

SWG Chairs Telecon 19-June-2018

Minutes by SKAO Science Team

Participants:

SWG: Ann Mao, Divya Oberoi, Doug Johnstone, Garrelt Mellema, Gianni Bernardi, Izaskun Jimenez-Serra, Mark Sargent, Erik Rosolowsky, Fernando Camilo, Laura Wolz, Lourdes Verdes-Montenegro, Grazia Umana, Xuelei Chen, Ingrid Stairs, Sebastien Muller

Apologies: George Heald, Richard Battye, Michael Rupen

SKAO: Robert Braun, Anna Bonaldi, Tyler Bourke, Cristina Garcia-Miro

- Review of CDR dates and outcomes. Reviews for TM, SADT successful. Some change of dates for upcoming CDRs still possible.
- A few slides on technical aspects of the telescope, based on slides originally prepared by Maria Grazia Labate were discussed. The SKALA4 antenna design for Low achieves better performance in terms of sensitivity as well as smoothness of the band. The polarization performance is also improved.
 - Q (Doug): For SKA1-Low, are stations clustered in the spiral arms as well?
 - A: Yes, there are clusters of 6 stations in the spiral arms to achieve good sensitivity on all scales
 - Q (Garrelt): Radius of stations of 38m is quoted. Is this now final?
 - A: Yes, it is now fixed, as the SKALA4 antenna size is now fixed.
 - Q (Garrelt): Is SKALA4 antenna taller, and is it this which given the improvement in performance?
 - A: Yes, it is taller, 2.09 rather than 1.85m, however the improvement is primarily due to the larger number of active elements (16 rather than 9).
 - Q (Gianni): is SKALA4 going to CDR on the timescale forecasted?
 - A: This is the current target. LFAA is going through a catch-up process with the help of SKAO, due to the change of antenna and other aspects. The first RRN for the documentation was not successful, the next one is in August and will determine whether the CDR can proceed on schedule.
 - Q: Is the configuration of SKA1-Low now frozen?
 - A: It is now fixed in the baseline design, and can only be changed via an Engineering Change Proposal if good motivation is provided.
 - Q: From some previous tests, it looked like SKALA2 had significant horizon response. Is this still the case for SKALA4?
 - A: The measurement that likely led to this interpretation was an image produced from the cross-correlation of the 256 antennas in a prototype station layout. Antenna elements within the station do not have a clear line-of-sight to the horizon, so their cross-correlation in that direction is likely to be dominated by signals that have nothing to do with a horizon response to the sky, such as correlated amplifier noise power. Suitable measurements to determine the actual horizon response must still be undertaken.
- Discussion of the EDGES results on possible detection of CD signal (Bowman et al. 2018). Garrelt: this is a very surprising signal, because it cannot be explained by known

mechanisms. If genuine, either the temperature of gas is much lower, or the background temperature higher, than expected. Some caution still necessary, other experiments (SARAS, PRISM, LEDA) will try to confirm. This is a showcase of how CD/EoR observations can make breakthrough discoveries.

- SKA data challenges: initial description and plan presented. EoR team is producing their own data challenges simulations, so this effort shouldn't be duplicated. The first simulated dataset produced should be relatively small and easy. It could be a continuum Mid imaging product.
 - Q (Lourdes): Might the data challenges contribute to the definition of Quality Assurance (QA) metrics?
 - A: Yes, possibly. In the first instance, they will more likely be testing the quality of source finding and characterisation methods of the user community. This may lead to new insights into the most relevant QA metrics that might ultimately be generated for, and distributed with, data products.
- SKA science meeting update: format will be similar to that of the last meeting in Goa, with contributed talks and poster marathons. Focus on new techniques enabling new science. Budget is being worked out now, so conference fee can be announced shortly. We are budgeting for childcare to make this a family-friendly event
 - Q (Ingrid): at the Pulsar meeting in JBO, childcare was meant to be available but there were problems with University regulations. Is this a problem for this meeting?
 - A: We are looking into it and will offer childcare if at all possible. Confirmation and details will be posted as soon as they are available.

IAU: General Assembly in Vienna. SKA will have a stand there, so people attending are encouraged to make use of it for working and networking. Please get in touch with our Comms team skao-outreach@skatelescope.org to promote their SKA-related sessions, talks etc. Help on the stand for outreach purposes is also welcome

- Fernando: the full 64 dishes have been installed on the MeerKAT site 2 months ago and science surveys have now begun. Inauguration is on 13th July.