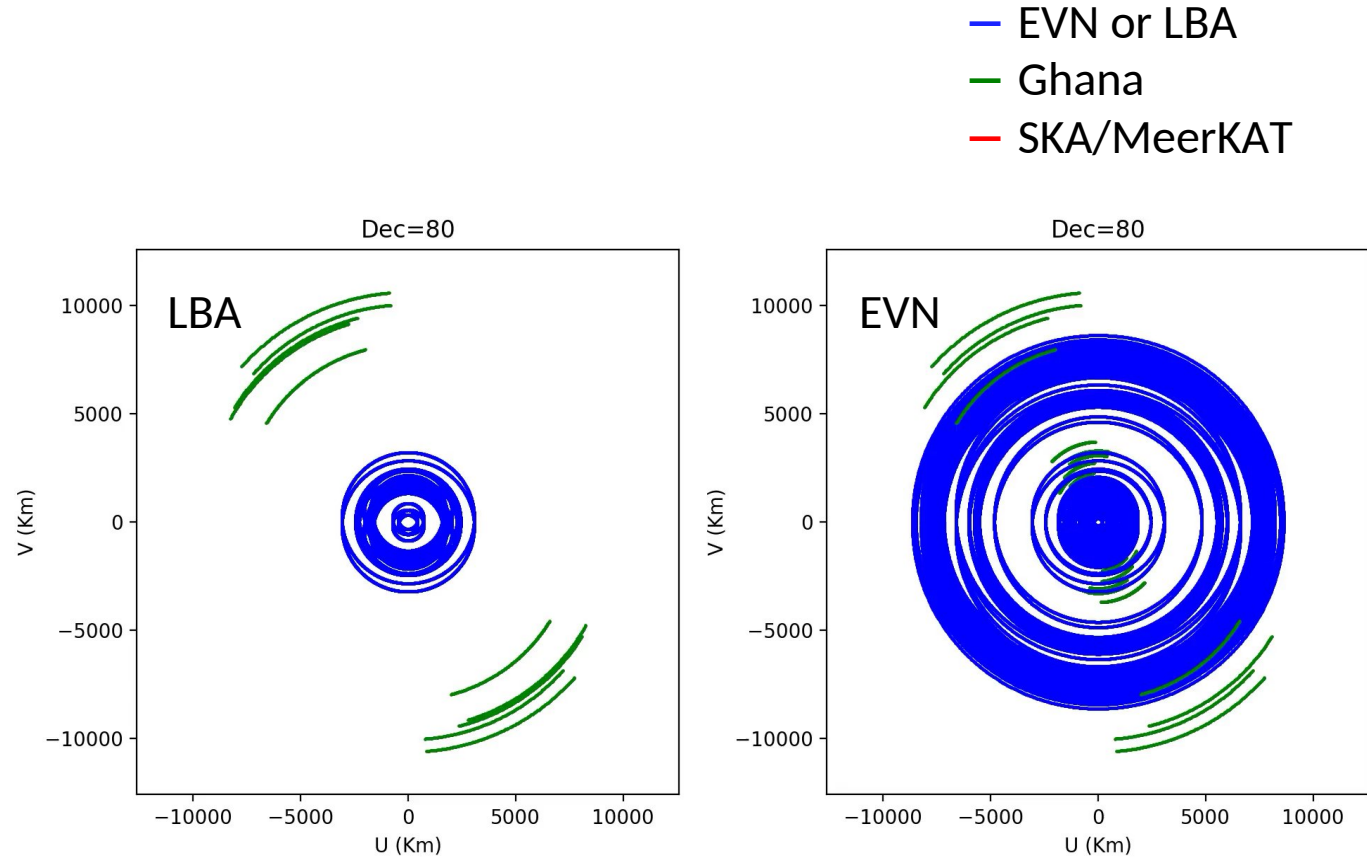




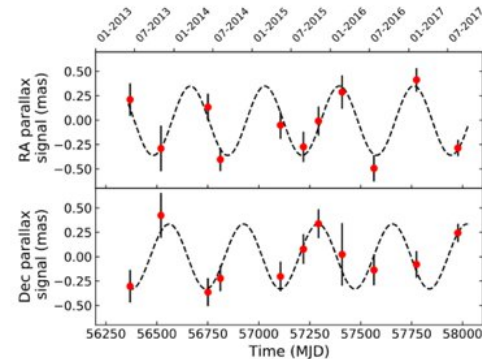
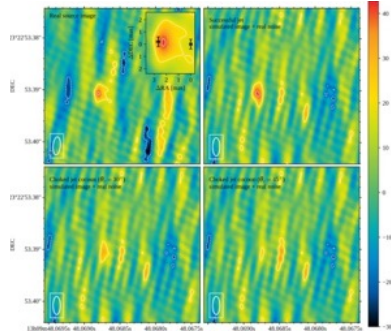
# LBA Update

Chris Phillips | 30/10/2019

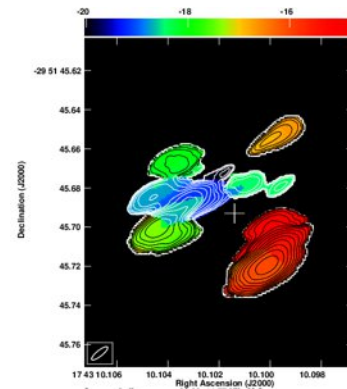


# LBA Highlights

- 10 papers in last 12 months
- Binary neutron star merger event GW170817 (Ghirlanda, Science)
- Proper motions black hole X-ray binaries (Atri, MNRAS)
- Second LBA Calibrator Survey (Petrov, MNRAS)
- Polarisation of OH masers (Chanapote, MNRAS)
- Distance to PSR B1259-63 (Miller-Jones, MNRAS)
- Oversubscription x 2, NAPAs increasing
- Wide range of Galactic and extragalactic science
  - Pulsars, masers, Galactic structure, stars, gamma-ray binaries, AGN, SNR, radio stars, radio galaxies
  - Astrometry pivotal



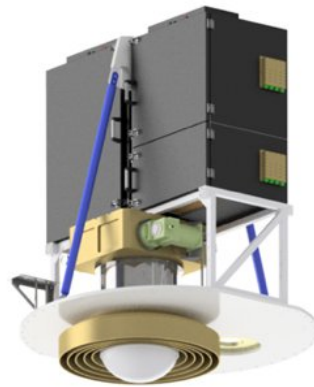
Miller-Jones 2018



Burns 2019

# Current Upgrades

- Parkes UWB-Low
  - 700 MHz - 4 GHz “anytime”, legacy down conversion
  - Initial VDIF voltage capture demonstrated
- AuScope wideband receiver
  - 3-13.5 GHz, 8 Gbps capability
  - Stirling cycle cooling
- Waiting on Parkes UWB-High and BIGCAT
  - ASKAP Tied array “approved”



# Mopra

- No current funding
  - UNSW Linkage grant soon to be submitted
    - In conjunction with KASI
  - KASI potential source to fund operations for a number of years
    - Long baseline for KVN
    - Have installed Octave and Mark6 (20+ GHz only)
    - Plans for “quasi-optics” to illuminate 22/44/88 GHz Rx simultaneously
- Number of other parties expressed interest in funding operations for VLBI usage



Opportunities

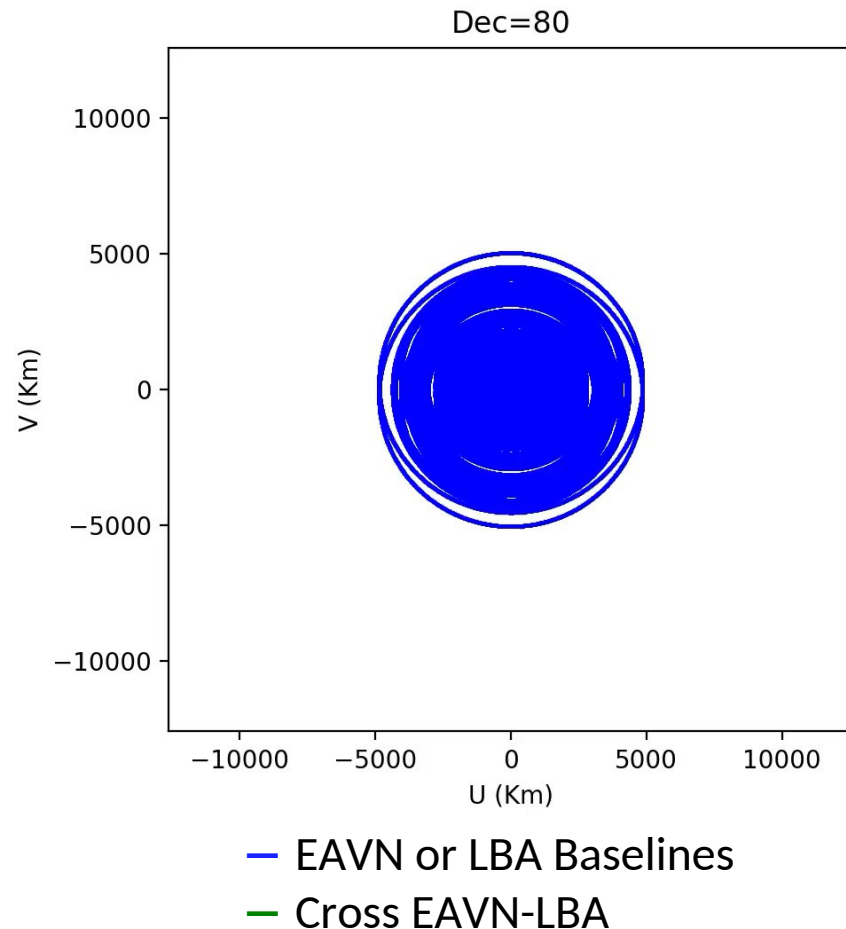
# European VLBI Network

- LBA and EVN call for proposals invite “joint” observations
  - Reviewed independently by each TAC
- A number of successful observations performed
  - 72hr global VLBI observation in February 2019
  - L-band observation next week
- Currently complicated by need for LBA sessions for Rx changes, and Hartebeesthoek



# East Asian VLBI Network

- EAVN ratified as VLBI array
  - Partnership between KVN, CVN, JVN and VERA
  - Formal call for proposals etc, open sky access
- Encourage joint LBA-EAVN proposals?
- Thai 40m telescope helps bridge UV gap



# Global VLBI Alliance

- Discussions to create “Global VLBI array”
  - EVN, VLBA, EAVN, LBA
- Shared proposal submission
- Single TAC
- Discussions ongoing....



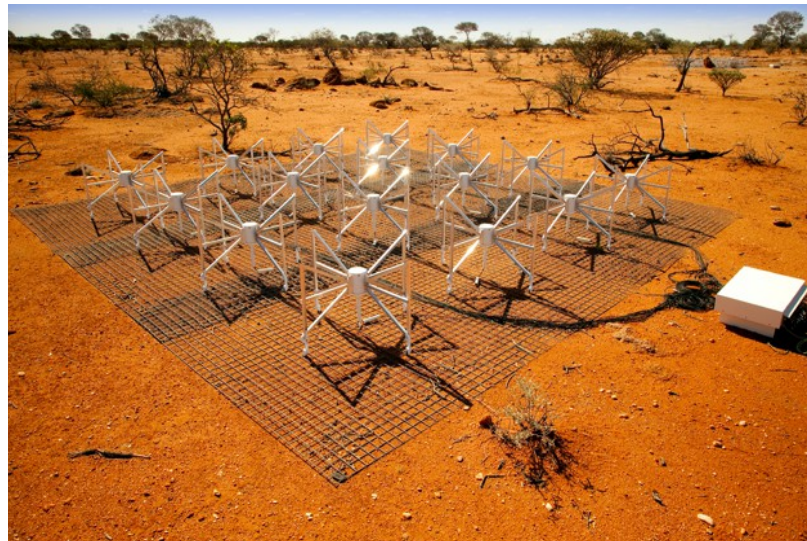




# LBA-Low



- MWA Style dipole
  - Bluering digital processing
    - RFSoc Sampler/FPGA
    - Channelisation+BeamForming
- \$190K per station (hardware only)
- Locate at existing LBA observatories?
  - Saves on site costs (power, network etc)
- Possibly near AARNet nodes – eVLBI
- Contact George Heald if interested



- 14-16 October
  - Discussion of SKA VLBI capabilities and science priorities
- Strong interest in LBA in era of SKA
- Lack of low frequency antennas in Southern Hemisphere noted
  - Much interest in LBA-Low concept



# Thank you

**Astronomy and Space Science**

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