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The Next Steps (A4)
SETI 1: SETI Science and Technology (1)

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SETI IN THE SOLAR NEIGHBORHOOD WITH LOFAR

Abstract

Recent results from various fields within astrobiology suggest that life elsewhere in the galaxy is a possibility. If we assume there is life elsewhere, an immediate question is whether or not intelligent life has developed as on Earth. To answer this question one can probe for extraterrestrial technology as a proxy for intelligence. Until now most experiments have used radio wavelengths as the most likely way of detection.

Even though the Search for Extraterrestrial Intelligence (SETI) in the radio has been ongoing for decades, the constraints on the parameter space which describes the prevalence of intelligence in our galaxy are minimal. From the lack of constraints, it is equally likely that we are the only civilization in the galaxy or that there are thousands of them. If intelligent life is common then nearby stars may show evidence of other civilizations. Even if the radio emission is not intentional, it can come in the form of radio leakage.

Here, I will describe our volume limited search of artificial signals from nearby stars. We include all stars within 5 pc irrespective of their spectral type. This is the first SETI experiment done at a wide range of low frequencies. We exploit the full frequency coverage available to LOFAR. We perform a thorough search of narrow band signals with drift rates up to $\pm$ 10 Hz/s. This range covers Doppler dispersions caused on a transmitter being accelerated around planets up to a few times more massive than Earth. I will present the results from this search on nearby stars and discuss the resulting constrains in light of future work.