Low Frequencies in New Mexico:
The EVLA Low Band Upgrade and the Long Wavelength Array Station One

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Summary: This is a transformative time in low frequency radio astronomy, and here we report on two exciting developments in New Mexico. The Expanded Very Large Array Low Band (EVLA-LB) project, an initiative to equip the National Radio Astronomy Observatory (NRAO) EVLA with broadband (~50–500 MHz) low frequency receivers and LWA1, the first station of the Long Wavelength Array (LWA: http://lwa.unm.edu). The potential to combine signals from early LWA stations, including LWA1, with the new EVLA-LB system is being explored.

namir.kassim@nrl.navy.mil for information on either project.
The next LWA1 call for proposals is expected by March 2012.

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11 x 74 MHz
Future Antenna Feeds
6 x 330 MHz
74 MHz (green)
X-rays (blue)

Lane et al. (2004)
Kirkpatrick et al. (2009)
Red: 5 GHz; white: X-rays
Wise et al. (2004)

Virgo A: 330 MHz
Virgo A: 74 MHz

Long Wavelength Array Station One: The LWA1 Radio Observatory

LWA1 is located near the EVLA prime axis, approximately 10 km to the west, and consists of 2004 m long antennas (background). Examples of science complementing our daytime images include LWA1’s five independent beams and all-sky monitoring. Postprocessing data technology is making several related University products.

Herschel (2000-2012)
Transients

Solar Bursts

Pulsars

(J. Vink et al., 2009)

(Courtesy of K. Donald et al., UT8)

http://www.cfa.harvard.edu/LEDA/

Background monitored by LWA1. Radar-processed images show the evolution of the transient position through the radio band.

Transients and transient searches are a major research program at LWA1 and are being pursued by several groups using LWA1 and other telescopes.

http://www.phys.unm.edu/~lwa/lwatv.html

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Basic research in radio astronomy at NRL is funded by 6.1 base funding. The EVLA is operated by NRAO and is a facility of the NSF. The LWA1 Director, Associate Director, and Chief Scientist are G. Taylor (UNM), S. Ellingson (VT), and N. Kassim (NRL), respectively.

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