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THE SQUARE KILOMETRE ARRAY: AUSTRALIA'S MEGA-SCIENCE PROJECT

Abstract

The Square Kilometre Array is currently being designed by a collaboration of ten member countries. Before the end of the decade, construction of two radio telescopes will start in South Africa and Australia, covering the frequency range 50MHz to 14 GHz. In Australia, the SKA1 Low telescope will consist of 130,000 antennas spread across 65km of desert in Western Australia, enabling world-leading low-frequency radio astronomy in fields such as the Epoch of Reionisation and pulsar search and timing.

In this talk I will explore the current status of the SKA, with particular focus on Australia's contribution to SKA design: this includes deployment of a low frequency test array in WA; development of the array correlator and beamformer; and work on the high-throughput computing necessary to process the 150 TB/s of data that the telescope will produce. I will also discuss the Murchison Radio-astronomy Observatory (MRO), Australia's SKA site. As well as being geographically remote, the MRO is supported by a regulatory radio quiet zone that ensures it is one of the quietest sites in the world for radio astronomy.