

Opening up the decameter radio band with LOFAR

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The Decameter radio band (< 30 MHz) has been scarcely explored since the inception of radio astronomy, largely due to the perturbing effects of the ionosphere. However, the decameter wavelength band is an important part of the electromagnetic spectrum. In particular, decameter observations of radio halos in galaxy clusters will allow us to constrain the particle reacceleration mechanisms responsible for the bright and extended synchrotron emission. With the LOw Frequency ARray (LOFAR), we are able to observe the decameter wavelength band with unprecedented detail and sensitivity, opening up a new spectral window for observations. In this talk, we will present current LOFAR decameter observations, in particular of radio halos in galaxy clusters. We will specifically discuss how LOFAR corrects for the severe perturbing effects of the ionosphere at decameter wavelengths, and the current plans for expansion to a full northern-sky survey.

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