

## The LWA1 Low Frequency Sky Survey

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We present our survey of the low frequency radio sky between 35 and 80 MHz accessible from the first station of the Long Wavelength Array (LWA1). The survey images cover the sky north of a declination of  $-40^\circ$  with a spatial resolution ranging from  $4.7^\circ$  at 35 MHz to  $2.0^\circ$  at 80 MHz. This survey represents the most modern systematic survey of the diffuse Galactic emission within this frequency range. This is accomplished by combining LWA1, a 256-element crossed dipole array, with five specially designed “outrigger” antennas equipped with precision radiometers developed as part of LEDA, the Large aperture Experiment to detect the Dark Ages. The array provides snapshot images of the sky captured every 15 minutes while the radiometers use a three state switching system to provide calibrated sky-averaged temperatures to better than 1K.

The survey maps provide constraints both on the two dimensional structure of the emission as well as the spectral characteristics and total power. This makes these maps well suited for understanding the foreground emission that masks the redshifted 21 cm transition of neutral hydrogen from the cosmic dark ages ( $z > 10$ ) and, at higher frequencies, the epoch of reionization ( $z > 6$ ). These maps also can be used to quantify the strength of the radio synchrotron background. Beyond understanding the low frequency radio sky these maps are also useful for understanding calibration systematics of different instruments. Finally, we have combined our survey with other low frequency sky maps to create an updated model of the low frequency sky called the Low Frequency Sky Model. Due to the low frequencies probed by our survey, the updated model better accounts for the effects of free-free absorption from Galactic ionized hydrogen.