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SKA decision will expand UCT's astronomy reach even further

The University of Cape Town enthusiastically welcomes the decision by the SKA Science and Engineering Committee (SSEC) and its associates to assign a portion of the Square Kilometre Array (SKA) of radio telescopes to South Africa.

The majority of SKA dishes in Phase 1 will be built in South Africa combined with MeerKAT. Further SKA dishes will be added to the ASKAP array in Australia. All the dishes and the mid frequency aperture arrays for Phase II of the SKA will be built in Southern Africa while the low frequency aperture array antennas for Phase I and II will be built in Australia / New Zealand.

Professor Danie Visser, the Deputy Vice-Chancellor at UCT responsible for research, said: "It is a red-letter day in the development of science in South Africa. This is one of the biggest scientific research ventures ever undertaken and it confirms that developing nations can also be a part of solving the big questions of our day. It will bring scientists from all over the world to South Africa (and to UCT in particular) and thus greatly enhance not only South Africa's but also UCT's international research collaboration. SKA also brings important opportunities for job creation and the development of the country as a whole."

The university's Astronomy Department is the only dedicated, independent, university department focused on astronomy in South Africa, with strong ties and joint positions with the SA Astronomical Observatory and increasing interaction with the SKA SA project office. It has partnerships with other astronomy groups in South Africa, and through the National Astrophysics and Space Science Programme; and with other universities and agencies in Africa, Europe, Australia and North America. Until the SKA is completed, the 10-year MeerKAT project offers one of the largest radio telescopes in the world for research.

For the next decade it will remain the most sensitive radio telescope in the Southern Hemisphere. The completed MeerKAT array will comprise 64 dishes of 13.5m in diameter; its precursor, KAT-7 with seven dishes, is already functional. Four out of 10 key science

projects assigned to the MeerKAT array of radio telescopes in the Karoo are already led or co-led by researchers at UCT.

Professor Renée Kraan-Korteweg, the head of the Astronomy Department at UCT, said: "There is a shortage of good astronomers, in particular radio astronomers in South Africa – especially for the facilities we expect to be built or expanded, which will offer opportunities for recruiting at staff and post-doctorate levels. UCT's goal is to train future leaders in radio astronomy for these kinds of opportunities. A degree in astronomy and astrophysics is also useful for careers in other branches of science, as well as engineering, technology, instrumentation design, software development, digital processing, computer science, telecoms, digital processing, teaching, business and other fields."

UCT is the only South African university to include an astrophysics major in its undergraduate programme. It is attracting a steadily increasing number of students. Professor Kraan-Korteweg noted that 75% of undergraduates in the astrophysics programme at UCT are black South Africans.

She said other branches of science and technology would also strongly benefit from the parts of SKA that are assigned to South Africa: "Instrumentation, computer sciences, programming, mathematics, computer hardware – all these sectors will benefit from having SKA here," she said. "Eighty percent of the engineers at the SA SKA office are South African."

UCT a hub for astronomical and astrophysics research in Africa

Professor Kraan-Korteweg said UCT is becoming a hub for astronomical and astrophysics research in Africa, channeling resources and outreaches to neighbouring countries. "We are training the next generation of astronomers in this country and in Africa," she said.

"UCT is a partner in research projects involving eight other African countries, with more on the way." UCT has led research outreaches to Mozambique and Ethiopia in the last few years.

Professor Kraan-Korteweg said: "MeerKAT has already started reversing the brain drain in this region by attracting talented researchers from other parts of the world. MeerKAT and SKA are attracting South African researchers to return after post-grad or post-doctoral study elsewhere."

In the last seven years, the number of staff, students and postdoctoral students in astronomy at UCT has more than quadrupled. In 2005, UCT had two astronomy staff and three to five postgrad students; in 2012, the department has 10 staff (including two resident SARChI Chairs); 11 postdoctoral fellows (predominantly specialised in radio astronomy); and 30 postgraduate research students (mostly South African but also from other African countries such as Madagascar, Mauritius, Ethiopia and Uganda). Half of the staff are women

(including the Head of Department) and half are South African, including three young astronomers who were recently signed on.

Each SARChI Chair generates opportunities to employ support staff and to take on an average of two PhD students, two Master's students and two post-doctoral students per Chair; plus an array of bursaries that attract additional students Professor Kraan-Korteweg said: "Astronomers are not tied to a specific country or part of the world; it is common to travel to different hubs to do research, gain experience, or advance a degree. UCT is now a part of this network, representing Africa to the global astrophysics community and bringing astrophysics capacity into the continent."

Professor Kraan-Korteweg said: "With or without SKA, this country offers a very attractive opportunity to researchers. Our telescope technology now combines optical, infrared, radio and gamma, and from 2016 onwards we will have access to a world-class radio facility with MeerKAT."

Experts in astronomy and astrophysics at UCT and their contact details:

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