EVLA Project
Peter Napier

VLA Background

- VLA – 27 x 25m reflectors,Y array arms up to 22 km long
- Built in 1970s, dedicated 1980
- Limited upgrading since original construction

Expanded VLA (EVLA) Goals

- Use modern technology to obtain an order of magnitude improvement in most VLA observational capabilities

  -Continuous frequency coverage 1-50 GHz

  8 receiver bands, new LO system

  -Up to 16 GHz bandwidth per antenna

  New IF system(8 x 2GHz), fiber-optic digital transmission

  -New wideband, high spectral resolution correlator

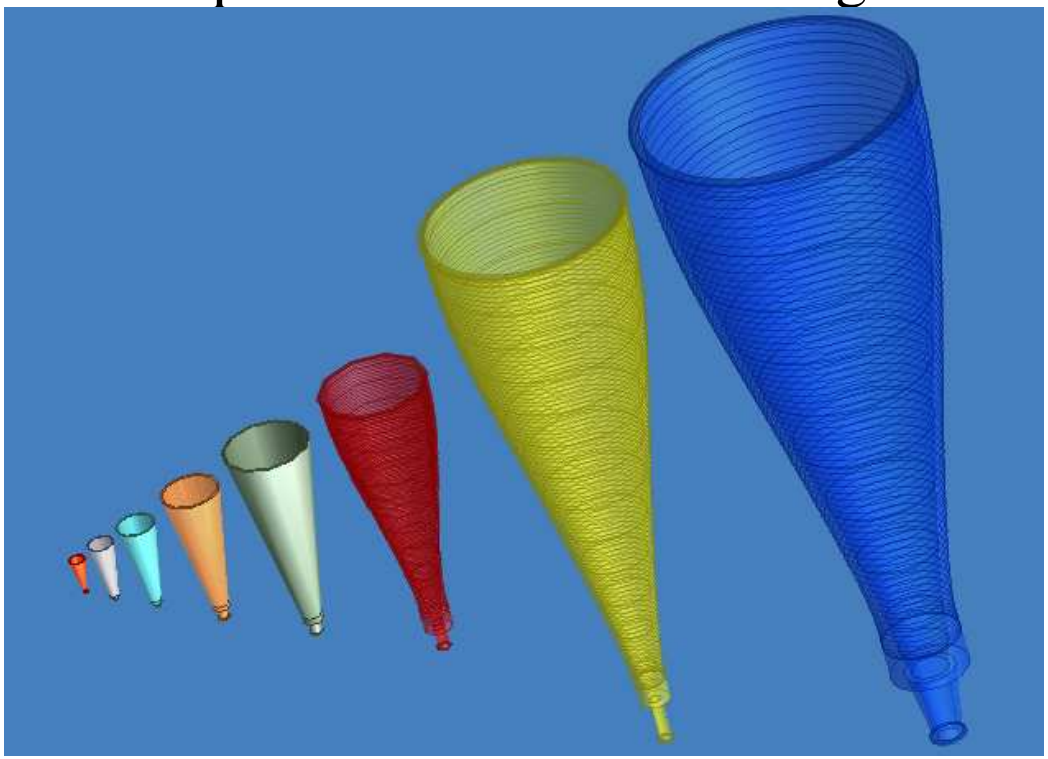
  -New monitor/control and data processing systems
- Maintain VLA science during the decade-long upgrade

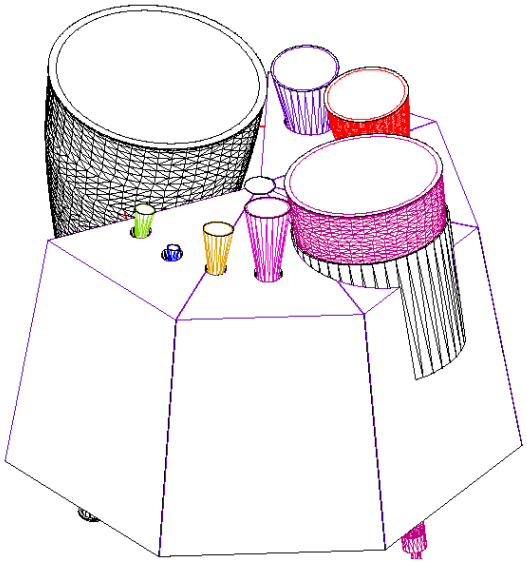
EVLA Receiver Bands

Band Center Frequency (GHz)	Frequency Range (GHz)	System Temperature (K)	Total System Efficiency	Maximum IF Bandwidth (GHz)
1.5	1.0-2.0	20	.55	2x1
3.0	2.0-4.0	25	.60	2x2
6.0	4.0-8.0	31	.65	2x4
10	8.0-12.0	34	.65	2x4
15	12.0-18.0	35	.65	2x6
22	18.0-26.5	52	.60	2x8
33	26.5-40.0	56	.55	2x8
45	40.0-50.0	76-104	.50-.45	2x8

EVLA Feed System

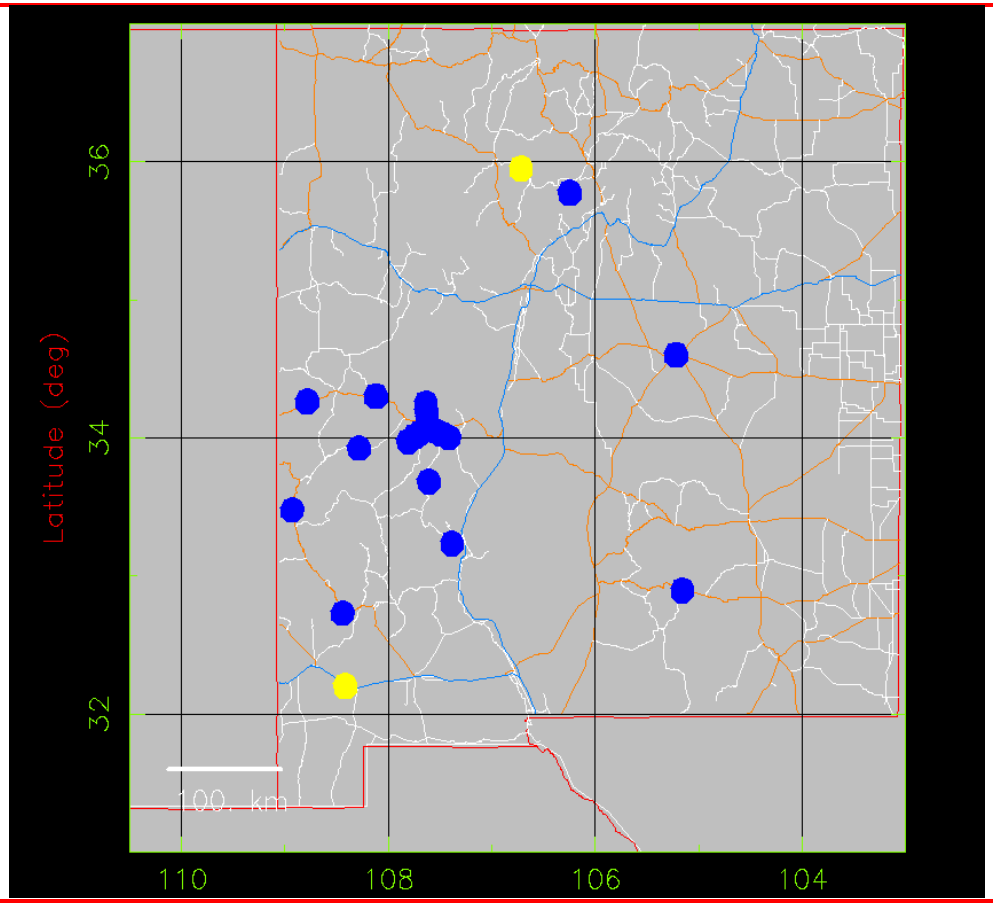
- Feeds – profiled or conical corrugated horns





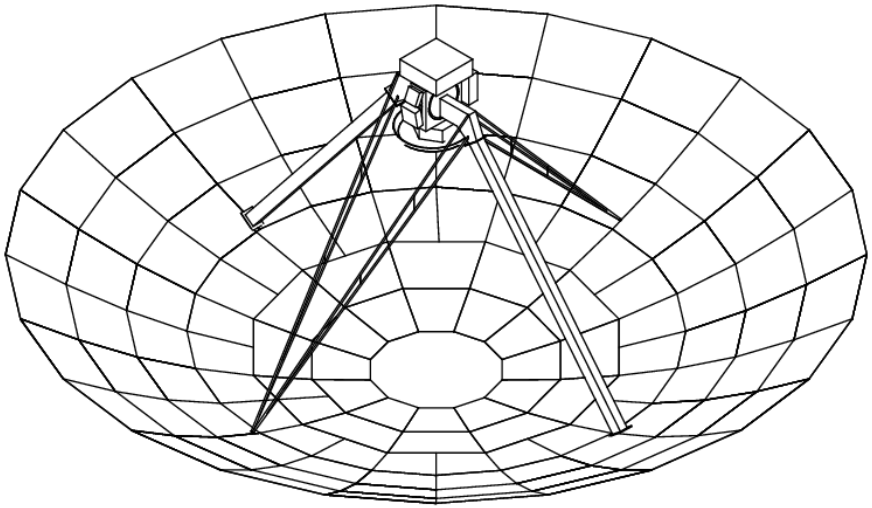
45 33 22 15 10 6 3 1.5 GHz **1.5 Ghz feed = 1.6 x 4.3 m**

New Mexico Array



Low Frequencies (~200-1200 MHz)

- 700-1200 needs high sensitivity
- 400-700, 200-400
  needs good beam
- Expensive for 40 antennas
  Subref flipper $6M
  Feeds/rx $8M



Possible FPA