

Pulsars: A return to low frequencies

Ben Stappers¹

¹ASTRON

ABSTRACT: Low frequency observations of radio pulsars have, to a certain extent, fallen out of favor in recent times. This is despite exciting and interesting work in Russia, Ukraine and India. The move to higher frequencies has mainly been due to the deleterious effects of the interstellar medium. However, with the increased availability of baseband recording and coherent dedispersion techniques and new facilities such as the LFFEs at the Westerbork Synthesis Radio Telescope (WSRT) and in the future LOFAR/LWA, the interest in observations at frequencies below 300 MHz is growing again. I will present some recent results on scintillation and single pulse studies from observations at the WSRT (115-180 MHz) and Arecibo (47 MHz). I will also present the prospects for pulsar research with LOFAR. LOFAR will have unprecedented collecting area and bandwidth at frequencies below 220 MHz, allowing for a wide range of pulsar studies, in particular in emission physics. I will show results from simulations which show that an all-sky survey with LOFAR could be expected to find up to 1500 new pulsars. This survey would provide significant constraints on the low-end of the pulsar luminosity distribution which has important consequences for the total pulsar population. I will also show that LOFAR could detect pulsars in nearby galaxies.