



## Refurbishment of the Allen Telescope Array: Science and Capabilities

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After a period of hibernation that almost spanned a decade, the recently-refurbished Allen Telescope Array (ATA) has entered science operations phase. Hosted on the Hat Creek Radio Observatory (HCRO), the ATA is composed of 42 6.1-m in diameter offset-Gregorian dishes that can slew in both elevation and azimuth. The major refurbishment of the instrument included increasing the reliability and sensitivity of its uniquely-designed log-periodic feeds and revamping its digital signal processing (DSP) system. The cryogenically-cooled dual-polarization Antonio Feeds are receptive to a broad range of frequencies, spanning 1-12 GHz. Analog signals from each antenna, sent via RF-over-fiber, are digitized in a central signal processing room allowing up to 4x 700 MHz independent intermediate frequency (IF) tunings to be selected by observers anywhere in the RF band. Digitized voltages are received by a modern high-data-throughput compute cluster that hosts in-house-built, highly configurable, DSP software backends that can capture raw voltage data, correlate, and beamform ATA antennas.

In this talk, we will discuss the status of the refurbishment of the Allen Telescope Array, its current operations, and the status of the various processing backends that satisfy the technical requirements of many science objectives, including fast radio bursts, slow and fast transients, pulsars, with particular emphasis on radio technosignature search capabilities.