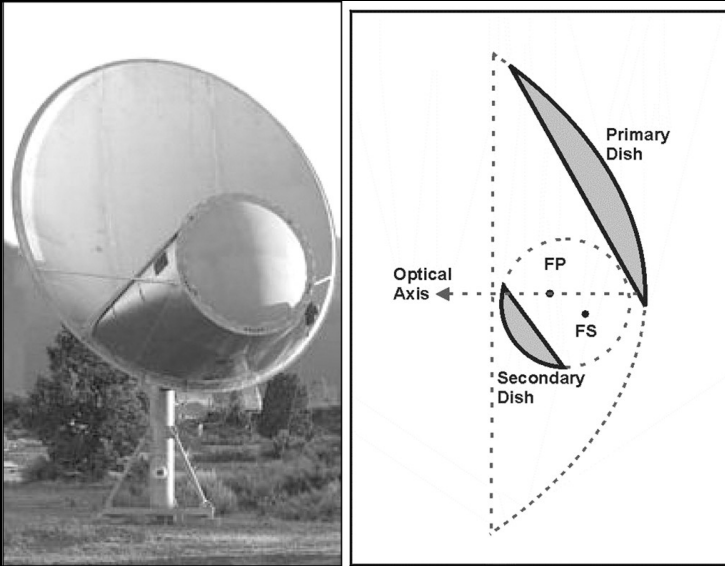


# ATA Dishes and Beamshapes

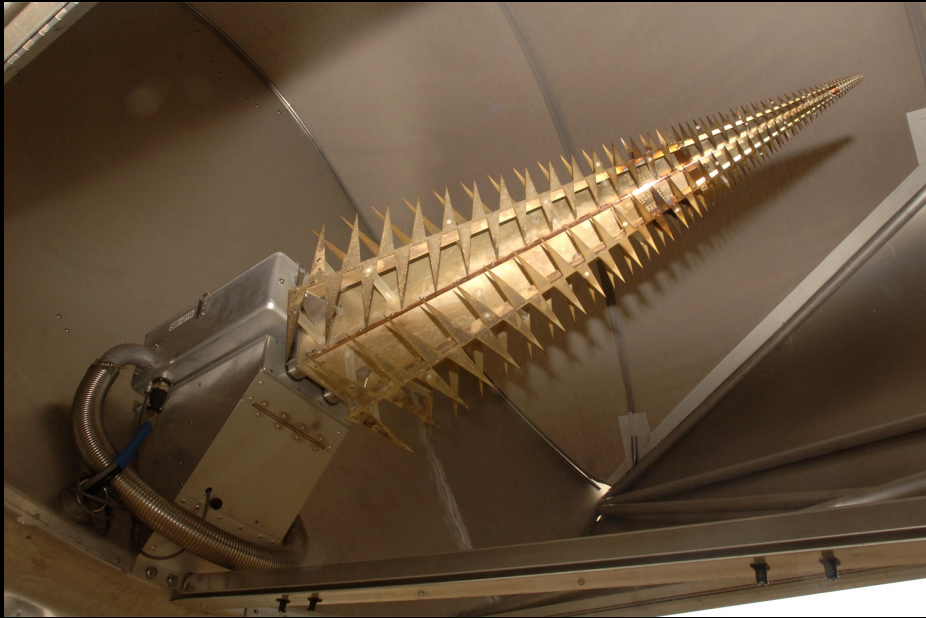
Peter K. G. Williams • [pwilliams@astro.berkeley.edu](mailto:pwilliams@astro.berkeley.edu)  
3GC-II • Algarve, Portugal • 2011 Sep 27

# Basic Design – Offset Gregorian



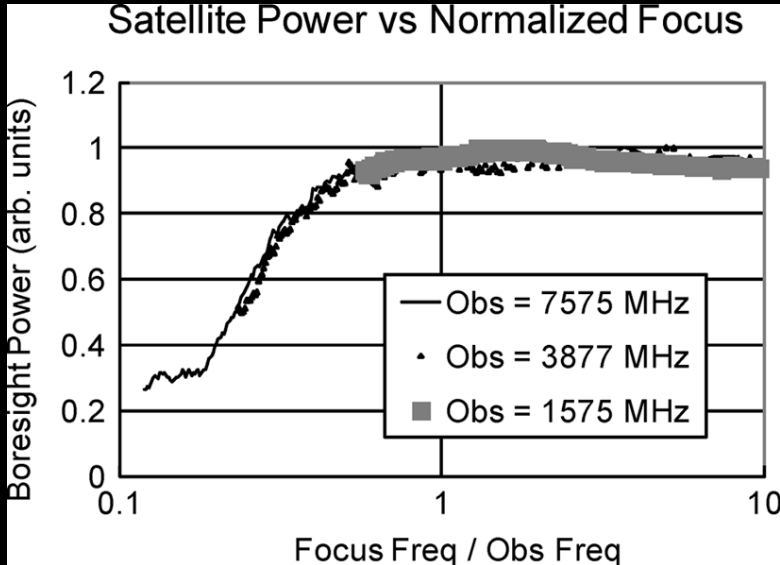
Harp et al. 2011

# Basic Design – Movable Feed



Seth Shostak

# Basic Design – Movable Feed



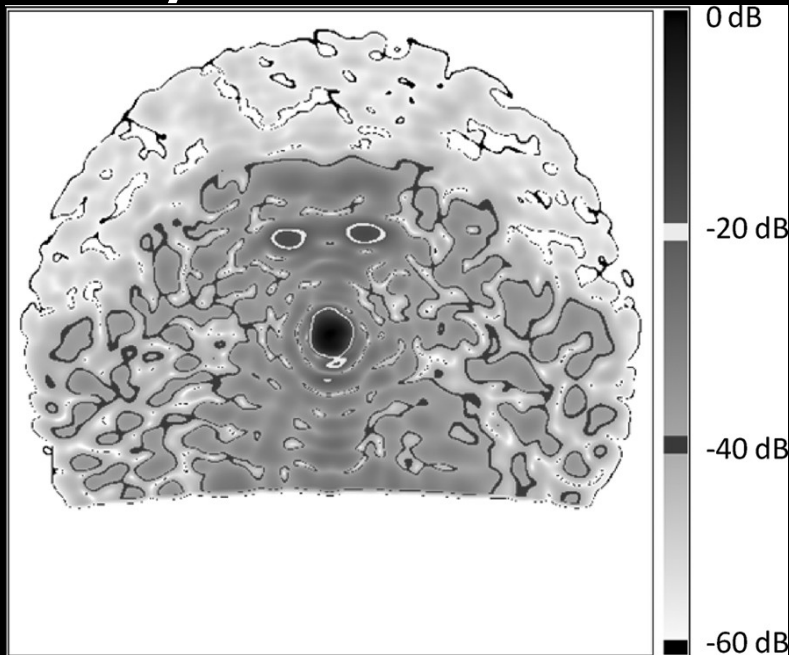
Harp et al. 2011

# Basic Design – Hydroforming



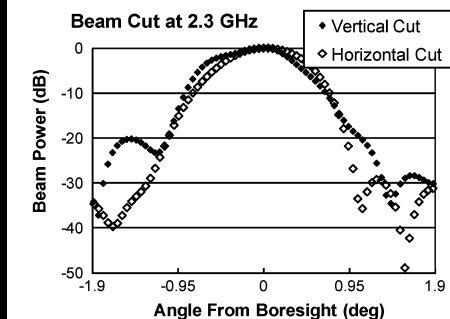
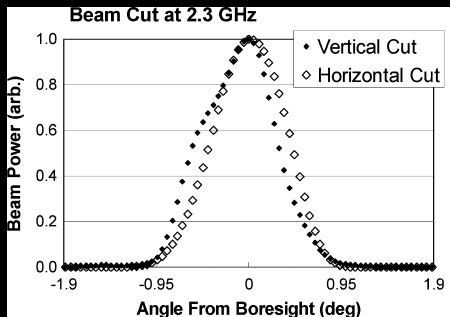
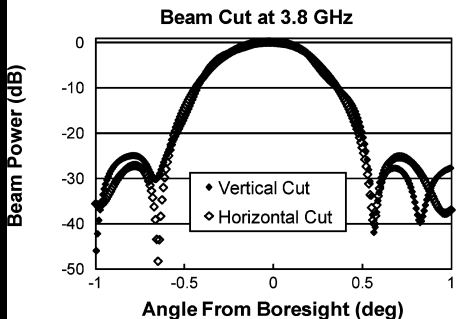
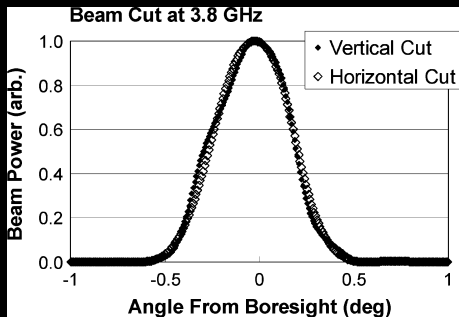
# Primary Beam Power Pattern

# Primary Beam Power Pattern



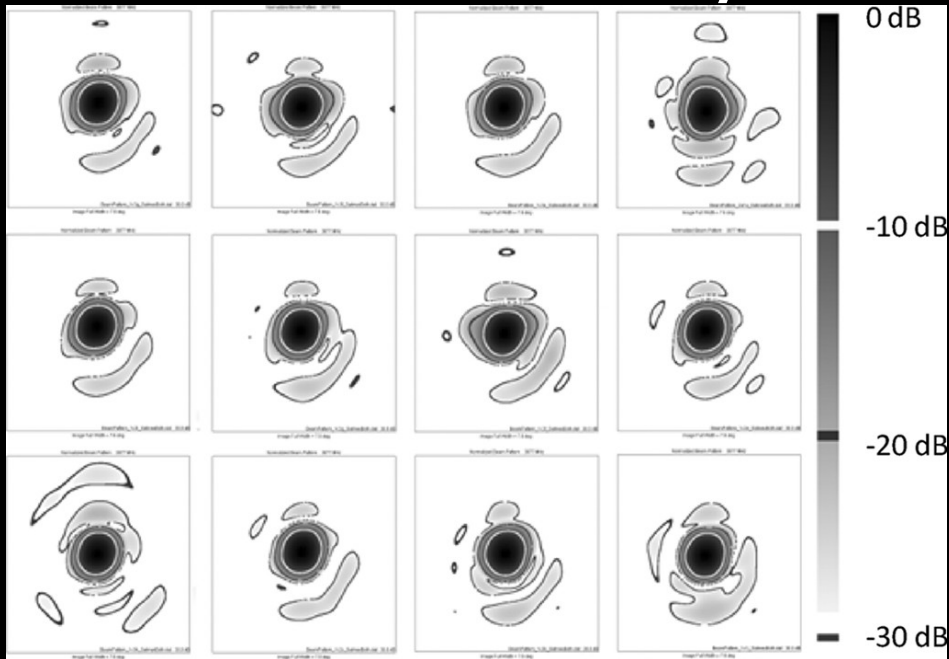
Harp et al. 2011

# Primary Beam Power Pattern



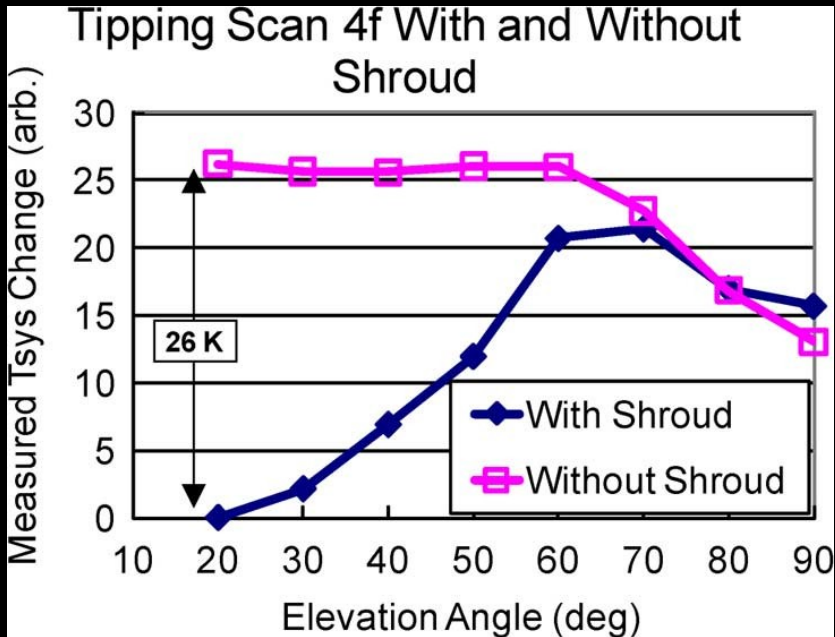


# PBPP Consistency



Harp et al. 2011

# Spillover

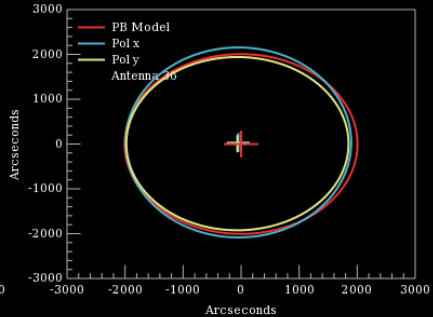
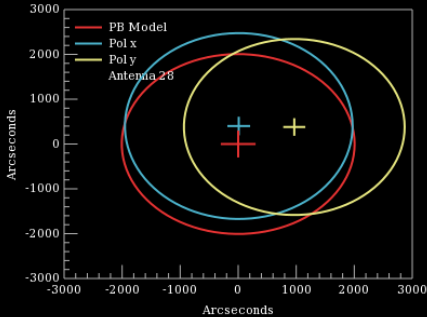
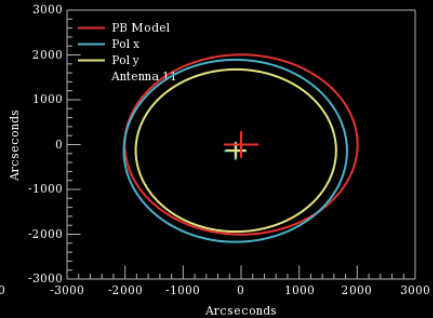
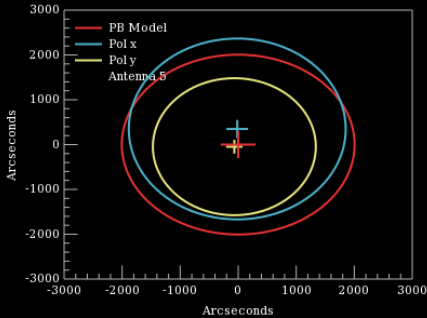


# Squint

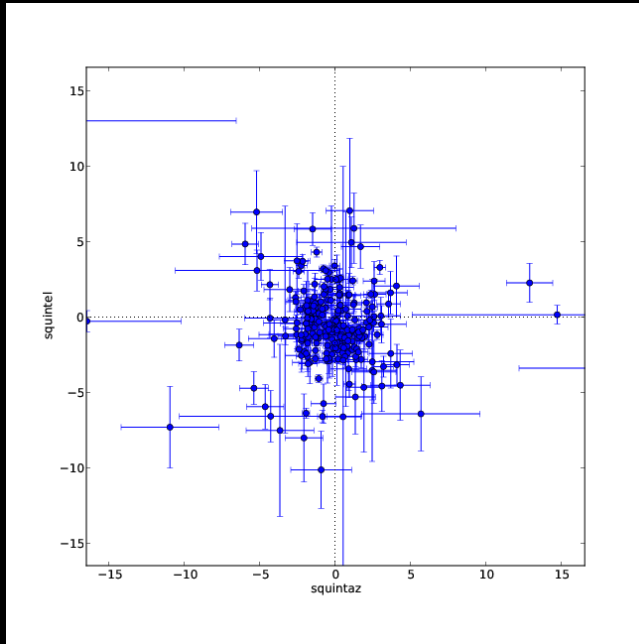
# "Hex" Observations

- Seven pointings in hexagon centered on calibrator
- Selfcal to get gains, solve for Gaussian PB for X and Y feeds
- Weekly observations
- Many frequencies, focus settings, epochs, feed revisions, times of day, etc
- See MacMahon & Wright 2009; Burns, Williams, Bower, et al in prep

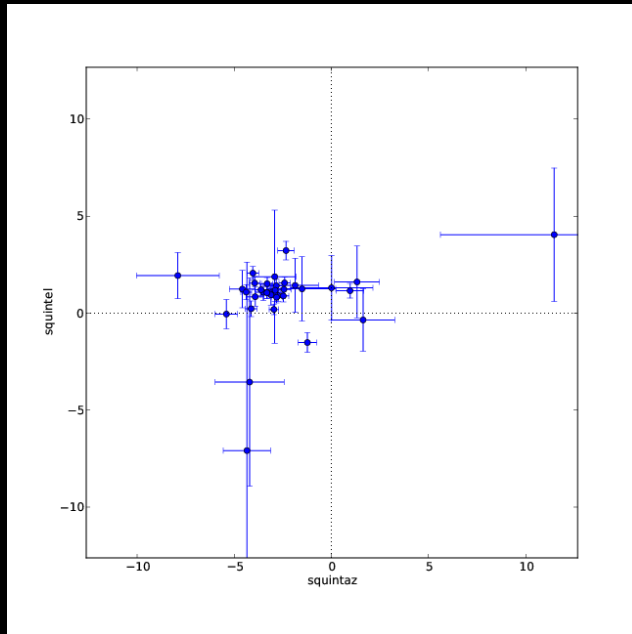
# Squint



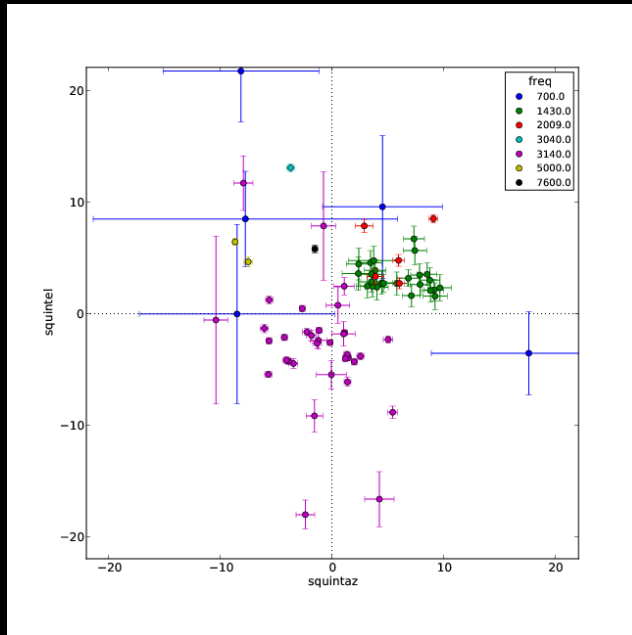
# Squint – 3GHZ Ensemble Results



# Squint – Repeated Measurements



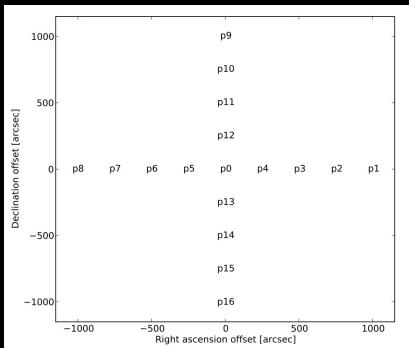
# Squint – Frequency Dependence



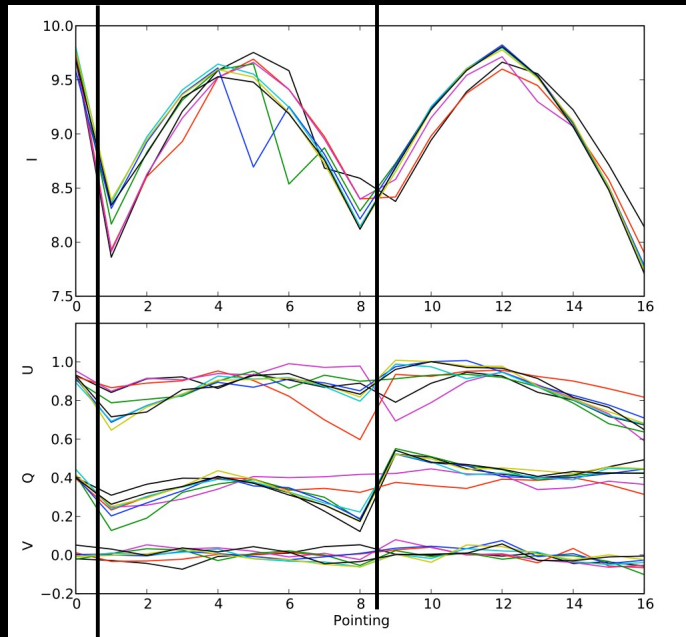


# Polarimetry

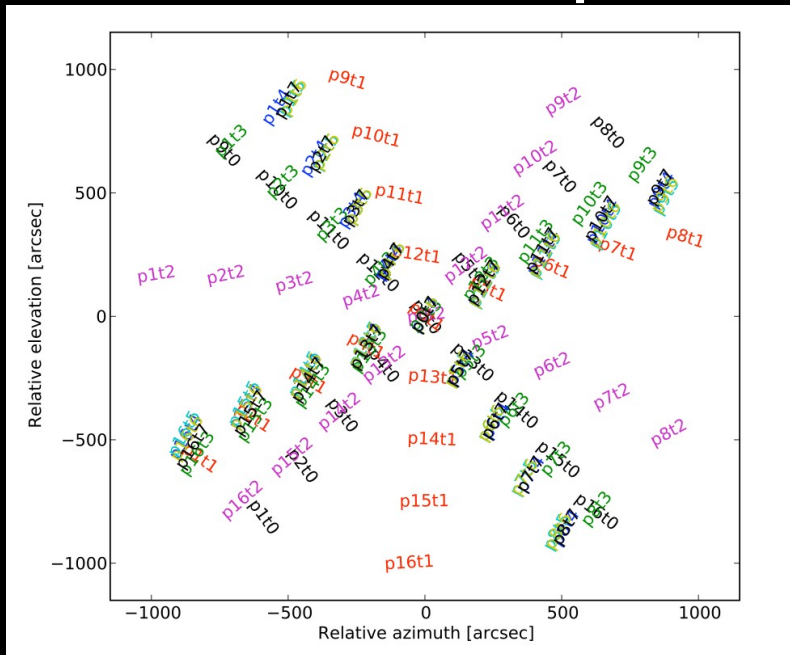
# Polarimetric Response



de Villiers & Law, 2010



# Polarimetric Response

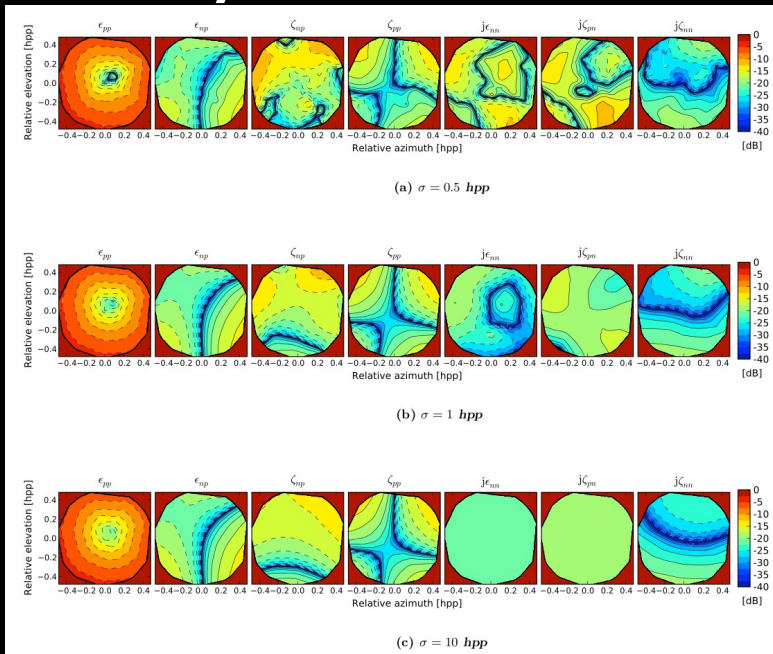


de Villiers & Law, 2010

# Polarimetry – Stokes Corrections

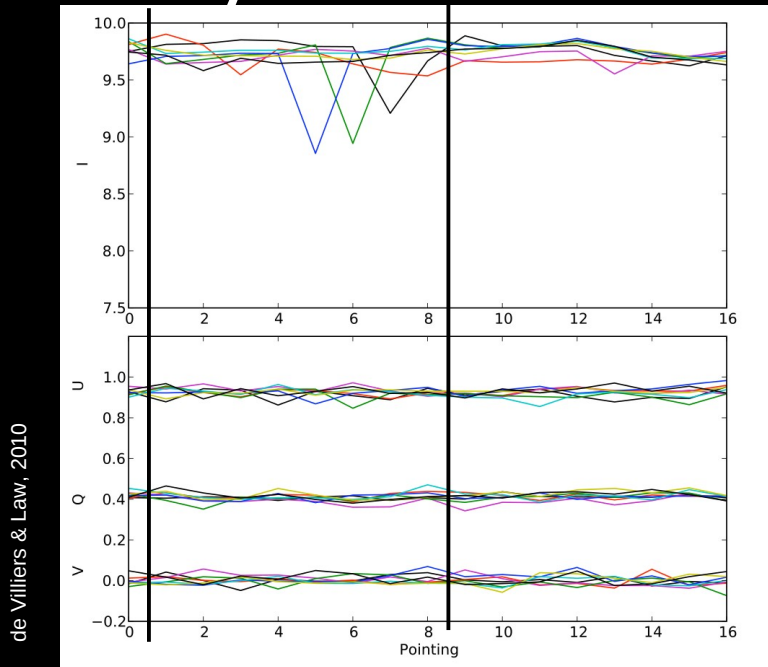
- Averaging over all antennas!
- Seven real parameters for gain and leakage errors
- See de Villiers & Law 2010, Sault et al 1996 for equations (messy)

# Polarimetry – Stokes Corrections



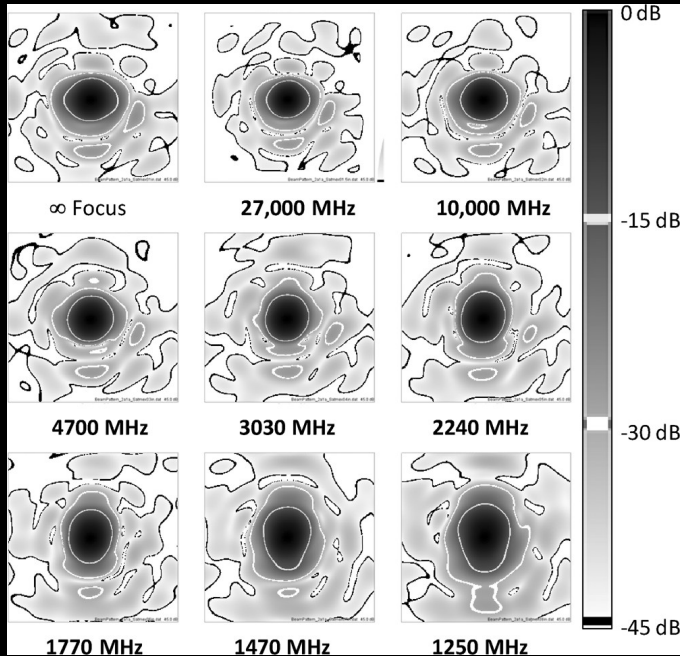
de Villiers & Law, 2010

# Polarimetry – Stokes Corrections



# Feed Focus

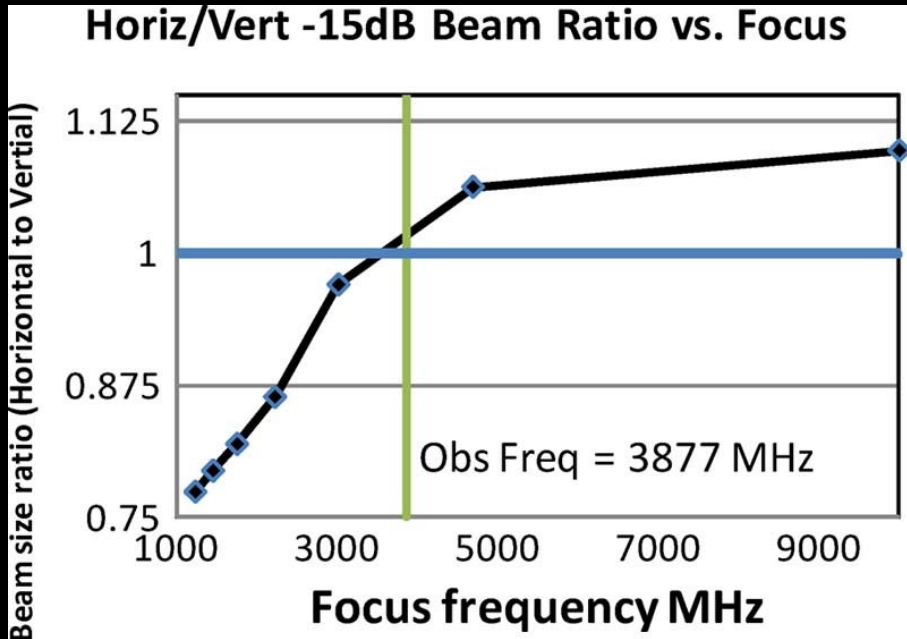
# Feed Focus Behavior



Harp et al. 2011

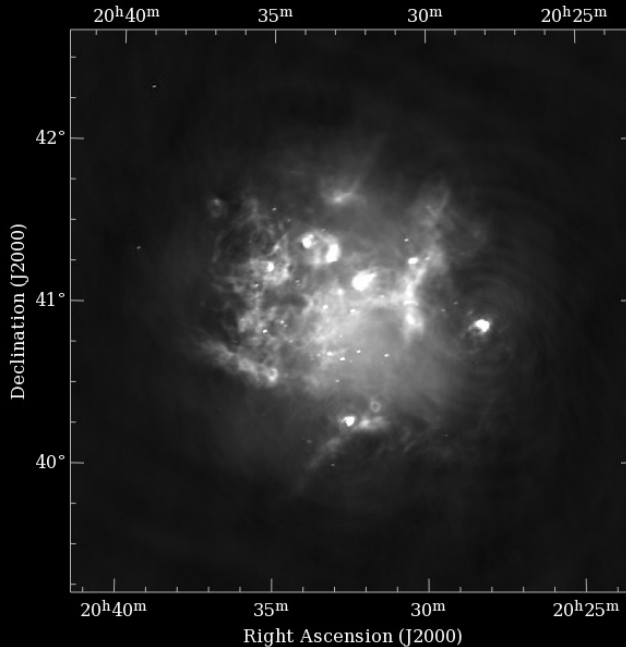


# Focus Behavior – Astigmatism

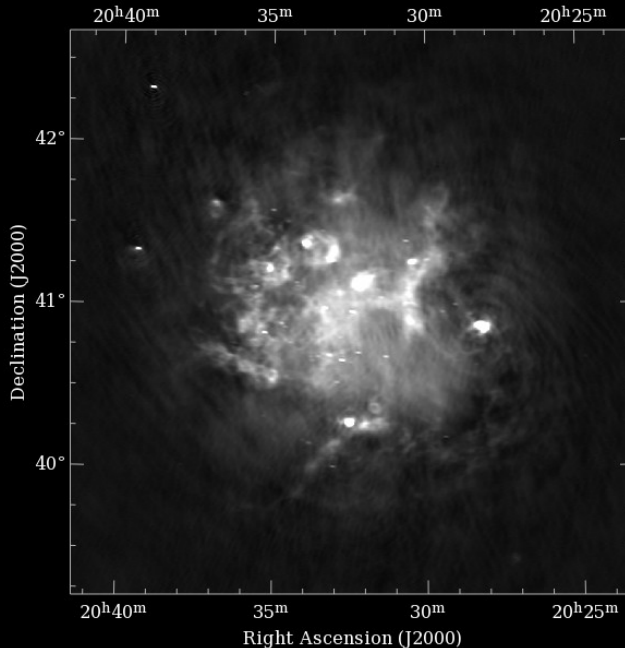


Harp et al. 2011

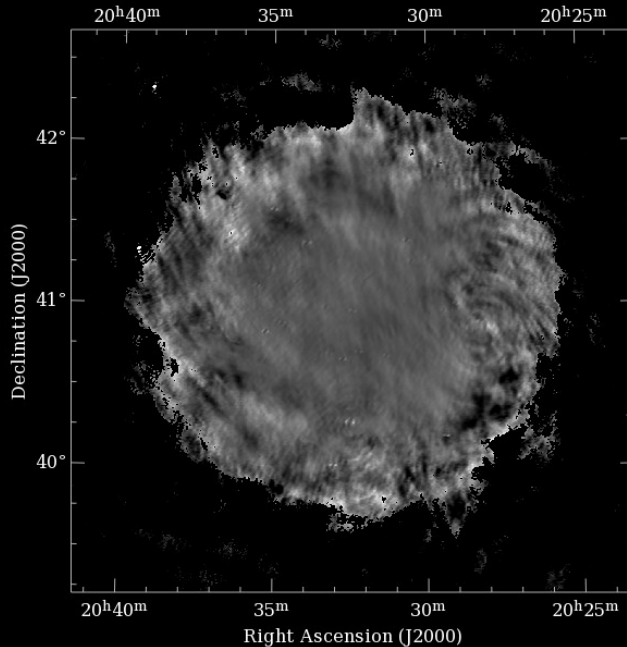
# Focus Behavior — In Practice



# Focus Behavior — In Practice



# Focus Behavior — In Practice



**fin**

# References

- de Villiers, M. & Law, C. J. 2010, ATA Memo #88.
- Harp, G. H., et al. 2011, ITAP 59 2004.
- MacMahon, D & Wright, M. 2009, ATA Memo #83.
- Sault, R. J. et al. 1996, A&A 117 149.