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LOFAR LEGACY 60 MHZ SURVEY OF THE 3CRR CATALOGUE

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The Low Frequency Array (LOFAR) is currently the only instrument capable of deep, high-resolution imaging at frequencies below 100 MHz. Sources selected from the 3C catalogue are some of the best studied powerful radio galaxies, with the largest number of available sensitive and high (kpc-scale) resolution images at GHz frequencies, (still) driving our current understanding of their dynamics and energetics. However, a lack of instruments with sufficiently long baselines (combined with short baselines) at frequencies below 1 GHz, or a lack of robust calibration strategies, has prohibited any highly-resolved radio galaxy studies in the MHz regime. Observing at these low frequencies using the Low Band Antenna (LBA) system has proven challenging. However, over the past few years, our team has developed tools and strategies to solve both instrumental and ionospheric systematic errors, producing thermal noise limited images. With this work we calibrate and image the observations of the entire 3C(RR) catalogue. The final goal is to obtain a flux-limited legacy catalogue of radio images with the following unique combination of characteristics: (I) an observing frequency of 60 MHz, (II) a high resolution (< 10′′), and (III) good sensitivity to large scale emission.

keywords

imaging, calibration, survey overview, clusters, AGN

In-person or online?

in-person

Career level

Student

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