

PESEK LECTURE
GMRT, SKA and SETI

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Abstract

Starting from the search made under Project Ozma by Frank Drake using 85ft dish in 1959, many searches for SETI have been made by radio astronomers using larger and larger telescopes that have been built for exploration of the radio Universe. I plan to discuss prospects and practical aspects for a SETI programme with the Giant Metrewave Radio Telescope (GMRT) in India and a much more ambitious Square Kilometer array to be built in Australia or S.Africa under an international collaboration during the next decade.

GMRT is a highly sensitive radio telescope for astronomical observations, consisting of 30 nos. of parabolic dishes, each of 45m in diameter that are placed in an array of about 25km in extent, about 80 km north of Pune, India. It is currently world's largest radio telescope operating in the frequency range of about 130 MHz to 1420 MHz. It is possible to undertake a SETI programme with the GMRT in two different modes: (a) simultaneous SETI observations in directions in which astronomical observations are being made, (b) SETI observations in direction of about 200 selected stars in the southern sky by any group in India or abroad.

SKA will consist of thousands of antennas located in about 100 stations located over a distance of 3000km with about 75% within about 150km. With its wideband (~100 MHz to ~22 GHz) and multi-beam capability, SKA will provide at least two orders of magnitude improvement over current searches with a detection limit of $\sim 1 \times 10^{-28} \text{ W/m}^2$, thus allowing searching for any altruistic signals being transmitted by ETI and also probing millions of stars for powerful communication signals that may be emitted by an advanced civilization.