MeerKat radio telescope

August 25, 2021

In news– The MeerKat radio telescope's analysis of 2,000 galaxies revealed new information recently.

About the new study-

- The **study used observations from the powerful MeerKAT radio telescope array, located in South Africa**, to analyse more than 2,000 galaxies.
- Its findings suggest that, **within the galaxies scientists analysed, their course of evolution** is likely **accompanied by cosmic ray electrons** losing energy with time.
- As per the study, **the energy does not and cannot simply vanish.**
- **Instead, as the electrons slow down,** their energy is converted into that of the electromagnetic emissions.
- These emissions, after escaping the confines of the galaxy and traversing the cosmic distances, are among the **telltale signals picked up by the MeerKAT.**
- **These findings help scientists better understand the nature of these galaxies, and furthermore, the formation and evolution of galaxies** in general including our home galaxy, the Milky Way, which may be undergoing a similar process at the moment.
- **Scientists selected 2,094 galaxies that are active in forming stars,** which means they are energetic and young in cosmic time-scales.
- The galaxies scientists observe now reflect how they used to be roughly 1 to 11 billion years ago and they are at different evolutionary stages.
- **By combining the emission of light in visible, infra-red, and radio from these selected 2,094 galaxies,** the study measured how massive, how active, and how bright they appear to be at different radio frequencies, as

well as some other fundamental physical properties.

About MeerKAT

- **MeerKAT, originally the Karoo Array Telescope,** is a radio telescope consisting of 64 antennas in the **Northern Cape of South Africa.**
- MeerKAT is the **most sensitive radio telescope in the southern hemisphere until the Square Kilometre Array (**SKA, which will be the world's largest radio telescope) is completed.
- MeerKAT was launched in 2018.
- It was designed by engineers within the South Africa Radio Astronomy Observatory and South African industries.
- It comprises 64 antennas, each 13.5m in diameter, equipped with cryogenic receivers.
- MeerKAT is a precursor for the SKA-mid array, as are the Hydrogen Epoch of Reionization Array (HERA), the Australian SKA Pathfinder (ASKAP) and the Murchison Widefield Array (MWA).
- MeerKAT supports a wide range of observing modes, including deep continuum, polarisation and spectral line imaging, pulsar timing and transient searches.