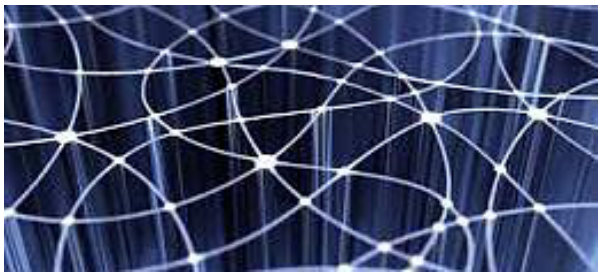

Contribution ID: **78** Type: **not specified**

The MeerKAT radio telescope

The MeerKAT radio telescope is currently under construction, with completion of the 64 dish array scheduled for 2016. This will be the largest centimetre wavelength telescope in the southern hemisphere, and one of the largest in the world. Construction of the first phase of the SKA is due to commence in 2016 and the MeerKAT will be incorporated into SKA-mid, contributing about 25% of the total sensitivity for Phase 1. The science case, design and implementation of the MeerKAT will be introduced, with particular emphasis being placed on the digital signal path.

Because the cosmic radio signals are noise-like and have very wide bandwidths, the aggregate digital data rate coming from the receptors is very large. Practical issues such as radio frequency interference (RFI) multiply this data rate because high resolution ADCs are required to ensure sufficient headroom to maintain linearity. The various observing modes require the receptor data to be processed in real time by the central signal processor (CSP), and this DSP processing load has a polynomial scaling law that depends on the array and receptor parameters (e.g. number of antennas, ratio of dish diameter to dish spacing, maximum dish spacing). The various CSP modes and implementations are discussed.

Primary author: Prof. JONAS, Justin (SKA)

Presenter: Prof. JONAS, Justin (SKA)