

## Engineering the SKA-Low telescope.

The Square Kilometre Array (SKA) is one of the most ambitious international mega-science projects currently in progress. This paper focusses on the SKA-Low telescope; construction the Murchison Radio-astronomy Observatory is scheduled to start shortly. This telescope covers the “low-frequency” radio astronomy band from 50-350 MHz. It will consist of large number of stations each approximately 40m in diameter, comprising 256 dual-polarised log-periodic dipole antennas. The stations function as a receive-only phased array. The baseline design envisages 512 such stations. The core of the telescope is very dense and contains almost half of all the stations. The remaining stations are distributed along three quasi-spiral arms, with a maximum baseline of 65 km.

The talk will draw on the presenter’s involvement in the international SKA project for almost two decades, and will focus in particular on the computational electromagnetic simulation of SKA-Low stations.

### About the presenter:

David Davidson completed his undergraduate and Master’s degrees in electronic engineering at the University of Pretoria in 1982 and 1986 respectively. From 1985 to 1988 he was with the Council for Scientific and Industrial Research in Pretoria, South Africa. From 1988 until 2017, he was with Stellenbosch University (SU), SA; he received his PhD and D Eng from SU in 1991 and 2017 respectively. From 2011-17, he held the South African SKA Research Chair at SU; he was also a Distinguished Professor there and is presently Professor Extraordinary. He holds a B1 research rating from the (South African) National Research Foundation.

As of 2018, he joined Curtin University, Perth, Western Australia, where he is Professor and Director of Engineering at the International Centre for Radio Astronomy Research at Curtin University node (Australia). He has held a number of visiting appointments, including at the University of Arizona (1993); Cambridge University (1997); Delft University of Technology (2003); and the University of Manchester (2009). He is a registered Professional Engineer with the Engineering Council of South Africa and a Chartered Professional Engineer with Engineers Australia. He is a Fellow of the IEEE (2012) and an associate editor of the IEEE Transaction on Antennas and Propagation. He has been extensively involved with the ICEAA conference series, and chaired the local organizing committee for the ICEAA’12 Cape Town edition.