8 April 2011

Announcement
PAFs for SKA – a discussion workshop to focus PrepSKA CoDR PAF inputs

Venue: Brigham Young University
Provo, Utah

Wednesday 25 May – Friday 27 May 2011

Aims: This workshop aims to review the key requirements for SKA phase 1 and phase 2 astronomy in terms of PAF performance, and reflect these in the material presented at the Concept Design Review (CoDR) to be held in July 2011. This is a relatively informal workshop and the program will be set to allow sufficient time for Q&A. The outline below is to provide an overview of content only and will be tailored to the requests for contributions received.

The workshop comprises 3 sessions;

Session 1 will comprise a series of presentations and discussions led by scientists but directed towards the engineering requirements for the SKA PAF(s) – i.e. these presentations are not to focus on the astronomy outcomes (numbers of galaxies etc) but instead on the requirements.

Session 2 will be a short series of "PAF R&D updates" from groups active in this research space.

Session 3 reviews the status of the material describing the PAF subsystem for the WP2.2 CoDR and aims to conclude 'data gathering' for this exercise; If you are participating in PrepSKA WP2.2 and are interested in PAF developments then this session is for you (otherwise it probably isn't!)

Participants: Whilst the last session is strongly focussed on preparation for the PrepSKA WP2.2 CoDR all interested parties are welcome to attend.

Outline workshop agenda (draft only)

SESSION 1 Wednesday 25 May; 0900 - 1230

PAFs and wide field science or alternatively *'what every engineer should know about my science'*

It is expected that the presentations in this session will focus on the following (rather than being overall SKA science talks per se);

1. Overview of the types of astronomy best done by PAFs (or only achievable with PAFs) – for SKA (arrays), for single dish (e.g. Arecibo, Parkes etc)
2. Detail presentation on key specifications and capabilities for this science project e.g.
   what dynamic range,
   would you trade number of dishes for X? for field of view? … for what?
   What about polarisation purity?

What drives these specifications?
How have they been derived?
How is the data processed and analysed – what are the key issues (bit sampling? Weighting schemes?)

09.30 – 10.00 Introduction; Science with PAFs - Lisa Harvey-Smith
10.00 – 10.30 Pulsars and time-domain science with PAFs - Joe Lazio
10.30 – 11.00 Morning Break
11.00 – 11.30
11.30 – 12.00
12.00 – 12.30 Panel discussion;

12.30 – 14.00 Lunch

SESSION 2 Wednesday 25 May; 1400 - 1700

"**PAF development updates**"
Contributions are invited from groups wishing to expose their latest results; expecting each to be about 30 mins each plus Q&A

14.00 – 14.30 Apertif (TBC)
14.30 – 15.00 PAFs developments at BYU (TBC)
15.00 – 15.30 Afternoon Break
15.30 – 16.00 ASKAP PAF (Gough/Hay/tbc)
16.00 – 16.30 other
16.30 – 17.00 other
17.00 End of day 1

SESSION 3 Thursday 26 May 0930 - 1700
PAFSKA CoDR preparation

(space is available at the start of Thursday for extra PAF development contributions if necessary)

09.00 – 09.30 WP2.2 CoDR; format and preparation (Neil Roddis)
09.00 – 09.30 Review existing PAF material as set out in the WP2.2 CoDR document matrix (Carole)

A session of presentations from each PAF concept leader, i.e.

10.00 – 10.30 PAF active antenna array concept description I (CSIRO: Hay, Gough)
10.30 – 11.00 Morning Break
11.00 – 11.30 PAF active antenna array concept description II (DRAO: Veidt)
11.30 – 12.00 other contribution on PAF antenna array developments (tba)
12.00 – 12.30 Discussion – antenna array concepts

12.30 – 13.30 Lunch

13.30 – 14.00 PAF receiver concept description 1- direct sampling (CSIRO; Gough, Bowen (incl SPF requirements))

14.00 – 14.30 PAF receiver concept description 2- I/Q mixer (CSIRO; Gough)
14.30 – 15.00 PAF receiver concept description 3 – direct optical high BW (DRAO: Veidt, Hovey)
15.00 – 15.30 Discussion - receiver concepts and/or other contribution (tbc)
15.30 – 16.00 Afternoon Break
16.00 – 16.30 PAF beamformer design phase 1 (CSIRO: Bunton/Hampson)
16.30 – 17.00 PAF beamformer/correlator design (DRAO;?)
17.00 – 17.30 Discussion or other contribution (tbd)
17.30 End of day 2

SESSION 3 continued
Friday 27 May ; 0930 – 1700

09.30 – 10.00 PAF M&C/imaging and computing loads (tbc)
10.00 – 10.30 Discussion – PAF data loads; SKA 1 and SKA 2; are PAFs good value per pixel?
10.30 – 11.00 Morning Break
11.00 – 12.30 Review of CoDR PAF materials (roundtable)

** this is not explictly a CoDR input but sets useful discussion with scientists and engineers and is highly relevant for the SKA system cost

12.30 – 13.30 Lunch
13.30 – 14.30 Discussion/presentation of ancillary CoDR documentation wrt PAF inputs;

- Risk register and mitigation strategies
- Strategy and plans for the next phase
- Logistic planning
- Identification of software and related software documentation
- Technology roadmap

14.30 – 15.00 Roundtable: discussion; concept description development – timeline, inputs etc.
15.00 – 15.30 Afternoon Break
15.30 – 17.00 Continue discussion or break into small groups
17.00 Workshop end

Registrations and proposals for contributions please to Dr Carole Jackson, CSIRO Astronomy and Space Science by 28 April 2011; carole.jackson@csiro.au

There is no charge for this workshop; morning and afternoon breaks will be provided (but not lunches or dinners). A 'workshop dinner' will be arranged and details are to follow.

Please note that BYU is planning to organize a broader, more extensive phased array research and technology meeting later in 2011 or early 2012. The workshop announced above is focussing on the PAF inputs to PrepSKA WP2.2 and does not intend to replace the technology meeting in any way.