

53rd IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) –
The Next Steps (A4)
Interactive Presentations - 53rd IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL
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ENHANCING THE BREAKTHROUGH LISTEN TECHNOSIGNATURE SEARCH WITH ADVANCES
IN ANOMALY DETECTION

Abstract

Breakthrough Listen, the planet's most comprehensive search for technosignatures, continues to acquire vast amounts of data from telescopes around the world and in space. Classical techniques have been applied to look for candidate technosignatures, but the enormous data volumes make this challenging, and existing approaches may miss certain types of interesting signals.

The Listen program has also employed a variety of anomaly detection techniques that are complementary to existing algorithms. Some of these involve machine learning, whereas others employ novel statistical techniques to find signals missed by the standard pipelines. In other cases we can use new algorithms to vet signals found using classical approaches.

I will discuss the use of these algorithms on current and future datasets at optical and radio wavelengths, how they are being used to constrain the occurrence rate of technosignatures, and synergies with anomaly detection techniques being used in other areas of astronomical observations and engineering.