## MeerKAT as an SKA-mid precursor

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The MeerKAT radio telescope is an array of 64 13.5 metre offset Gregorian antennas with cryogenically cooled, single pixel receivers. Construction of the array is underway, with completion of the antennas scheduled for late 2016. Three sets of receivers covering frequencies from 580 MHz to  $\sim$ 3 GHz are currently in production or under development. The correlator/beamformer is implemented using the SKARAB FPGA platform developed for the CASPER collaboration.

The MeerKAT radio telescope project has afforded a number of technical pathfinding activities for the SKA mid-frequency instrument. The design process for the MeerKAT will be described, including the extensive concept exploration phase where emerging technologies such as focal-plane array feeds, composite materials, RF-over-fibre signal transport and Stirling-cycle cryogenic systems were tested for suitability in the final MeerKAT implementation. Extensive use was made of electromagnetic modeling to optimize the performance of the dish antenna and feed systems, and various trade studies were undertaken to achieve the required specifications for the science program. The technology and design choices will be discussed, and the performance results from the first MeerKAT receptors will be presented.