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## In Search of Dark Matter with MeerKAT Radio Telescope in Dwarf Spheroidal Galaxies

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MeerKAT's combination of high-sensitivity and angular resolution makes it a particularly well suited radio interferometer for detecting faint cosmic radio emissions that would otherwise remain inaccessible by other instruments.

This capability is especially important in identifying weak, diffuse radio signals that could be associated with dark matter interactions.

Our research focuses on searching for dark matter signals from dwarf spheroidal galaxies (dSphs), which are promising targets due to their high mass to light ratios, well characterized stellar kinematics and established dark matter density.

We present results from MeerKAT observations of the Milky Way satellite Reticulum II.

We aim to constrain the dark matter parameter space—particularly the Weakly Interacting Massive Particles (WIMPs), by analyzing potential radio signals resulting from their annihilation or decay.

This involves probing two key parameters: the particle mass and the annihilation cross section.

If no significant signal is detected, we set upper limits on these parameters, helping to rule out theoretical models that predict stronger signals than observed.

As sensitivity improves, more theoretical models can be excluded, refining the landscape for future dark matter searches.

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**Primary author:** SEMANE, Shibre (University of the Witwatersrand)

**Co-authors:** Dr BECK, Geoff (University of the Witwatersrand); Dr MAKHATHINI, Sphesihle (University of the Witwatersrand)

**Presenter:** SEMANE, Shibre (University of the Witwatersrand)

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