

The OVRO-LWA: A FARSIDE Pathfinder

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OVRO-LWA: Concept

Adapt the LWA antenna to all-sky imaging at ~few arcminute resolution

352 antennas spaced over ~2.6 km

Full cross-correlation = All-sky FOV

15-85 MHz (2900 channels)

5 arcminute spatial resolution

Construction in 3 stages...



Stage 1: Array Core (2013-2014)

Custom built array for all-sky imaging

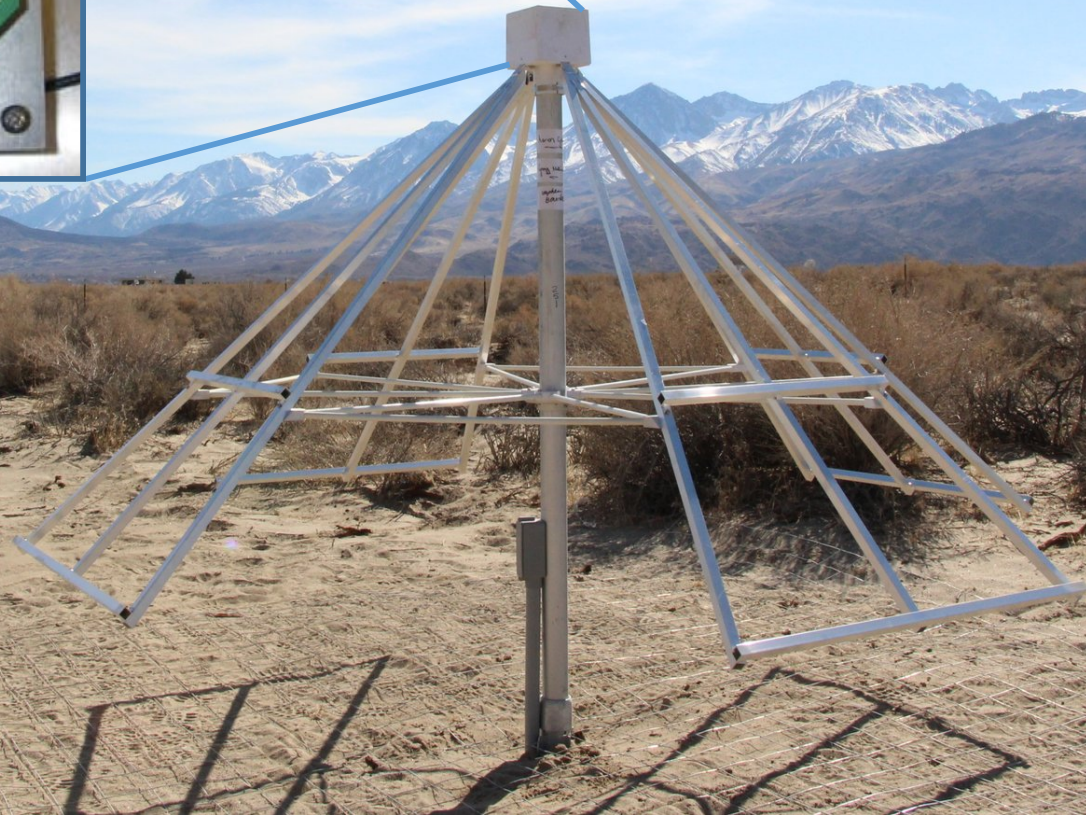
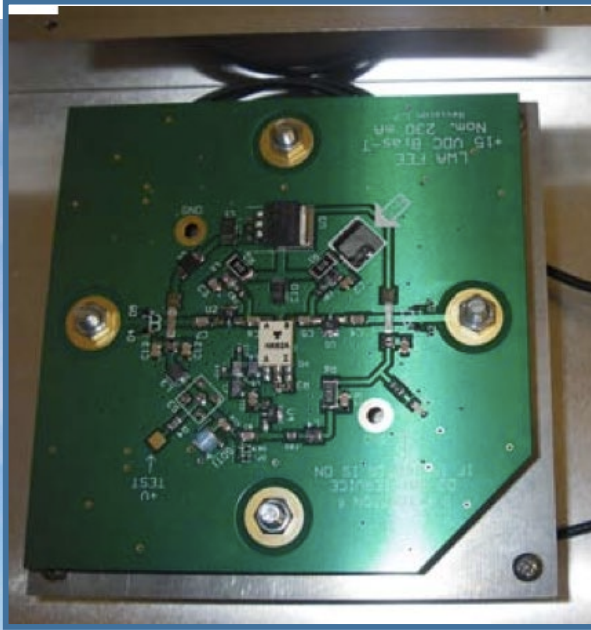
256 antennas
88 km of buried coaxial cable
1 km of fencing

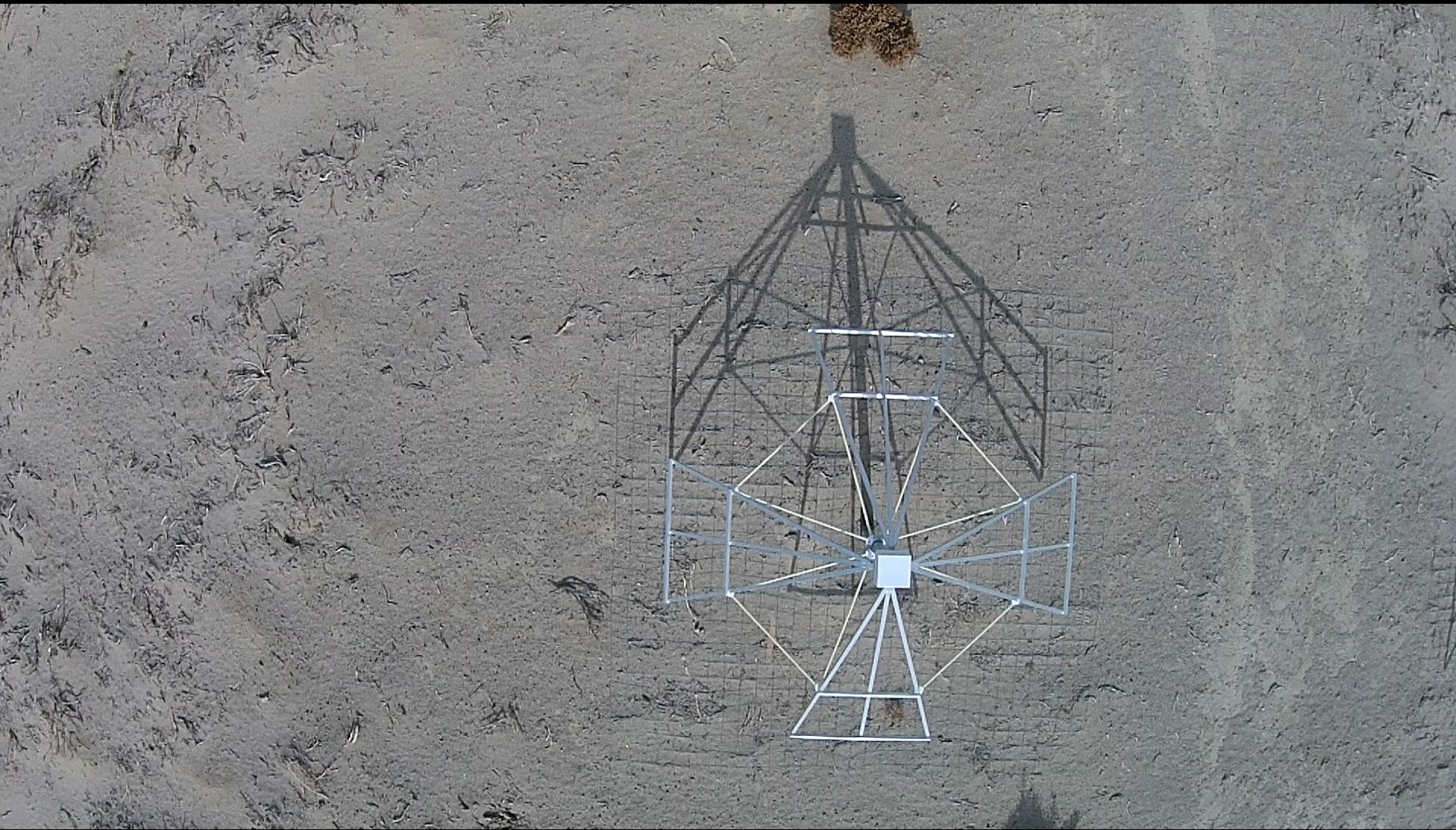
200m



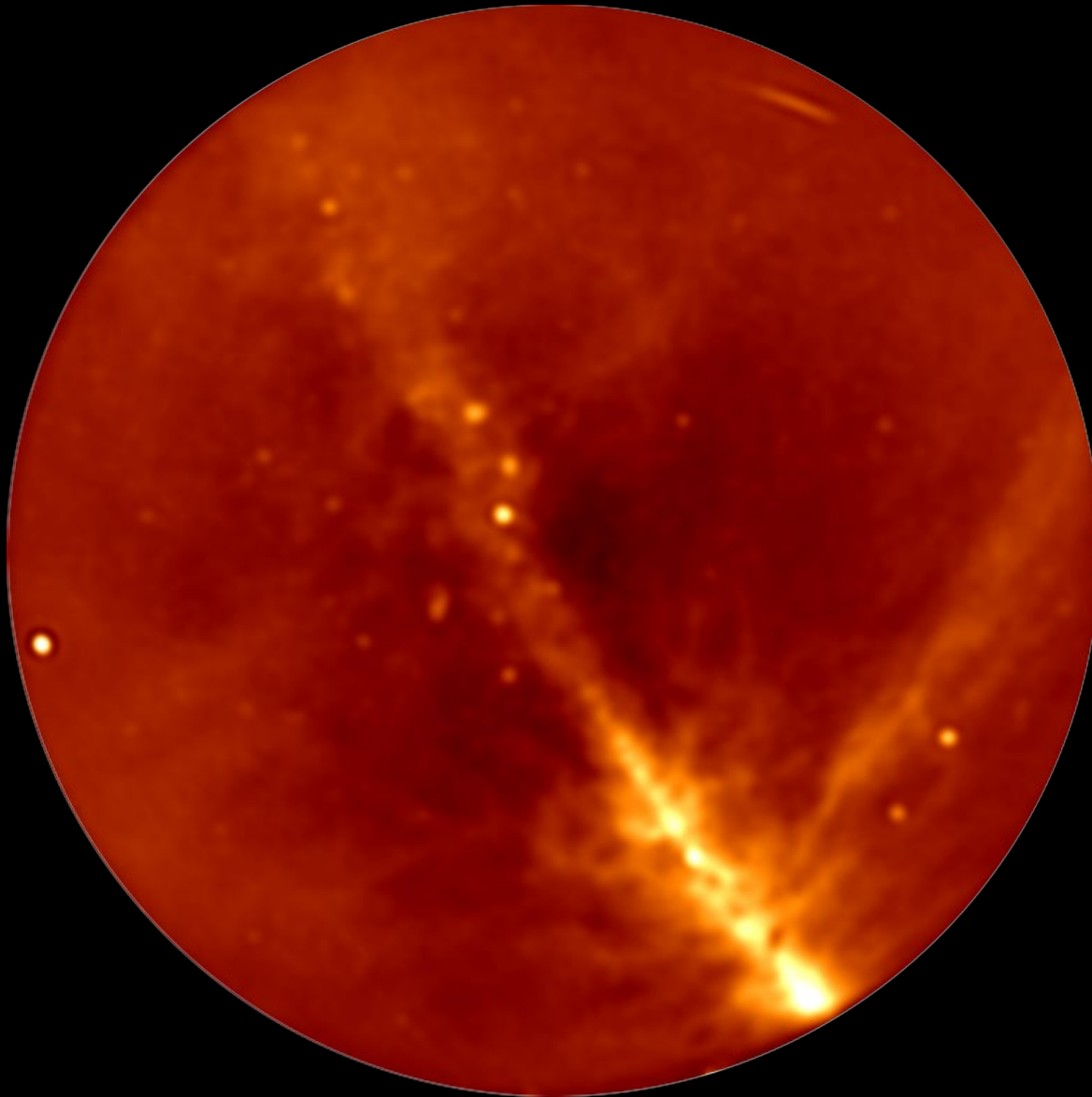
Two powerful back-ends:
1) LEDA correlator - Kocz et al. (2015)
2) All-sky Transient Monitor

Antenna and Front-end





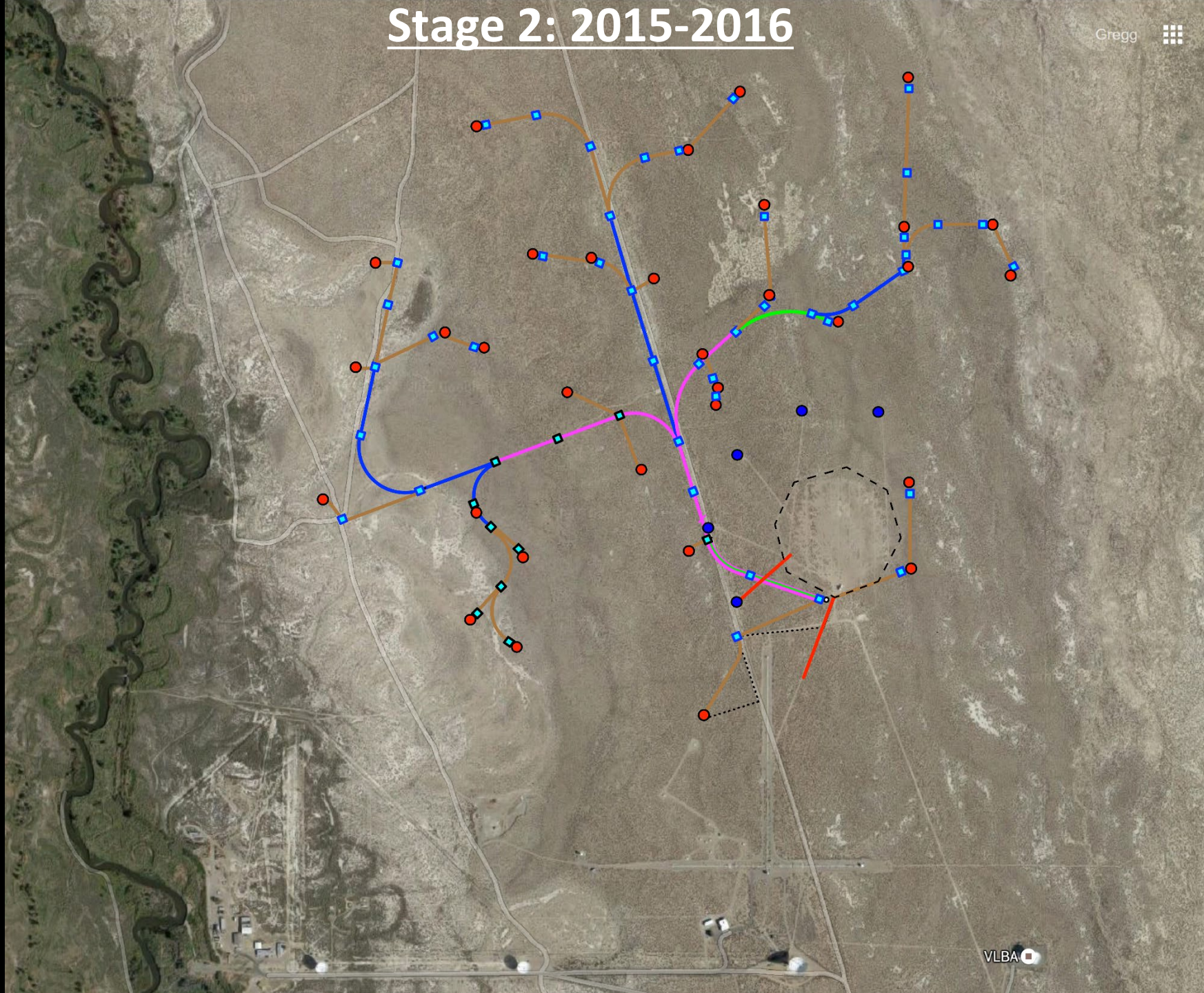
Core Image (200m baselines)



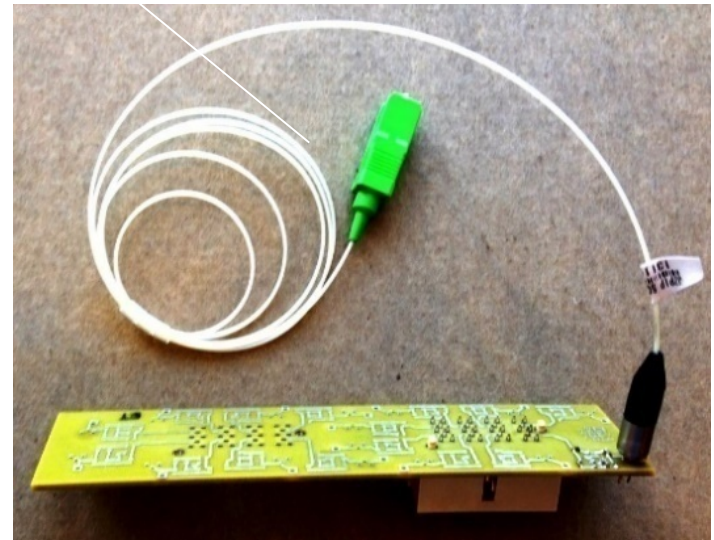
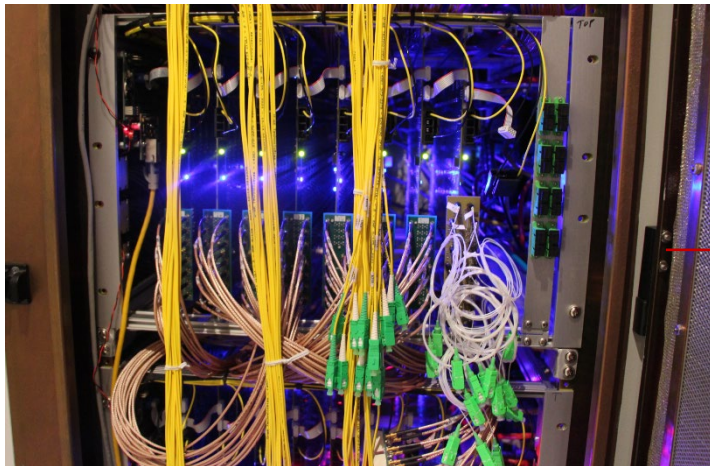
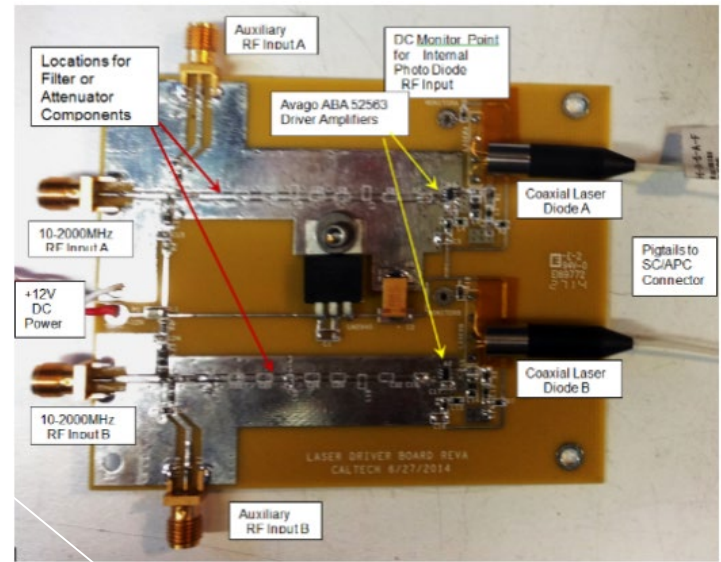
- 30 second snapshot with ~40 MHz bandwidth
- Confusion limit is ~few Jy
- Thermal noise is ~ 200 mJy
- Reach confusion noise in <0.1 seconds

Stage 2: 2015-2016

Gregg



Fiber Link Development



Custom fiber links designed by Sandy Weinreb and his group
– cost per antenna now <\$100 (vs \$2000 for commercial hardware)

Long baseline demonstrator array – 2015



- Large network of conduit holding 43 km of optical fiber
- 6 fibers at each “station” to allow the future completion of the array



