



BARTLETT RADIO ASTRONOMY INSTITUTE

The Bartlett Earth Station was built in the 1970's by Comsat Corporation. As one of the first large satellite systems this station was required to be extremely large. The immense size of the hub earth station was necessary to overcome not only the 22,000 miles of space, but also because technology had not advanced in the areas of low noise amplifier technology, and spacecraft power budgets. Systems of this size are no longer required for satellite communications, so its owner, AT&T has decided to decommission the facility for this reason, among others. The earth station, however, has great value as a radio astronomy facility due to its immense antenna aperture. It has been maintained in AT&T's thorough fashion and could economically be converted to a radio astronomy facility.

We propose to establish the non-profit Bartlett Radio Astronomy Institute and work to obtain public funds to cost effectively renovate and operate this facility in the interest of science and the public good.

MISSION - Bartlett Radio Astronomy Institute

- University Collaboration -
 - Utilize UAF Computer Center as a key element to aid in operations and research
 - Provide a laboratory environment for students from numerous Universities
 - Educational experiences tailored to support the overall mission
 - Students will get hands-on experience while Bartlett receives infusion of state-of-the-art technology
- Pulsed radar astronomy research
 - Use surplus FAA radar for cost effective research platform at 1,000,000 watts peak power
 - Modified radar will provide minimum capability to receive raw echoes from a 1 km diameter object at 10,000,000 miles from earth
 - Digital signal processing will enhance minimum capabilities by many orders of magnitude
 - UAF Cray computer will use NASA provided algorithms and software for detailed analysis
- Radio Astronomy
 - Pure radio astronomy research for educational purposes
 - Develop interferometry techniques for collaborative use with other RA facilities
 - Associated digital signal processing research
- NASA mission support
 - NASA is too busy to complete their work, Example: telemetry from the Voyager spacecraft is transmitted daily, but is only collected weekly. Bartlett could supplement these kinds of operations.
 - Bartlett can work with NASA to help characterize potentially hazardous Near Earth Objects (NEO)
- Near earth object characterization
 - Working with NASA's Arecibo and Goldstone facilities to help acquire information about near earth objects
 - Utilizing pulsed radar techniques, obtain additional NEO data as a stand-alone facility
- Low Noise Amplifier and other electronics research
 - Low Noise Amplifier optimization research
 - Internet Remote Operability
 - Radar optimization
 - Engineering of multiple frequency band capability
 - Pulse radar astronomy research

The Bartlett Radio Astronomy institute will be good for Talkeetna, good for Alaska, good for humanity.