



NAVAL RESEARCH LABORATORY

The Corporate Laboratory for the Navy and Marine Corps

Economical Low Frequency (LF) Active Antenna

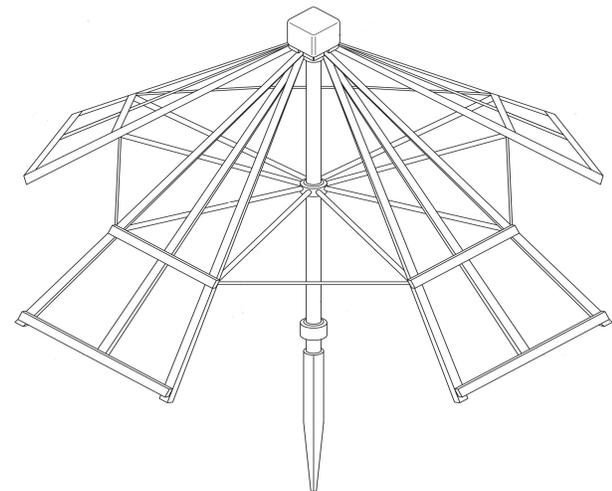


The Naval Research Laboratory (NRL) has developed a patent-pending active antenna design with a fixed ground screen. It satisfies emerging need for a receptor that's low-cost, operates at 6 dB sky noise dominated performance, has dual-polarization HF/VHF, and operates at 20-80 MHz. At about \$200, the patent-pending antenna design is ideal as a low cost option for use in radio frequency receivers for astronomical observations. It is designed for economical production and rapid, on-site assembly by relatively untrained personnel for use in arrays of antennas. The system can operate independently or as part of a long wavelength array for astronomical radio telescope applications.

NRL is a major partner in the Long Wavelength Array (LWA) project, which is a low-frequency radio telescope designed to produce high-sensitivity, high-resolution images in the frequency range of 20-80 MHz. LWA is opening a new astronomical window on one of the most poorly explored regions of the electromagnetic spectrum. The LWA is an effort to advance astronomy by using inexpensive antenna stations to build a very large aperture to probe the depths of space at the lowest frequencies (10-88 MHz).

The LWA would not have been possible without the advantage and capability that the Economical NRL Low-Frequency Active Antenna design provides.

The LWA's very large eventual aperture of 13,000 antennas will include many stations, each station formed of an array of 256 inexpensive antennas. The NRL design provided this opportunity.



READY-TO-ASSEMBLE LOW FREQUENCY (LF) ACTIVE ANTENNA SYSTEM OPTIMIZED FOR ECONOMICAL MANUFACTURE AND DESIGNED FOR UNTRAINED PERSONNEL TO SIMPLY "STAKE DOWN"

Applications

At about \$200, the patent-pending antenna design is ideal as a low cost option for: Professional and amateur astronomers that want to observe a variety of celestial objects and phenomena; Passive, all-sky imaging for military applications and detection of nuclear tests through ionospheric observations; Low-cost surveillance receptor for airborne objectives; General purpose, upward-looking high sensitivity low-frequency receptor.

Licensing and Collaboration Opportunities

US Filed Patent Application No. 14/072715 is available for License to companies with commercial interest. Collaborative research and development is available under a Cooperative Research and Development Agreement (CRADA).

