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Radio telescope to probe early universe may be located in SA

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CAPE TOWN — An international conference in Cape Town of astronomers involved in the Square Kilometre Array (SKA) telescope — an ambitious project to detect the very faint signals from the early universe — is expected to boost the chances of SA being chosen as the site for the € 1,5bn project.

Decision time for where the SKA — a radio telescope expected to be so sensitive that it could convert weak radio signals dating back to the birth of galaxies and stars into “pictures” by the use of superfast computers — will be sited is expected in 2012.

Prof Richard Schilizzi, SKA international director, said yesterday this would be after a system design project was completed to determine the final cost of the project, as well ironing out policy and organisational issues.

If all goes well and the necessary finance is obtained from the funding agencies, the SKA will be up and running by 2017.

Schilizzi said the effect the global financial slump would have on funding was still an unknown factor, but was a “concern”.

The main contenders for the SKA site are SA and Australia, but SA has turned its bid into an Africa-wide effort with proposals to build outlying stations in countries such as Madagascar, Mauritius, Kenya, Zambia and Ghana, which could be to its advantage.

The SKA will pick up radio waves rather than light emissions and would be used to study and “take pictures” of what happened at the birth of the first stars and galaxies when they were formed about 750-million years after the “Big Bang”, which created the universe 14-billion years ago.

It would also be used to study a phenomenon called “dark energy”, the force apparently driving the acceleration of the expanding universe.

The SKA would also survey the sky and focus on hydrogen, the most common element, to obtain a better understanding of the universe.

Funding for the SKA is expected to come from the scientific funding agencies of 19 countries, the most significant of which are the US and the UK, as well

as others in Europe. These agencies would make the final decision on where the SKA will be sited, based on the recommendations of astronomers.

The initial study has been funded by the European Commission and would run until 2012.

Schilizzi said at that stage there would be a much clearer indication of the costs, as well as policy issues on how the project should be organised, for example by way of a treaty.

Bernie Fanaroff, head of SA's SKA effort, said SA would use the conference to showcase its own advances in the field, a prototype "pathfinder" midrange radio telescope made up of 80 dishes, each 12m in diameter, situated near Carnarvon in the Karoo.

The government has allocated R1,5bn to the Karoo Array Telescope, or MeerKAT, over a seven-year period and the first dish is expected to be in place by April. Many of the scientific advances and much of the technological progress made through MeerKAT would be used in the final SKA venture.

Fanaroff said the SKA could be likened to more than 1-million household satellite TV dishes being focused on one point. It would be 100 times more sensitive than any existing radio telescope, being fed information from an array of between 2000 and 3000 12m diameter dishes.

He said while SA and Australia were "competing" for the right to host the SKA, this did not deter the two countries from collaborating on science.

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