

## **SKA SWG Update 15 November 2022**

SWG Chairs: Abhirup Datta, Anna Nelles, Adriano Ingallinera, Andrei Mesinger, Mark Sargent, Sebastien Muller, Marta Spinelli, Stefano Camera

Other Guests: Fernando Camilo, Phil Edwards

SKAO Science Team: Anna Bonaldi, Wendy Williams (notes), Robert Braun, Philippa Hartley, Tyler Bourke, Simon Purser

Apologies: Patrick Woudt, Francoise Combes, John Ilee, Betsey Adams, Natasha Hurley-Walker, Tessa Vernstrom, Barbara Catinella

### **SDC2 update - Phillipa**

Mark Sargent - pity the winning team did not participate in the reproducibility awards. It would be good to share best practice.

Phillipa - No, but they do have a public repository of their code, and though it does not reproduce their pipeline and results directly, they do share code and documentation

### **SDC3 EoR - Anna**

Andrei Mesinger - Will it be calibrated data or data with calibration errors?

RB - The aim is to provide data with a realistic level of residual calibration errors such as users might expect to get following an actual observation. We will describe the model of calibration errors, both direction-independent and -dependent, including ionospheric, A-team, etc., but we have scaled back the magnitude to be what we might expect after calibration and combining multiple observations: i.e. calibration errors are put in at a fraction of percent for typical 4-hr track and then scaled to 1000hr by reducing by  $\sqrt{100}$  - not  $\sqrt{250}$  since some errors will not be independent and scale as  $\sqrt{t}$ .

Andrei - No cable errors? We thought 'tier 1' would have 0 calibration errors?

RB - No cable errors. The aim is to provide imperfectly calibrated visibilities to determine how "perfect" the calibration will need to be in practise. It's likely that what we are providing is still too clean compared to real data. This was certainly the feed-back we had for SDC2 from the community.

Andrei - What has been done to the data must be very clearly defined. Do we have station beam?

RB - Indeed, a full description will be provided and we will also provide a time averaged and frequency-dependant beam model.

Abhirup Datta - tier 2 or tier 1 was told to the community, so now are a bit confused what is being provided

AB - tier 1 or completely uncalibrated visibilities with goal to do calibration is beyond the scope here. we are not doing that but providing imperfectly calibrated vis.

Abhirup - do we need to calibrate?

Anna and RB - no

Abhirup - This seems redundant. What are we testing with residual errors in the data?

Andrei - Some people can do something with the residual gains... but most will just avoid the wedge.

AB - We can test that the analysis pipelines are robust to slightly imperfect data.

Andrei - With exact sky model used we might want to forward model the gain errors in determining the power spectrum and account for them

RB - This is the first attempt to produce something like a real observation that is well calibrated

Abhirup - No need to calibrate what is shared with community?

RB - Correct.

Marta Spinelli - Will the figure of merit compare with the original power spectrum or to one passed through a pipeline?

AB - TBD ... it could be that something done to data prohibits going back to the original power spectrum. In that case we will use the processed data. Jury still out on this.

Abhirup - Should be to original otherwise it will be biased to the code used.

AB - It should be possible to get input back within error.

RB - We will explain exactly what has gone in (to the simulated data) and how scoring will be done.

Link to challenge website:

[sdc3.skao.int](http://sdc3.skao.int)

## **Meetings**

TB - ngVLA/SKA meeting: 7/8 invited speakers confirmed

AB - ESO/SKA meeting: 196 abstracts received and being reviewed, aim for responses in ~10days.

## **IAU2024-GA**

EoR - Cath Trott et al. will be submitting their proposal

HI - Natasha H.-W. et al. will also be submitting their proposal

WW - Note proposals can still be submitted even without an expression of interest. Deadline is Dec 1.

## **Sharing information and SWG websites**

WW - Cosmic Particles SWG expressed interested in hosting some SWG materials (e.g. meeting minutes, work results) on the SKAO website in the interest of transparency and information sharing between SWGs.

RB - This has come up before, but worth revisiting. Many SWGs already have their own independent systems in place.

RB - What we could easily do is provide links to SWGs own wikis/websites/etc centrally on the SKAO website so other SGW members can find them.

Opinions from other SWGs? If you have thoughts, please email them to us.

### **News from SWGs**

Mark Sargent - Some issues with links on SWGs websites (particularly HI members)

Stefano Camera - Cosmology - some focus group leads have changed (HI intensity mapping), recent brainstorming session looking at pre-SKA activities - SWG group meeting upcoming (Manchester, 17th-19th Jan 2023)

Fernando Camilo - Meerkat - S-band now available - Workshop in February on science with Meerkat extension (Add 16 SKA dishes to Meerkat with longer baselines)