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THE BREAKTHROUGH LISTEN TARGETED SEARCH : GBT/L-BAND

Abstract

The abundance of extraterrestrial intelligence in our galaxy is very uncertain. However, an artificial signal search from a large enough set of stars can give a significant approximation to the density of civilizations in the galaxy and thus an upper limit on the number of civilization in the Milky Way.

Towards this end, the Breakthrough Listen Initiative will search a million stars during the length of the program. As an initial step, a set of ∼1700 stars have been identified as a targeted search program with the GBT and Parkes telescopes. These stars are distributed uniformly on the celestial sphere. They cover the full range of stellar types to avoid having an anthropocentric bias. Also, we now know that planets around other stars are common. Allowing us the search of stars without known exoplanets.

Here, I will describe the analysis of hundreds of stars from the Breakthrough Listen targeted program. We concentrate on data from the L-band receiver at the Green Bank Telescope. We performed a thorough search of narrow band signals, we concentrate on doppler-corrected signals with a drift rate up to $+/-10$ Hz/s. This range is sensitive to doppler accelerated signals from an putative terrestrial planet. I will present the results of this search and give detail of the software used for the search.