



SA Minister of Science and Technology visits proposed astronomy reserve

Kim de Boer, Assistant Project Manager, SKA South Africa

On Monday 28 May 2006, the South African Minister of Science and Technology, together with the Premier of the Northern Cape Province, visited the Karoo to inspect the sites proposed for the Square Kilometre Array (SKA), the Karoo Array Telescope (KAT) and other radio astronomy projects. The visit formed part of a three-day discussion that focused on the commitment from national and provincial government to establish an astronomy reserve and to build the KAT.

Legislation which will empower the Minister of Science and Technology to declare this area as an astronomy reserve is in the final phase of consultation and should be presented to Parliament during the second half of this year. The proposed "Astronomy Park" is lo-

cated about 90 km from the town of Carnarvon in the Northern Cape Province.

Minister Mosibudi Mangena was accompanied by Premier Dipuo Peters, Mayor Burnette Slambee (Mayor of the Kareeberg District, which includes the town of Carnarvon), Dr Michael Hendricks (Director General of the Northern Cape Province); Dr Phil Mjwara (Director General of the DST); Dr Adi Paterson (Deputy Director General of the DST); Dr Rob Adam (Chair of the South African SKA Steering Committee); Mr Golemolemo Archie Lucas (Member of the Northern Cape Executive Council responsible for Science and Education) and the South African SKA project team.



Arriving in the Karoo!

Six science journalists accompanied the delegation to the site, resulting in a range of news items and feature articles in local printed, broadcast and online media.

The farm owner, Jan Louw, greeted the delegation on arrival at the site. Mr Louw supports the project and has maintained the site and diesel generator for the RFI equipment for the SKA project. On many occasions his family also provided accommodation and meals to the team.

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Special points of interest:

- 14 - 25 August 2006 – XXVth General Assembly of the International Astronomical Union (IAU)
- 21 August 2006 – Long Wavelength Astrophysics Joint Discussion 12 at the IAU General Assembly
- 28 - 30 August 2006 – ISSC

Join the KAT Science and Engineering wiki

Participate in discussions and collaboration with the KAT team and other developers and end users of the KAT by joining the "KAT Science and Engineering wiki" at www.kat.ac.za.

SA Minister of Science and Technology visits proposed astronomy reserve

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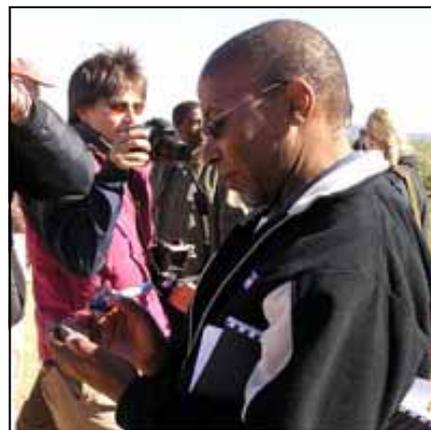
At the site Prof Jonas explained to the delegation why the area is ideal for siting astronomical instruments operating at all wavelengths. He also explained why the declaration of the astronomy reserve and the construction of the KAT, and possibly the SKA, would be a win-win situation for all, especially the residents of Carnarvon and the surrounding areas. The project will create new jobs and build science and engineering capacity in the Northern Cape, in collaboration with the National Higher Education Institute in Kimberley. Additional roads and the Carnarvon airstrip will be tarred and the electricity grid will be expanded. Once the Tb/s optical fibre cable is in place, Carnarvon residents will have the fastest internet access in South Africa, or even the world!

In discussions the following day, the DST and the Northern Cape Government agreed to establish a working group to ensure that the necessary infrastructure is installed for the site and that the environmental impact assessments and geotechnical investigations are commissioned as soon as possible. The working group has already started its work. The Northern Cape Government has appointed a project champion - Edcent Williams

(head of the Science and Education Department), a project executive - Michelle Ishmail, and a project manager, Paki Monyobo. Ferrial Adam will coordinate the work of the SA SKA Project Office on the infrastructure project. The working group will be supervised by a top-level team consisting of the Directors General of the DST and of the Northern Cape, with senior officials, and will report to the Executive Committee of the Northern Cape Government and to the SA SKA Steering Committee. This senior committee will meet at least four times over the year.

A sub-group of the working group has been established to work on setting up courses at the National Institute of Higher Education in Kimberley on Digital Signal Processing and RF Engineering. Telkom has expressed interest in providing resources for these courses. The sub-group will also work on the development of artisan skills for the project with the further education institutions in the Northern Cape.

"We recognize and value South Africa's leading role in global astronomy and space science networks and are therefore working hard to put funding, policies and legislation in place to ensure a bright future for astronomy research in this country," says



Minister Mosibudi Mangena signing a rock to commemorate the occasion.



An aerial view of Carnarvon.

Dr Adi Paterson, Deputy Director General of South Africa's Department of Science and Technology.

Four competing countries to present their SKA site bids



Prof Justin Jonas and Dr Bernie Fanaroff at the KAT site.

Scientists from South Africa, Argentina, Australia and China will travel to Cambridge, UK on 3 and 4 July 2006 to present their countries' bids to host the Square Kilometre Array.

This will be the first face-to-face presentation to the independent International Site Selection Advisory Committee (ISSAC).

The seven scientists serving on this committee are all experts in fields of astronomy and have all played key roles in deciding where to place major telescopes in the past. None of

them are from the four competing countries.

"Competition in this bid is tough, as the winning country will attract a billion Euro investment and one of the most ambitious science projects ever," says Prof Justin Jonas, chief project scientist for the SKA project in South Africa.

"We don't expect a final decision on where the SKA will be located before 2008." Prof Jonas and Dr Bernie Fanaroff will present the South African bid to the ISSAC.

How the KAT is taking shape

South African engineers and astronomers working on the Karoo Array Telescope (KAT) aim to have the first dishes of the array on the site by May 2008, so that the KAT can start with commissioning experiments by the end of 2009. The team is working on the sophisticated software, the digital signal processing hardware and firmware, state-of-the-art receiver and feed systems, designing the dishes and refining the work on the selection on the physical site. At the same time they have to get the basic infrastructure, such as roads, electricity, water and sewage, in place.

Constructing the prototype

The first step in the development of the KAT antenna is to design and construct a prototype at the Hartebeesthoek Radio Astronomy Observatory (HartRAO). The team will incorporate the lessons learned from this phase into an updated design when they construct the array of 20 antennas in the Karoo.

Anita Loots, KAT Project Manager, explains the importance of the prototype phase as follows:

1. The prototype will make it possible to conduct sensitivity tests of some of the key KAT science experiments. This will help the engineers to assess the suitability of critical elements of the KAT system design and will enable early testing of the telescope operational and science software chain. The KAT computing team is currently working on this software.
2. Linking the prototype antenna to the existing HartRAO antenna will help build competence in interferometry, an important skill for array radio astronomy and an area in which South Africa needs to develop its capacity.
3. The prototype antenna will provide a test bed for evaluation of the KAT feed technology. This includes characterisation of the beam pattern, pointing and tracking accuracy, self-generated radio frequency interference (RFI), calibration and polarisation performance. The antenna will be designed to allow for tests of both horn cluster feeds and development of focal plane array feeds (FPAs), in collaboration with international partners. Having a prototype antenna will allow research and development on FPA's to continue uninterrupted while KAT is constructed in the Northern Cape.

4. The prototype will make it possible to validate the mechanical design of an antenna for the KAT before starting with the production phase in the Northern Cape, thereby minimizing project risk.
5. The KAT prototype will help develop the capacity of South African industry in antenna design and construction, with the ultimate objective of a design that South Africa can offer as a solution for the SKA.

Prototype contract awarded

Towards the end of 2005, the KAT project office invited South African industry to submit proposals to construct the KAT prototype antenna. They received several excellent proposals and evaluated each one extensively. The contract was awarded to IST Dynamics Pty Ltd, a South African engineering company, on 24 April 2006. "We were impressed by IST's "out of the box" thinking and innovative approach in their proposal, and look forward to working with them on the KAT prototype," says Anita Loots.

IST Dynamics is at the forefront of developing integrated electro-mechanical and engineering software solutions for the South African and International Defence Industry. They have a growing international reputation for providing sophisticated, custom-designed products and systems.

KAT antenna timeline

In order to have the KAT fully operational by 2010, the KAT project team are now working towards the following schedule:

Prototype schedule

28 June 2006: Preliminary design review
28 August 2006: Detail design review
23 February 2007: Major components at site
16 May 2007: Antenna assembled
17 July 2007: Acceptance tests completed

KAT array

May 2007: Contracts awarded for KAT Array
May 2008: First antenna on Karoo site
December 2009: KAT antenna array completed

Progress with the prototype

The development of the prototype antenna is progressing well and is on schedule. In preparation for the preliminary design review of the KAT prototype on 28 June 2006, the KAT team has already

KAT funding and astronomy reserve on track

South Africa's government has allocated \$US 50 million (more than R300 million) towards the design, testing and construction of the Karoo Array Telescope (KAT) over the next four years. The KAT will be built in a sparsely populated part of the Northern Cape Province, north-west of the town of Carnarvon.

The KAT will be a powerful radio telescope in its own right and will prove that South Africa is committed and ready to host the much larger Square Kilometre Array (SKA). It will develop and demonstrate key technologies to be deployed in the SKA. The KAT will be available to local scientists and international researchers from partner institutions, and will significantly strengthen the country's capacity in astronomy, computing, digital signal processing and radio frequency engineering.

Some of the research envisaged for the KAT include finding new pulsars, studying transient sources, accurate mapping of the magnetic field in our own galaxy and other galaxies; measurements that will start to set limits on what dark energy and dark matter could be and studies of the evolution of galaxies. The KAT will be used in conjunction with South Africa's recently commissioned Southern African Large Telescope (SALT) and the HESS gamma ray telescope in Namibia to perform complementary observations. The combined instruments will form a formidable and powerful astronomical tool.

The KAT will consist of an array of 20 dishes, each 15 m in diameter, with innovative "smart" feeds in the focal plane. A high-speed fibre-optic link will connect the KAT to a remote high performance computing facility in Cape Town.

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How the KAT is taking shape

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completed much of the analysis, conceptual and detailed design work and prototyping.

The structural analysis of the antenna is about 80% complete. Some work on the feed support legs must still be done. The structural analysis includes deformation under own weight and wind. In order to perform accurate analyses under wind loading, a detailed CFD analyses was done in order to determine the wind loading on the structure for a wide variety of cases (combinations of azimuth and elevation angles) - see figures 1 and 2.

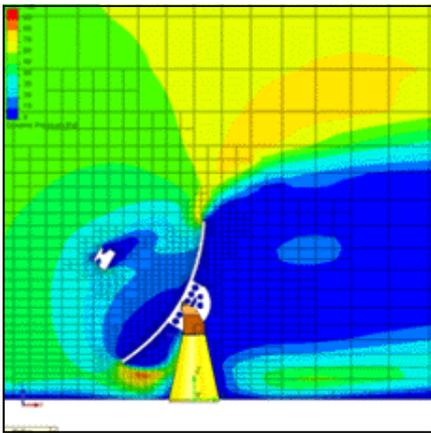


Figure 1: CFD Analyses - plot 1

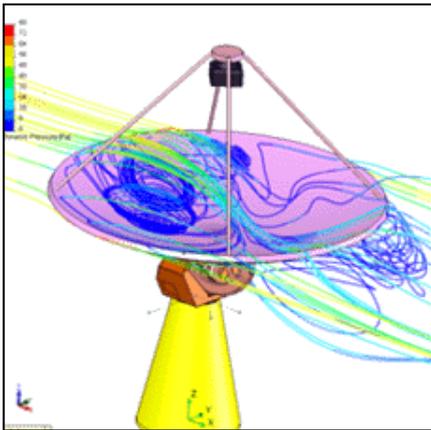


Figure 2: Spaghetti streamlines in the stowing position with 180 degree azimuth.

A conceptual design for the antenna has been completed (see figure 3) including detail selection of motors, gearboxes and other components. The dish construction design and manufacturing process has been worked out to a high level of detail.

A test piece of the composite dish structure has been manufactured in order to

verify the feasibility of the proposed manufacturing process. A second test piece that will incorporate the reflective layer is in process.



Figure 3: KAT prototype antenna conceptual design



Figure 4: Test piece of the composite dish.

The table below lists the most important specifications for the KAT prototype along with targets (design goals) that must be met to optimise antenna performance.

	Specification	Target
Pointing Accuracy (deg)	0.04	0.01
Surface Accuracy (mm rms)	4	1.5
Frequency Range (MHz)	700 - 1700	?
Wind (Operational) km/h	20	36
Wind (Marginal Operation) km/h	36	50
Wind (Drive to Stow) km/h	36	60
Wind (Survival) km/h	160	160
Azimuth Rotation speed (deg/s)	1	2
Azimuth speed (deg/s)	0.5	0.5
Diameter	15	15
F/D	0.5	0.5
Lowest Natural Frequency (Hz)	3	3
Feed Mass (kg)	200	200
Feed Displacement (mm) - any direction	2	?
Feed Rotation (deg) any axis	0.02	?

Digital Back-end for KAT XDM

The KAT Digital Signal Processing team is currently developing the experimental development prototype (XDM) for KAT. The XDM provides a platform to test critical aspects of the KAT digital back-end performance, designs and technologies. The prototype consists of 8 dual polarized digital receivers (DRX) (7 for the KAT cluster horn feed and 1 for the current Hartrao 26m dish), a 10 Gigabit switch fabric, a 10/100/1000 Megabit control network, a communications test module (CTM), data control computer (DCC) and a timing and synchronization module (TSM). Figure 1 shows a block diagram of the system. Each digital receiver directly samples a

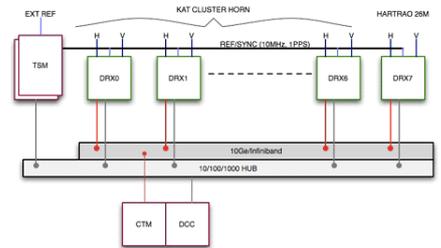


Figure 1: Block Diagram of XDM

1200 MHz to 1750 MHz radio frequency signal (post amplification), and then extracts a 256 MHz processing bandwidth across the 550 MHz RF receiver bandwidth. The data is phase aligned, channelized, time stamped and packetized onto the high-speed switch. The XDM includes a communication test module that allows the control computer to access information on the high-speed switch for monitoring and storage. The control computer also manages and configures the digital receivers through a 1Ge management interface.

The XDM hardware will consist of custom hardware designed according to the mechanical specification of the industrial computing PXI (extensions for instrumentation) specification. Each DRX module will consist of a motherboard supporting two XMC (extended mezzanine card) slots for either analog to digital receivers or processing modules, with timing and synchronization via the PXI bus. Cards will be populated in 6U PXI card cages located in standard 19" racks. Figure 2 shows an early CAD module of the physical view of the DRX module.

Currently the XDM hardware is being designed, with the first boards expected to

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How the KAT is taking shape

[From page 4]

be ready for testing at the end of November 2006.

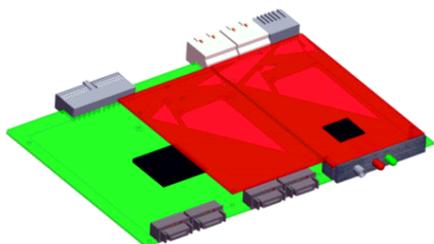


Figure 2: CAD model of Digital Receiver Module

Software and computing

The KAT Computing Team continues to make significant progress towards the development of the KAT computing and software systems. This includes simulations of KAT tied array and imaging modes, the characterization and mitigation of the radio frequency interference, and the early development of KAT calibration and imaging routines.

In addition, good progress has been made on the development of a prototype software architecture based on open standards widely used in the commercial sector. This software architecture will be developed further and tested on a small radio telescope array (PED - Production Equivalent Demonstrator) to be deployed at the South African Astronomical Observatory later this year. The KAT team is exploring a joint development collaboration with ATNF in Australia for common parts of the KAT and xNTD software systems.

Work is also proceeding on the high performance computing aspects of the KAT systems. A 24 node cluster has been assembled, which is allowing for scaled tests of parallel processing, including the use of cluster file systems.

In addition, work is continuing towards the further development of focal plane array technology in collaboration with international partners. Part of this effort includes the development of a data capture system for focal plane array test measurements.

Feed systems for KAT

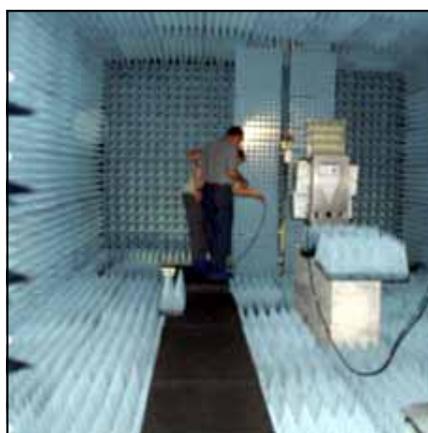
EMSS Antennas (Pty) Ltd has been appointed to take responsibility for the 7 horn cluster feed development for the KAT array (KAT Phase 1). They will also be responsible for the South African effort on Focal Plane Phased Arrays. EMSS came on

board during April 2006 and since then have made great strides in familiarising themselves with the KAT project. They have also conducted near-field and far-field scans on the two FPAs developed by SAAB Grintek (Pty) Ltd during 2005.

The KAT software will evolve through a series of prototypes, starting with the Production Equivalent Demonstrator ("PED") to be tested at the South African Astronomical Observatory (SAAO) in Cape Town. A single 15 m prototype dish to test feeds, signal processing equipment and software is being built by IST Dynamics (Pty) Ltd at the Hartebeesthoek Radio



The 4x3x2 FPA fitted at the far-field range near Paardefontein, South Africa, for testing.



The 4x3x2 FPA being prepared for near-field tests at the Stellenbosch facility.

Astronomy Observatory. "This dish will not only be the test bed for the KAT components, but it will also strengthen our industry's capacity to design and construct large dishes," says Anita Loots, KAT Project Manager. "We want to ensure that the local industry is ready to compete for contracts on the construction of the SKA."

Please note: Larger versions of the figures are available at www.ska.ac.za/newsletter.

SA steps up EU participation

Daan du Toit, Department of Science and Technology (South Africa)

Cutting edge radio astronomy initiatives in South Africa benefit hugely from the country's strategic science and technology partnerships with Europe, including several initiatives of the EU's Sixth Framework Programme (FP6.). Through the leveraging of South Africa's unique expertise and its important geographic advantages, South Africa also adds significant value to the leading FP6 radio astronomy projects such as the SKA Design Studies project (SKADS) and the RadioNet networking and coordination platform. These collaborations are mutually beneficial and much valued by all partners.

Engineers in the SKADS initiative are, for example, keen to participate in the development of technology for the Karoo Array Telescope (KAT) so that they can use the KAT project as a crucial test for fine-tuning SKA technology. South Africa joined RadioNet early in 2006. This means that South African scientists can now participate in European radio astronomy forums, share access to cutting edge instrumentation and benefit from mobility agreements and funding between radio astronomy sites.

"It is a huge advantage to be a part of new radio astronomy research initiatives from the start," says Justin Jonas, SKA project scientist in South Africa. "It helps us to understand how Europe is mapping out its radio astronomy programme into the future and even allows us to be a part of this planning process."

The Hartebeesthoek Radio Astronomy Observatory is also participating in another FP6 project - EXPRes, aimed at strengthening international VLBI (Very Long Baseline Interferometry) cooperation. EXPRes seeks to connect all major radio telescope in Europe and partner countries via high-speed fibre optic data links in order to create a truly global radio telescope facility.

This rich portfolio of different engagements has created a firm foundation for enhanced cooperation under the new Seventh Framework Programme (FP7) to be launched at end of 2006.

South Africa also contributed to the mapping of future European and global research infrastructure needs when former Department of Science and Technology Director-General, Dr Rob Adam, was a keynote speaker at the European Research Infrastructures Conference held in Nottingham in December 2005.

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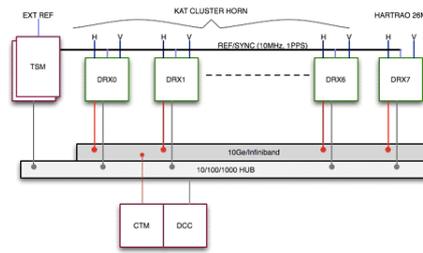


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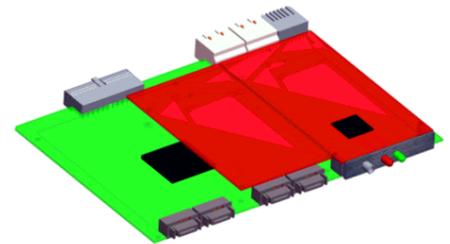


Figure 2: CAD model of Digital Receiver Module

"Little Blue" computing cluster for KAT's Cape Town office

The recent installation of a powerful computing cluster at the KAT offices in Cape Town will boost the team's high performance computing abilities and will allow many of the current prototype solutions to be more thoroughly investigated and tested.

The team is very excited about their brand-new cluster, fondly named "Little Blue", consisting of 24 nodes each equipped with a 3.0 GHz dual core Intel Pentium 4, as well as 2 GB of RAM and a dual gigabit Ethernet cards.

Little Blue will boost the team's high performance computing abilities and will allow many of the current prototype solutions to be more thoroughly investigated and tested.



Thomas Bennet from the Karoo Array Telescope (KAT) computing team, whose work focuses on the high performance computing aspects of the KAT.

Little Blue will also be used as a test-bed for the initial design of the KAT monitoring and control software and will provide critically important feedback with regards to the issues related to managing a high performance computing environment.



The "Little Blue" 24-node computing cluster installed at the KAT office in Pinelands, Cape Town.

Within the next few weeks the cluster will be tested with a variety of existing high performance code, including GADGET-2 (the n-body simulation code used to produce the millennium simulations) and bespoke astronomical data processing from the SALT project.

KAT software, computing and feed systems update

The Karoo Array Telescope (KAT) computing team continues to make significant progress towards the development of the KAT computing and software systems. This includes simulations of KAT tied array and imaging modes, the characterization and mitigation of the radio frequency interference, and the early development of KAT calibration and imaging routines.

In addition, good progress has been made on the development of a prototype software architecture based on open standards widely used in the commercial sector. This software architecture will be developed further and tested on a small radio telescope array (PED - Production Equivalent Demonstrator) to be deployed at the South African Astronomical Observatory later this year. The KAT team is exploring collaboration with ATNF in Australia for common parts of the KAT and xNTD software systems.

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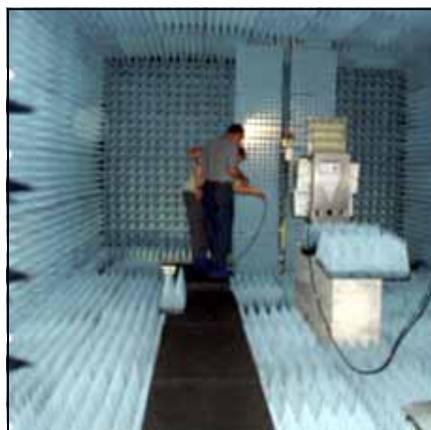
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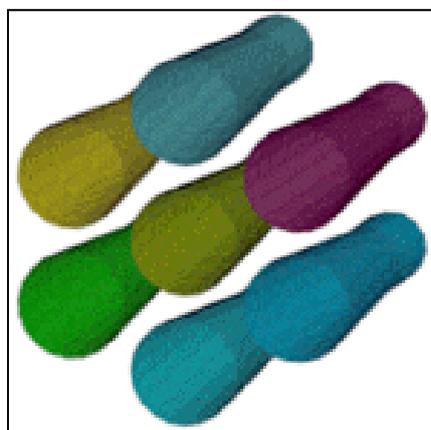
EMSS Antennas (Pty) Ltd has been appointed to take responsibility for the seven horn cluster feed development work for the KAT array (Phase 1) and will also be responsible for the South African effort on Focal



The 4x3 dual-polarized FPA mounted at the far-field antenna test range near Paardefontein, South Africa.



The 4x3 dual-polarized FPA in the near-field test facility at Stellenbosch University.



An early computer model of a seven feed-horn cluster prototype.

Plane Arrays (Phase 2). EMSS came on board during April 2006 and since then have made great strides in familiarising themselves with the KAT project. They have also conducted near-field and far-field scans on the two FPAs developed by SAAB Grintek (Pty) Ltd during 2005.

The electromagnetic design of the KAT reflector antenna involves the production of a feed assembly that captures celestial signals in a stable and optimized manner, and must also consider methods for reducing all sources of terrestrial thermal noise leaking into the sensitive receivers. One example is determining the positioning and cross-section shape of the feed support struts. These struts disrupt the mathematical elegance of the parabolic reflector, and thereby not only distort the celestial signal, but also generate minor radiation lobes directed towards the ground.

As with most real-world problems, the KAT antenna design parameters are interrelated and cannot be optimized simultaneously. The best design will therefore by necessity be a balance, which can only be derived after evaluating and trading amongst an extensive list of design options. Computer simulations will be used to predict radiation patterns, reflector surface currents, currents on the feed support struts, spill-over levels, and other electromagnetic phenomena.

The physical size of the KAT antenna and the frequency of operation together determine the computing power required, and it is already clear that full-wave simulations will be too complex to execute even on a top-end desktop PC. Work is underway to find the most suitable workstation for the numerical experimentation, which will be in full-time use over the next few months to build up the raw material for the case studies.

SA joins All-Sky Survey

South Africa's participation in the C-BASS (C-Band All-Sky Survey) is likely to be the first official experiment to be located within the proposed astronomy reserve in the Northern Cape.

"This is another important step in creating a diverse hub of astronomy infrastructure in Southern Africa," says Bernie Fanaroff, project manager of South Africa's Square Kilometre Array.

Telkom donated two dish antennas that will be used for the experiment. These are now being converted into radio telescopes for South Africa's participation in this exciting research project that will map the intensity and polarisation of the radio radiation

from our galaxy. The radio maps obtained from C-BASS will be used to subtract the "Galactic foreground" emission from data obtained with the many space and ground-based Cosmic Microwave Background (CMB) experiments about to be undertaken. The CMB is the radiation that resulted from the aftermath of the Big Bang, and studying the CMB provides us with our best view of the Universe in its infancy.

Initial testing of the dishes and measurements will be done at the Hartbeesthoek Radio Astronomy Observatory.

Through this partnership, South African astronomers and students will

work with leading astronomers at Caltech in the US, and the Universities of Oxford and Manchester in the UK. One of the first South African students to benefit directly is Oliver King, an MSc student from Rhodes University. Oliver leaves for the UK soon to take up an Oxford University scholarship, where he will be an important link between the UK and local partners.

"This is a direct link to some of the most prestigious astronomy research units and there will definitely be more opportunities for exchange and collaboration between students and researchers," says Justin Jonas, chief project scientist at the SKA South Africa project and professor of Physics and Electronics at Rhodes University.

SKA South Africa in the media

Six South African science reporters joined a recent visit (27 & 28 May 2006) to the proposed SKA South Africa site in the Northern Cape.

They had ample opportunity to interview the project leaders and scientists, as well as the representatives from national and provincial governments who support this project.

In addition to some radio reports and Afrikaans language articles, the following articles appeared in the press and on internet news sites:

Liftoff at last for national space policy

Engineering News, 12 June 2006

... The country is currently seeking to considerably expand its involvement and capabilities in radio astronomy, most prominently (but not exclusively) through the Karoo Array Telescope project and the bid to host the giant international Square Kilometre Array project.

Geheime van die Heelal tussen skottels

Die Burger, 3 June 2006

Duisende gesofistikeerde skottels op 'n Karoo-vlakte sal die geheime van die Heelal se geboorte kan ontsluit, mits Suid-Afrika sy mededingers in 'n sterre-

kunde-wedloop kan klop ...

Peace and quiet

Financial Mail, 2 June 2006

Government is to establish a radio astronomy park in the Northern Cape that is free from radio interference from cellphone masts, television broadcast signals and aircraft radar.

Northern Cape bids for another giant telescope

Business Day, 2 June 2006

Two hours' hard drive from the small Northern Cape town of Carnarvon lies Blauputs farm ... this might be the spot on which SA one day builds the world's biggest radio telescope, the Square Kilometre Array (SKA).

All set for a Big Bang in the Karoo

Cape Argus, 1 June 2006

South Africa is bidding to host the world's biggest radio-telescope, which will allow astronomers to see back in time to soon after the 'Big Bang' explosion that created the universe. This is the Square Kilometre Array - a R8.5 billion project that could be sited in the Great Karoo near Carnarvon.

All set for a Big Bang in the Karoo

IOL, 1 June 2006

... South Africa is one of four nations bidding to host the array, an interna-

tional project funded by the European Union, the United States, China and a number of other countries.

SA working on laws to attract astronomy-linked investment

Engineering News, 1 June 2006

South Africa is working on legislation to strengthen the country's attractiveness to the global astronomical community, and it is hoped that the bill will be presented to parliament by July.

R10bn telescope bid on track

ITWeb, 30 May June 2006

Science and technology minister Mosibudi Mangena was in the Northern Cape yesterday, showcasing the proposed site for the square kilometre array (SKA) telescope. The R10 billion project recently gained funding approval from the European Union.

Space progress to boost SA

News24, 29 May 2006

South Africa's remarkable progress over the past decade in the fields of space science and astronomy is set to generate billions of rands in foreign investment, Science and Technology Minister Mosibudi Mangena told MPs.

Please note: Links to the various articles are available at www.ska.ac.za/newsletter.

Prominent Swedish Astronomer joins radio astronomy in South Africa



Dr Roy Booth

Dr Roy Booth, recently retired director of Onsala Space Observatory in Sweden, has joined the radio astronomy community in South Africa on a three-year contract to promote radio astronomy and support South Africa's bid to host the Square Kilometre Array.

On 20 May 2006 Chalmers University honoured Roy with the prestigious

Chalmers medal in recognition of his outstanding academic career and contribution to Onsala Space Observatory, one of the world's leading radio astronomy facilities.

As the new science director at the Hartebeesthoek Radio Astronomy Observatory (HartRAO), he looks forward to a range of challenges.

High on his priority list are boosting HartRAO's research outputs and coordinating a visitor programme that will bring experts to South Africa to interest and inspire research students.

"South Africa must attract and retain people able to pursue a high level astronomy-related career," says Roy.

"We are going to build a future science base for the Square Kilometre Array (SKA) at HartRAO, and in the short term we are going to build and test a prototype antenna of the Ka-

roo Array Telescope (KAT) there," he adds.

Roy's immediate dream for HartRAO's education outreach programme is to acquire a small student telescope so that visiting learners can experience the hands-on thrill of pointing and steering a telescope to map and even weigh the Milky Way galaxy.

"South Africa must attract and retain people able to pursue a high level astronomy-related career," says Roy.

Students from remote schools will be able to participate in these experiments via the internet. He firmly believes that nothing replaces the thrill and inspirational value of such hands-on involvement.

SKA South Africa on display



Dr Adrian Tiplady and Paul Manners of the SKA South Africa Project Office at the SASOL National SciFest.

South Africa's Square Kilometre Array (SKA) project participated in two major, national science outreach events recently.

From 22 - 28 March 2006 a stand on the SKA South Africa project was on display at the SASOL National SciFest in Grahamstown, in the Eastern Cape. This festival attracts more than 40 000 visitors, most of them learners and educators.

Adrian Tiplady and Paul Manners of the SKA South Africa project office staffed the display for seven days to engage the visitors about radio astronomy and South Africa's bid to host the SKA.

A trailer, equipped with sophisticated instrumentation, that was used to measure radio frequency interference in the areas considered for the SKA, was on display outside the entrance to the main building of the festival.

Prof Justin Jonas, SKA South Africa project scientists, also led a workshop and discussion session on South Africa's bid to host the SKA.

During National Science week (13 to 20 May 2006) the same display traveled to Kimberley in the Northern Cape, the province where the proposed SKA site is located. This time Marion West, an astronomer at the Hartebeesthoek Radio Astronomy Observatory, accepted the challenge to answer questions of hundreds of enthusiastic learners who came to the SKA display.

For both events, special handouts and a set of questions were developed to allow keen visitors to engage with the project and find out more about radio astronomy in general.

Join SKAnet! SKAnet is an email list which keeps subscribers updated on news and latest developments about the Square Kilometre Array South Africa project. Join the list at www.ska.ac.za.