the needed R&D?

- K. Yamamoto: Cryogenic interferometer technologies (20'):
 - Operative temperature: 110K or 10/20K?
 - Cooling technologies vs cooling time
 - Status of the art and needed developments
 - Open questions
- R. Nawrodt: Materials for suspensions and test masses in a cryogenic detector (20')
 - Are we able to realize a cryo interferometer?
 - Is really silicon an alternative to sapphire (feasibility, noises)
 - Open question
- J. Degailaix: Optical Absorption on substrates (20'):
 - What we know about optical absorption in crystalline test masses?
- 20' Bottom-up talk
- Discussion

Wednesday: 09:00-10:30 – Session D

D.1) To be less sensitive to the thermal noise: Optical solutions

Targets: are flatter beams a possible solution?

- M. Tacca: High order mode beams (20')
 - Status of the research, last achievements
 - Open questions and future directions
- 20' discussion

D.2) Coatings:

Targets: Do we have valid solutions for the HR coatings in future detectors? What are the technical / engineering challenges e.g. associated with larger mirrors?

- G. Cagnoli: Review talk on the status of the art and known limitations (20')
- Discussion

Wednesday: 16:00-17:30 – Session E: Coatings (cont.)

- Bottom-up talk on coatings
- Discussion

Wednesday: 18:00-19:00 – Session F: Summaries

- Summarizing
- Preparation of a R&D white book: what is progressing and what is needed to progress
- Planning

Friday: 11:00-12:00

- Summary talk(s) at the plenary session