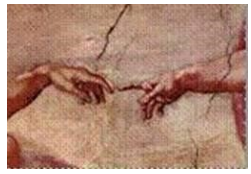
ASPERA Common Call

ET R&D

Networking and R&D for the Einstein Telescope



Meeting Minutes

WP1	WP2	WP3	WP4	MC	GM	Other
				X		

Title of the Meeting:	Management Committee Meeting, Telecon,
hyperlink:	
Date:	06/02/2015
Location (or phone)	phone

Participants			
01	Harald Lück (author of the notes)	02	Andreas Freise
03	Ronny Nawrodt	04	Stuart Reid
05	Iain Martin	06	Tomasz Bulik
07	Matteo Barsuglia	08	Mathyas Vasuth
09	Jo v.d. Brand	10	
11		12	
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17		18	
19		20	

Agenda

- status of the work in the WGs
- news from individual partners
- date for next meeting
- AOB

With 9 out of 11 members of the ET R&D MC participating in the meeting the required threshold of 3/5 according to our MOU had been reached, making this a valid MC meeting of which we agreed to have at least four per year.

Status of the working groups:

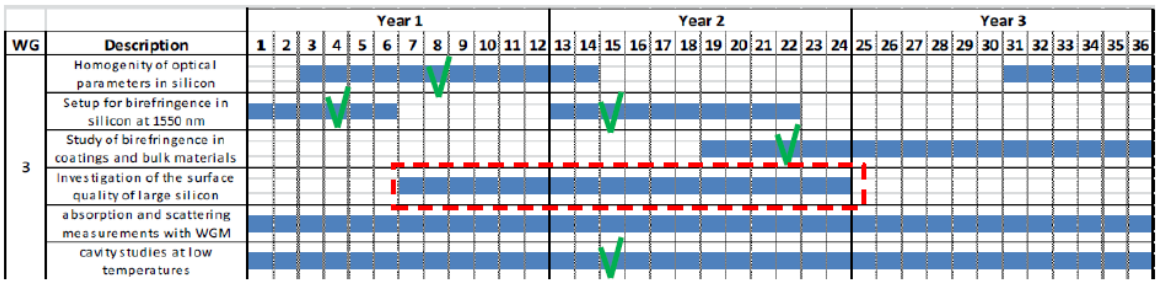
No representative of WG1.

WG4: Andreas Freise:
ET LF control scheme mostly done. Now including shot noise in coupling matrix to find out whether noise from cross couplings can be kept sufficiently low.
Filter cavity control scheme not started yet. Will probably rather reinvestigate achievable squeezing levels, where we suspect that intra cavity loss has not been taken into account in design study.
Bham: the student employed last October has now concluded the starting phase and starts working efficiently. Some tasks will slightly be modified following changing interests and requirements.
New algorithm implemented in finesse allowing to speed up mirror map calculation problems on supre computers. Needed when using high mode numbers. Otherwise too slow. Cut computation times down dramatically.
No news from Russian colleagues. Need to check what has been done there. Task for WG leader.

WG2: Jo v.d. Brand:
New sensors developed in last year. Polish colleagues visited Nikhef several times to calibrate their sensors. Last time three weeks ago. Are now in a position to produce them. Ready around April. Will produce more than 20 sensors and install them for long data recording at various sites. Probably start in Hungary.
Mathyas: Contract with mining company has been signed. Hungarian group is applying for funding to ensure continuing activities.
Thomasz: seismometers are in production. Company assembles electronics.
Jo: the Polish group has made really nice 3D sensors for a good price. People should keep this in mind when such sensors are needed.
No info on activities in the Baksan mine. Need to enquire. Task for WG leader.

Working group 3. Ronny Nawrodt:

Status WG3 – Optical properties of silicon at cryogenic temperatures



?

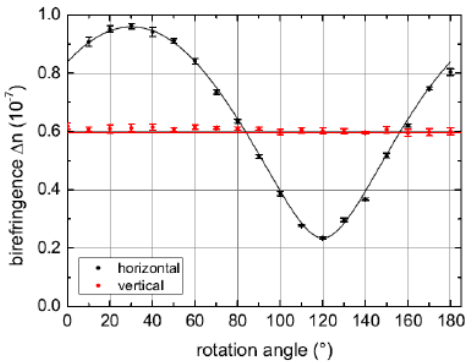
4 tasks:

1 – Stress induced birefringence
2 – Homogeneity of parameters in larger samples
3 – Surface Quality of large samples
4 – Investigations of WGM resonators

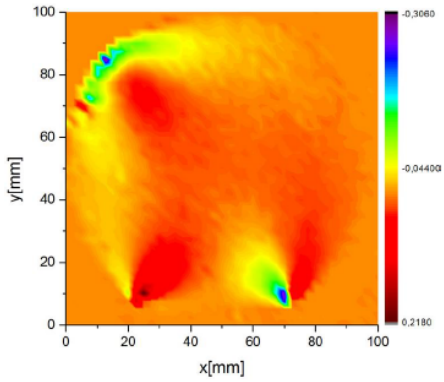
Stress induced birefringence

- Glasgow:
  7.5 µm based setup for live measurements of stresses/birefringence
- Hannover:
  cavity-based setup to study birefringence
- Jena:
  providing cryo-setup for large samples to study birefringence

Stress induced birefringence



modelling of different loads in a solid Si-cavity



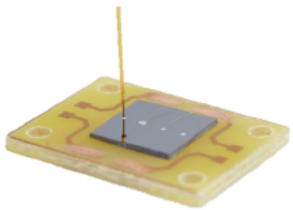
mapping stress in bulk samples

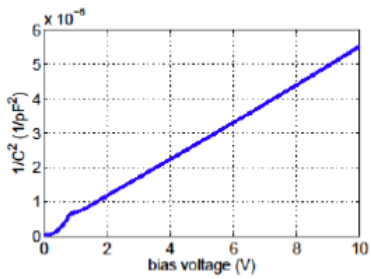
ongoing work:
measurement of photo-elastic coefficients of Si at 1550 nm and cryogenic temperatures

to do:
coating induced stress, birefringence at cryogenic temperatures, (annealing)

Homogeneity of parameters

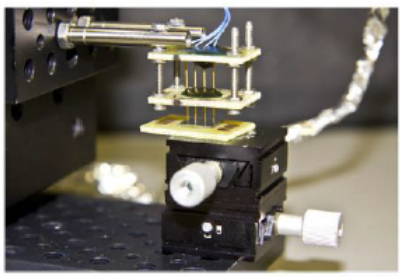
- measurement of doping concentration by means of C-V-studies at a Schottky-barrier

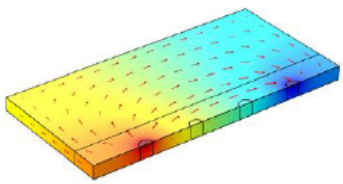


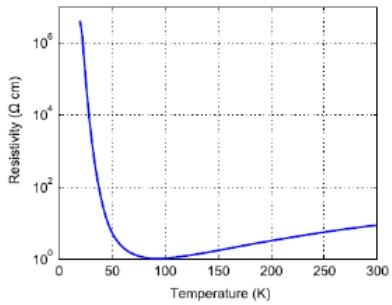


depth profile

- resistivity measurements (including cooling to study freeze out)







Ongoing work

- surface quality of samples
  - amorphous layers?
  - damaged layers?
  - polishing quality?
- whispering gallery mode resonator measurements
  - see status from Russia
- cavity experiment
  - last run needed to be repeated due to damaged coating (status from ET symposium in November 2014)
  - see status from Russia

Russian work in last year unclear, esp. WGM. No contacts recently. Need to enquire and push. Task WG leader.

Concerning large pieces of silicon to be investigated:
Iain: Have large Silicon piece in Glasgow ca. 15cm diameter 15 or 20 cm long. Absorption mapped through whole bulk. Most parts show values around 2-3ppm/cm= lowest value reported so far.
Ronny: 6”x9cm in Jena. Ca. 100Ohm cm.

Matteo:

Applied for funds for building frequency dependent squeezer. Decision will be made in summer.
APC: some experiments on higher order LG modes. Published paper end 2014. Recently APC and EGO done some experiments to compensate surface figure errors using heaters and micro-mirrors. So far compensated partially only astigmatism (not enough power to fully compensate it). Are writing paper on it now. Will be presented at LVC meetig or GWADW in Alaska. In this experiment not enough power in for compensating higher spatial frequencies, but also not enough time to extensively study the problem.

No “other business” to discuss.

Next meeting: try to arrange during GWADW meeting in Alaska with high f2f participation + teleconference .