

GARUDA: An automated radio data analysis pipeline for the GMRT

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Radio observations are essential for studying galaxy formation and evolution, yet analyzing low-frequency interferometric data is challenging due to radio frequency interference (RFI) contamination and other system issues. To streamline this process, we developed GARUDA, an automated pipeline for analyzing GMRT data, employing AI/ML-based algorithms for efficient RFI identification and artifact removal. GARUDA enables fast and consistent data reduction, handling ~10-12 GB GSB data in 20-30 minutes and ~400 GB GWB data in under three hours on standard servers. In this presentation, I will discuss GARUDA's capabilities and showcase results, including some of the deepest GMRT radio continuum images at the L-band, HI emission in galaxies, and one of the most sensitive galactic HI absorption lines (using frequency switching observation with GWB).