



The Very Small Array

Project: VSA

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Description and Objectives:

A test platform for future research-grade radio telescopes, the Very Small Array is a low-cost effort to combine the collecting area of multiple off-the-shelf backyard satellite TV dishes into a highly capable L-band observing instrument. A volunteer effort of the grassroots nonprofit SETI League, the VSA is being built in the Principal Investigator's backyard, with member donations and modest grant funding. A US patent has been issued for our technique of employing combined analog and digital circuitry for simultaneous total power radiometry, spectroscopy, and aperture synthesis interferometry.



Key Features of Instrument:

- 8 ea. 1.8 meter reflectors in Mills Cross array
- Offset feeds for non-blocked aperture
- Meridian transit mode w/ elevation rotation
- Dual Orthogonal Circular Polarizations
- Full 'water-hole' coverage, 1.2 - 1.7 GHz
- Simultaneous total power radiometry, spectroscopy, and interferometry in real time

Partners:

American Astronomical Society, ARRL Foundation, Microcomm Consulting

Schedule Milestones:

- Phase 0: Paper design, single-dish test bed; US patent #6,593,876 (issued 2003)
- Phase 1: Physical Structures - (completed 2004)
(masts, az/el mounts, dishes, feeds, conduit, junction boxes cables)
- Phase 2: Front-end electronics (in process 2005)
- Phase 3: Back-end electronics + DSP (planned for 2007)

Applications:

- Meridian transit all-sky SETI survey
- Parasitic Astrophysical Survey
- Targeted SETI in direction of known exoplanets
- Quick-response verification of candidate SETI signals

TRL = 3

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