

Unveiling a hidden population of radio shells with MeerKAT

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In the past decades, infrared surveys carried out with instruments like Spitzer have revolutionized our understanding of evolved stars, revealing a plethora of ring- and disk-like sources spread across the Galactic Plane. Many of these structures were later confirmed as relics of mass-loss events from massive stars, contributing to a more profound characterization of their interplay with the ISM.

Now, the precursors of the Square Kilometre Array have the potential to play a similar role in the radio window. Thanks to their superb sensitivity and resolution, they enable the detailed study of the circumstellar material around known evolved stars, and also permit an unbiased search for new, unknown evolved objects.

In this talk, we will present the results of a blind search for low angular diameter shells with MeerKAT, combining data from the Galactic Centre mosaic and the SRAO MeerKAT Galactic Plane survey (SMGPS). First, we will describe the search strategy, to later dive into the main outcomes of the project: the detection of over a hundred radio shells of about 1 arcmin in size, not related to any catalogued Galactic sources. Based on available multiwavelength information, our preliminary classification indicates that the sample includes a diversity of objects, including compact supernova remnants, numerous planetary nebulae, and several evolved massive star candidates (possibly Luminous Blue Variables or Wolf-Rayet stars). We will discuss the implications of these findings for the completeness of the census of Galactic radio emitting stars, and the prospects for future, deeper surveys in the SKA era.

keywords

Milky Way, MeerKAT, survey overview, evolved stars, shells

In-person or online?

unsure

Career level

ECR

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