

GNU Radio and Public Engagement at the Allen Telescope Array

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Figure 1: The Allen Telescope Array in Hat Creek, CA (Courtesy Seth Shostak / SETI Institute).

The Allen Telescope Array (ATA), located in Hat Creek, CA, comprises 42 antennas and was built with the primary goal of conducting SETI (Search for Extraterrestrial Intelligence) observations. Like other SETI programs such as Breakthrough Listen (BL), the SETI program at the ATA generates large quantities of data in specialized formats which have traditionally had a high barrier to entry for those outside of the research community, requiring an in-depth understanding of radio astronomy and digital signal processing to analyze. These modern SETI projects are now seeking to engage members of the public – including students and educators of a wide range of age levels – to become actively involved in the search alongside professionals in the field. As part of our goal to make radio astronomy and SETI more accessible, we have installed two USRPs (an N320 and N321) at the Hat Creek site for data collection, and we have implemented a GNU Radio software interface for the ATA which includes a control system and data acquisition capabilities. A major benefit of GNU Radio is its visual, user-friendly interface, and this makes it an ideal tool to bring radio astronomy techniques to members of the public. This new system will allow interested individuals to take advantage of the flexible capabilities of the ATA to capture data from a wide variety of objects of interest and for a wide range of applications, and will encourage public participation in broader aspects of SETI and radio astronomy as well, such as developing novel algorithms and processing techniques.