



Stacking radio stars in MIGHTEE

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The MIGHTEE (MeerKAT International GHz Tiered Extragalactic Exploration [1,2]) survey has emerged as a groundbreaking initiative, leveraging the unprecedented capabilities of the MeerKAT radio telescope array to explore the depths of the radio sky. Even if its primary focus is on extragalactic sources, MIGHTEE can push forward the study of late-type stars through stacking techniques. .

Stars, typically associated with optical and infrared observations, have been relatively unexplored in the radio wavelength domain. MIGHTEE's unique sensitivity and high-resolution imaging provide an opportunity to revolutionize our understanding of stellar radio emission. By employing the innovative technique of stacking, we aggregate faint signals from individual stars, from the Gaia catalogue [3] in the MIGHTEE region, thereby enhancing our ability to detect and characterize the radio emission from this stellar population.

The presentation will outline the methodology behind the stacking process, highlighting the challenges and advantages associated with probing the radio properties of stars in large-scale surveys. Preliminary results from the MIGHTEE survey will be presented, showcasing the collective radio signatures of stacked stars and providing insights into the underlying physical mechanisms responsible for their radio emission.

References

- [1] Jarvis M. et al., “The MeerKAT International GHz Tiered Extragalactic Exploration (MIGHTEE) Survey”, Proceedings of MeerKAT Science: On the Pathway to the SKA. 25-27 May, 2016 Stellenbosch, South Africa (MeerKAT2016)
- [2] Taylor R. et al., “MIGHTEE: The MeerKAT International GHz Tiered Extragalactic Exploration”, IOP Conference Series: Materials Science and Engineering, Volume 198, Issue 1, pp. 012014 (2017)
- [3] Gaia Collaboration et al. (2016b), “The Gaia mission”, A&A 595