

Summary of week 1

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Hannah Stacey

What have we learned so far?

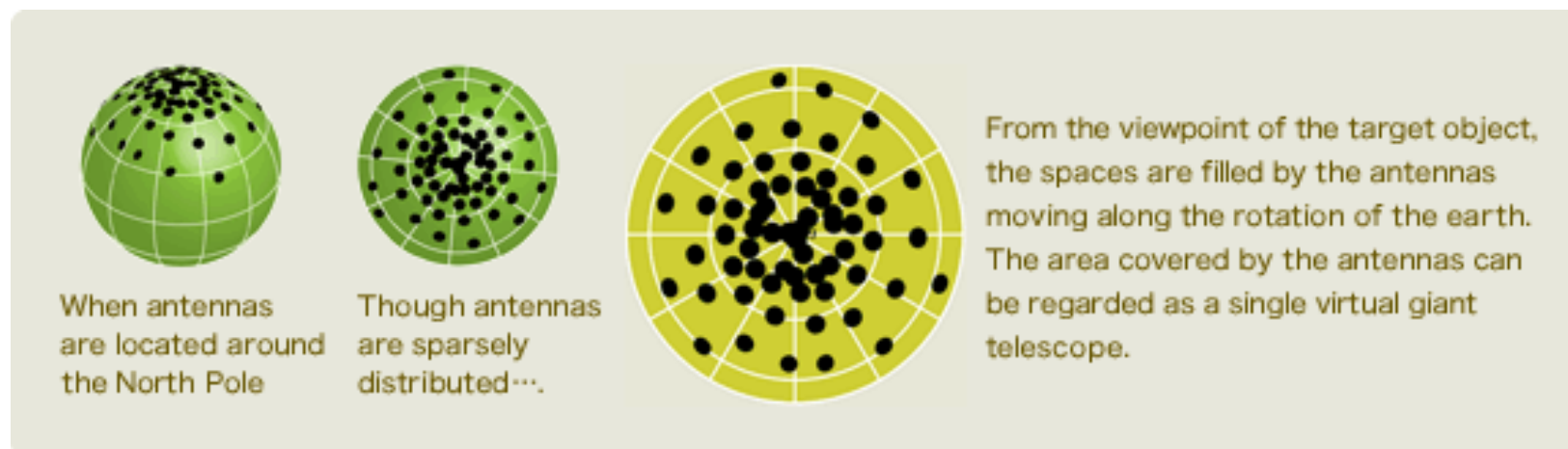
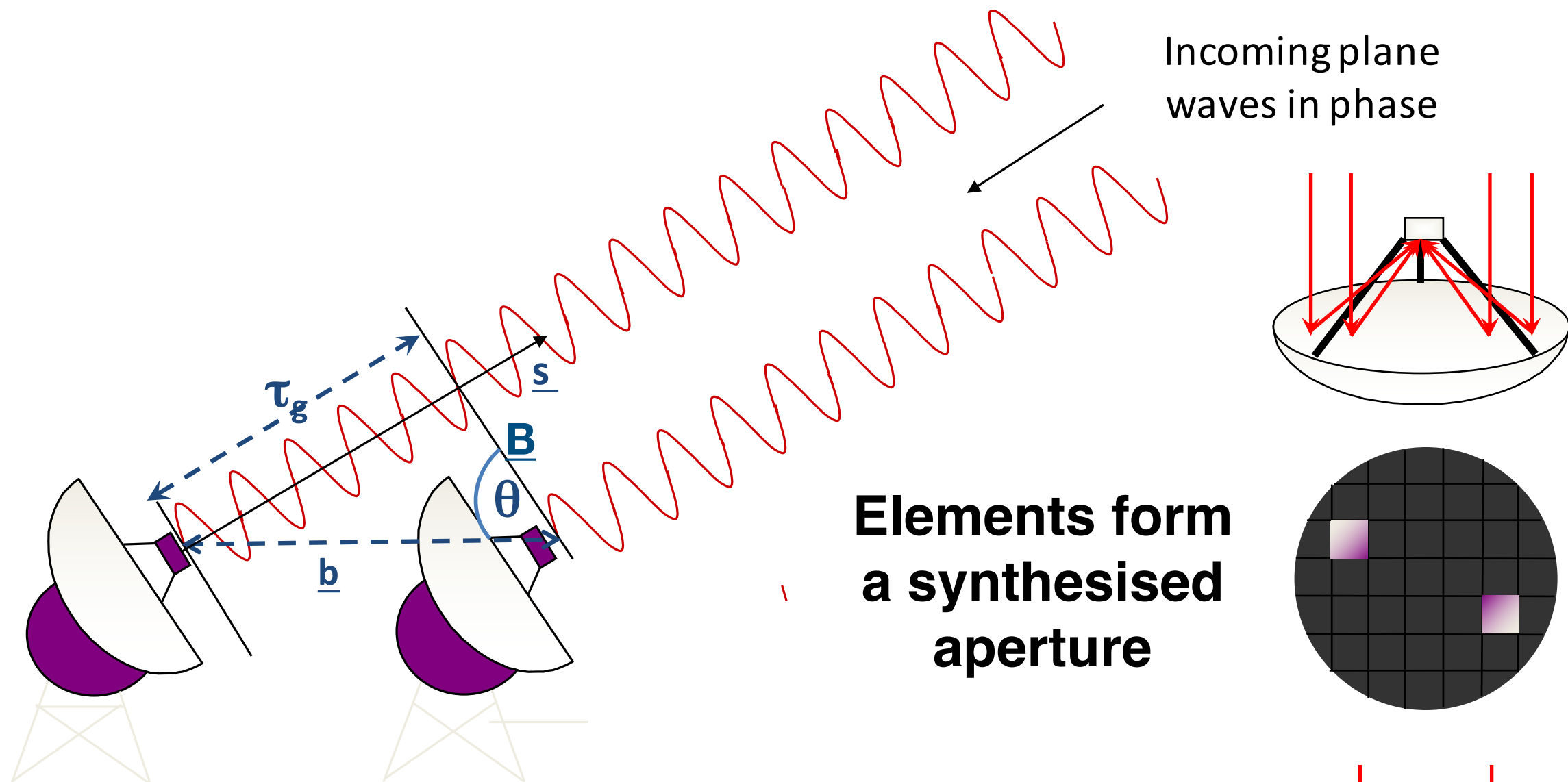
Lectures 1-4

- Principles of interferometry
- The two-element interferometer
- Aperture synthesis and the u - v plane
- Understanding Fourier transforms

Lectures 5-9

- Principles of calibration
- The measurement equation and sources of errors
- Imaging and image fidelity limitations
- CLEAN and deconvolution
- Choosing inputs and recognising errors

A two-element interferometer



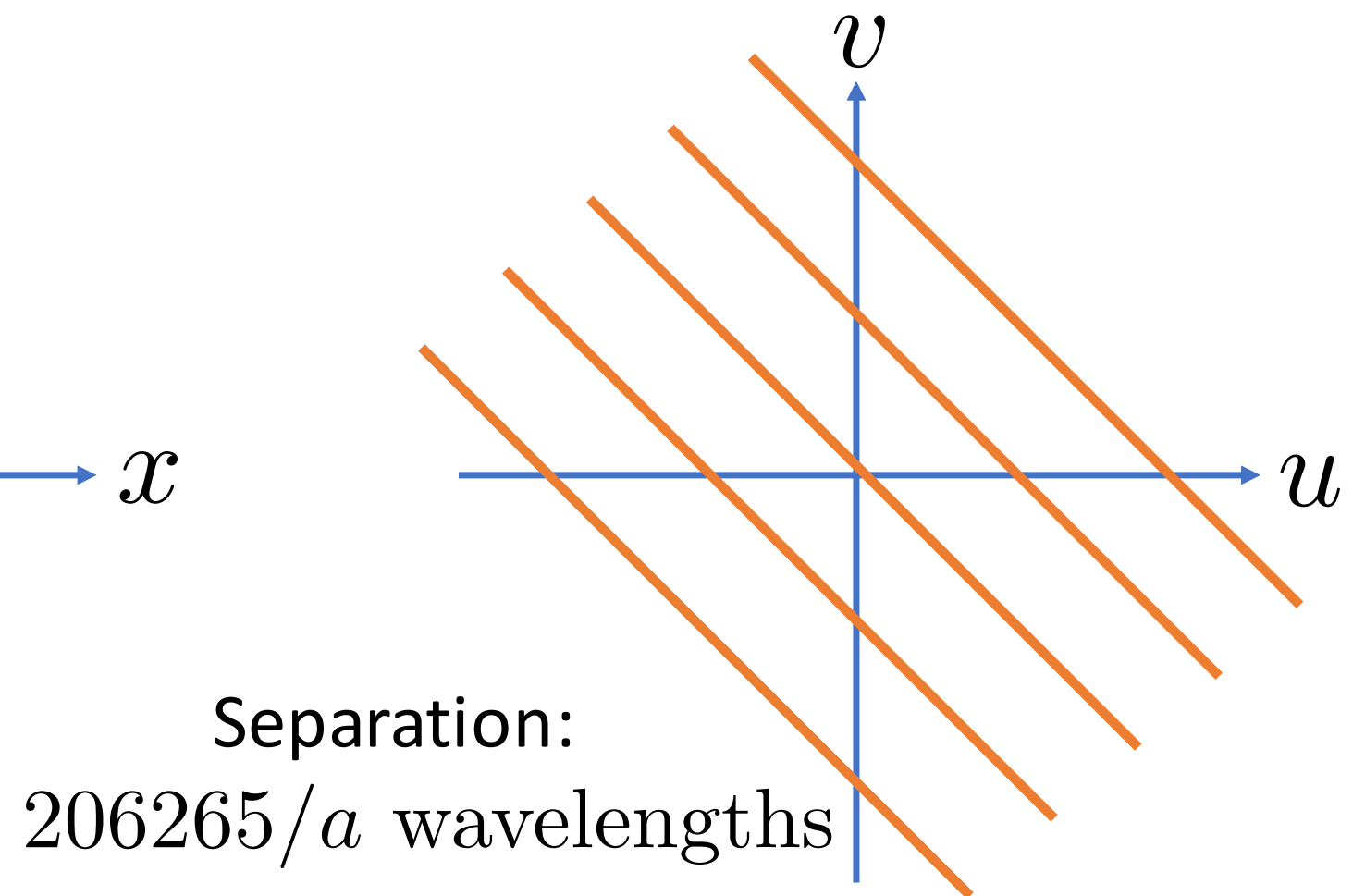
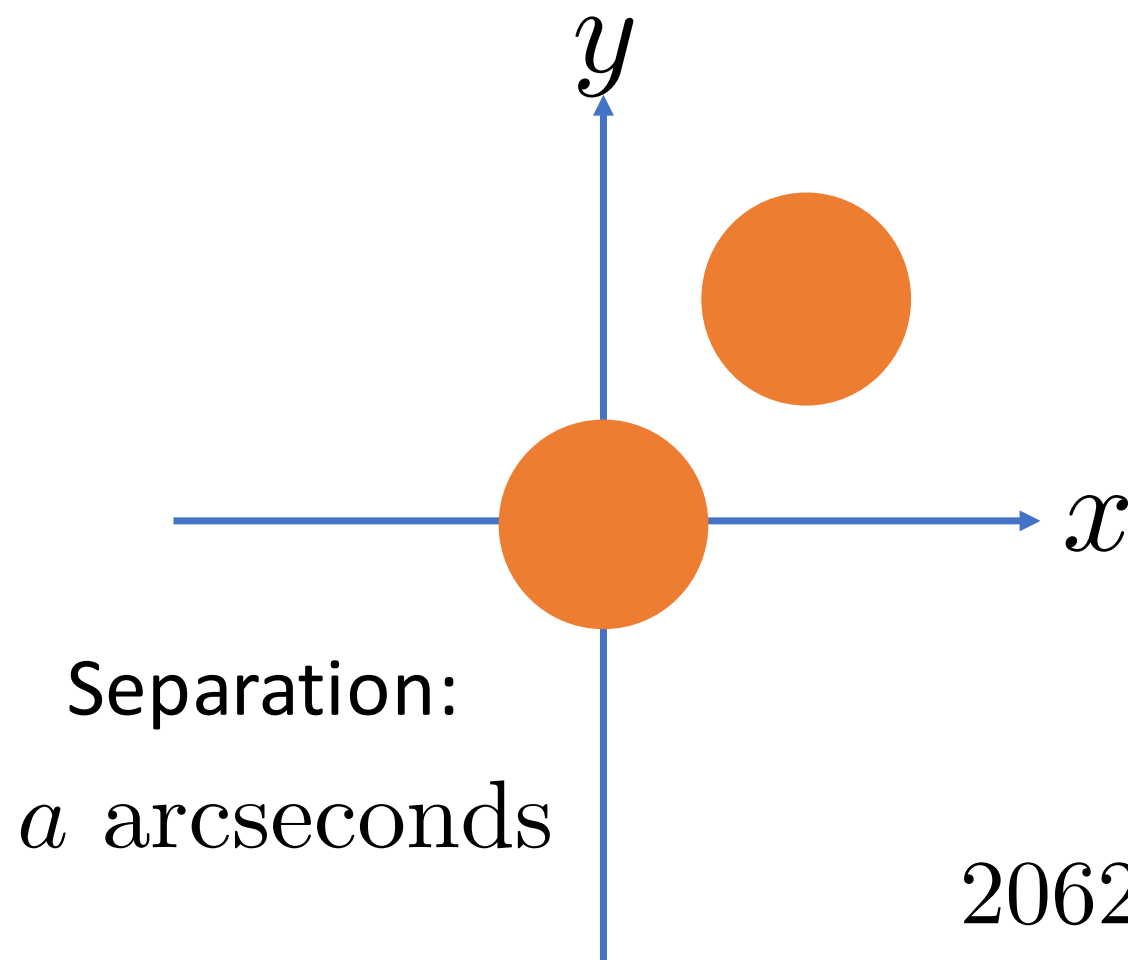
uv plane

- Direct relationship between x, y and u, v

Source brightness as
function of angle

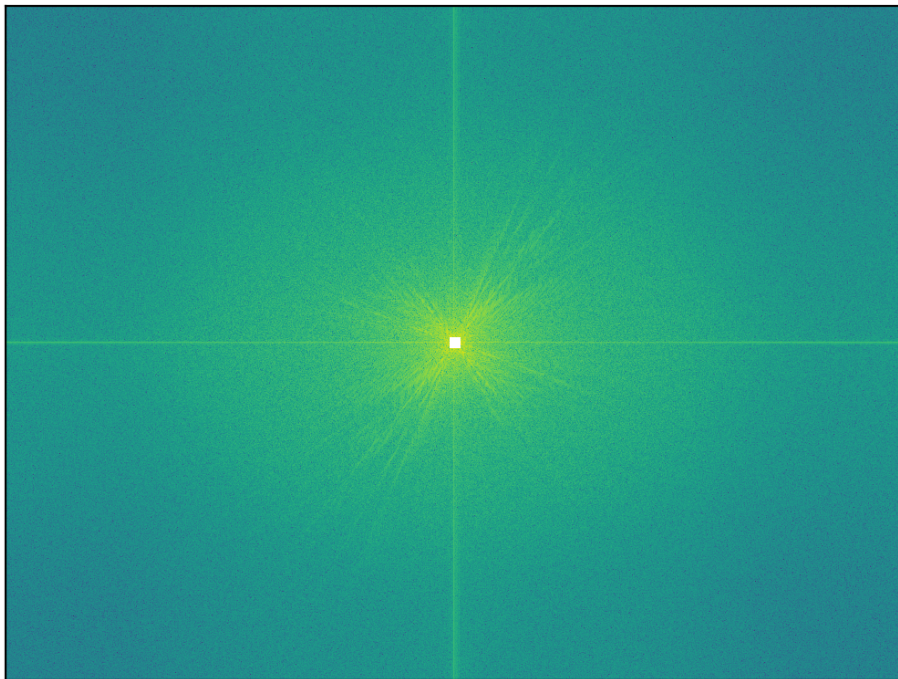


Fringe visibility as fcn.
of baseline length in λ

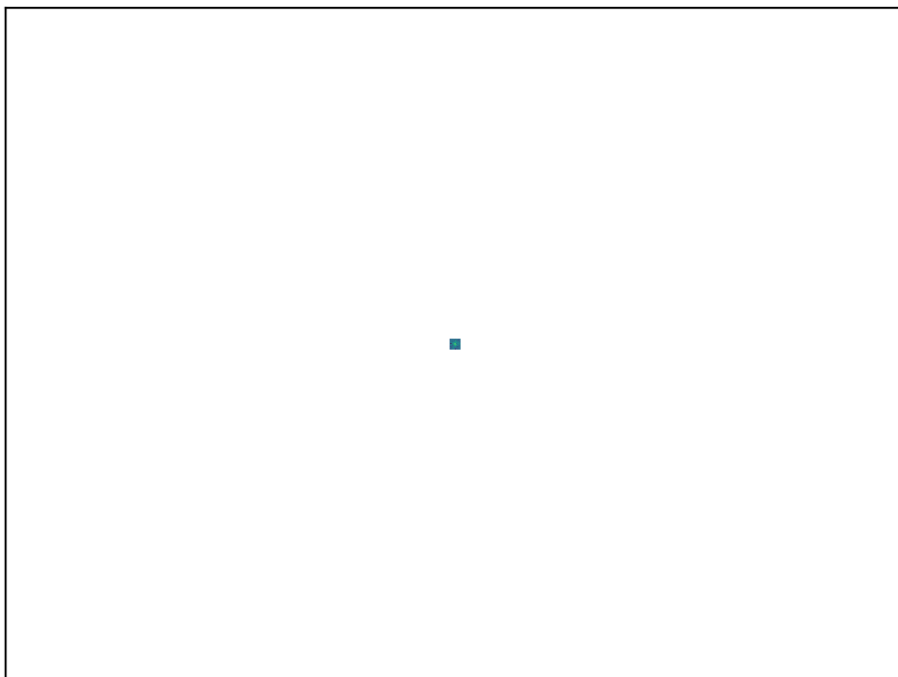


Furrier transforms

High pass



Low pass



Calibrating data

Initial calibration

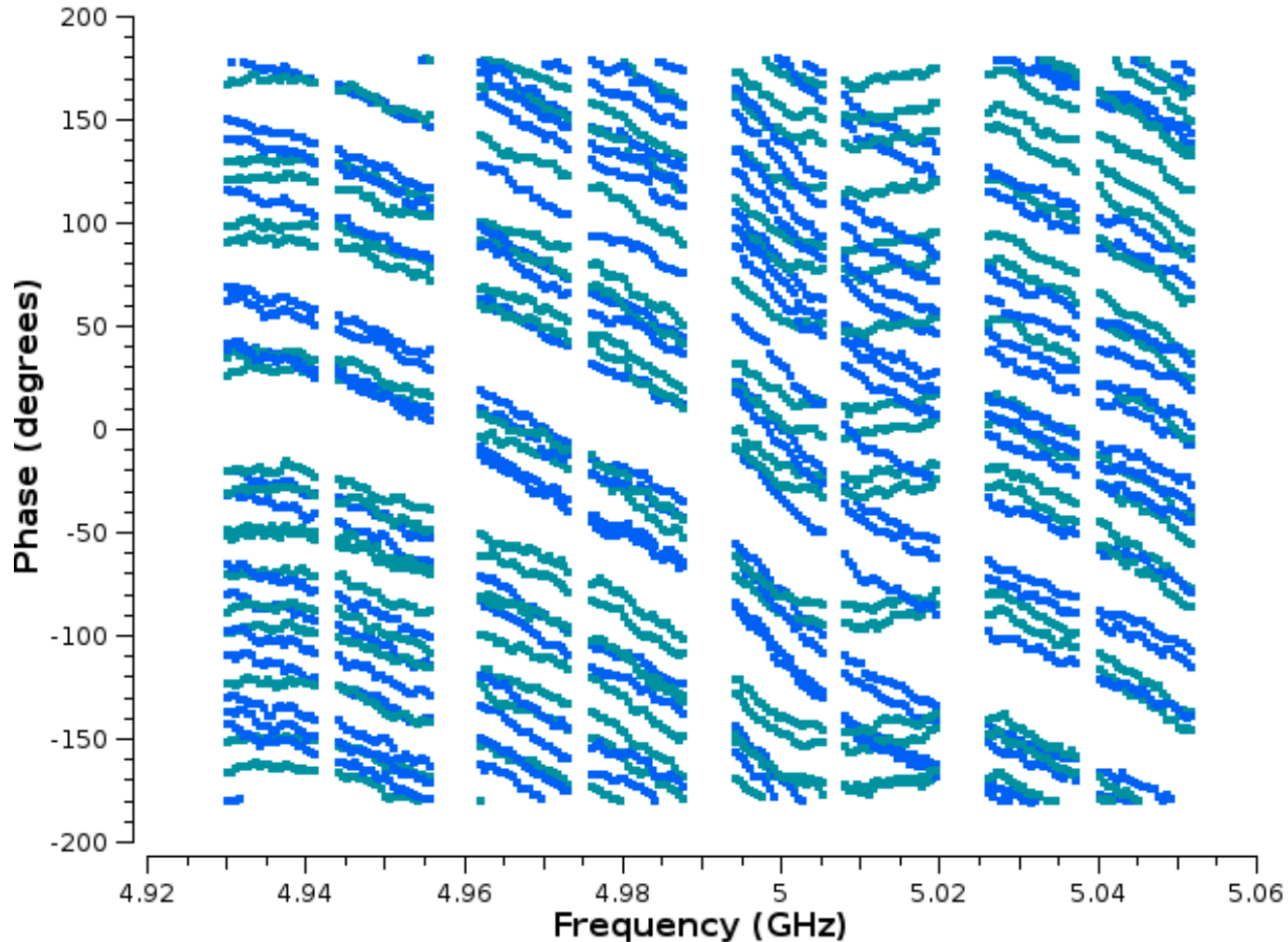
- Correcting T_{sys} and antenna table in measurement set
- Flagging data
- Deriving delay corrections (phase slope with frequency) for a phase calibrator
- Deriving phase corrections (phase change with time) for a phase calibrator
- Deriving bandpass corrections (gain across each spw)

CASA measurement sets

[illegible]

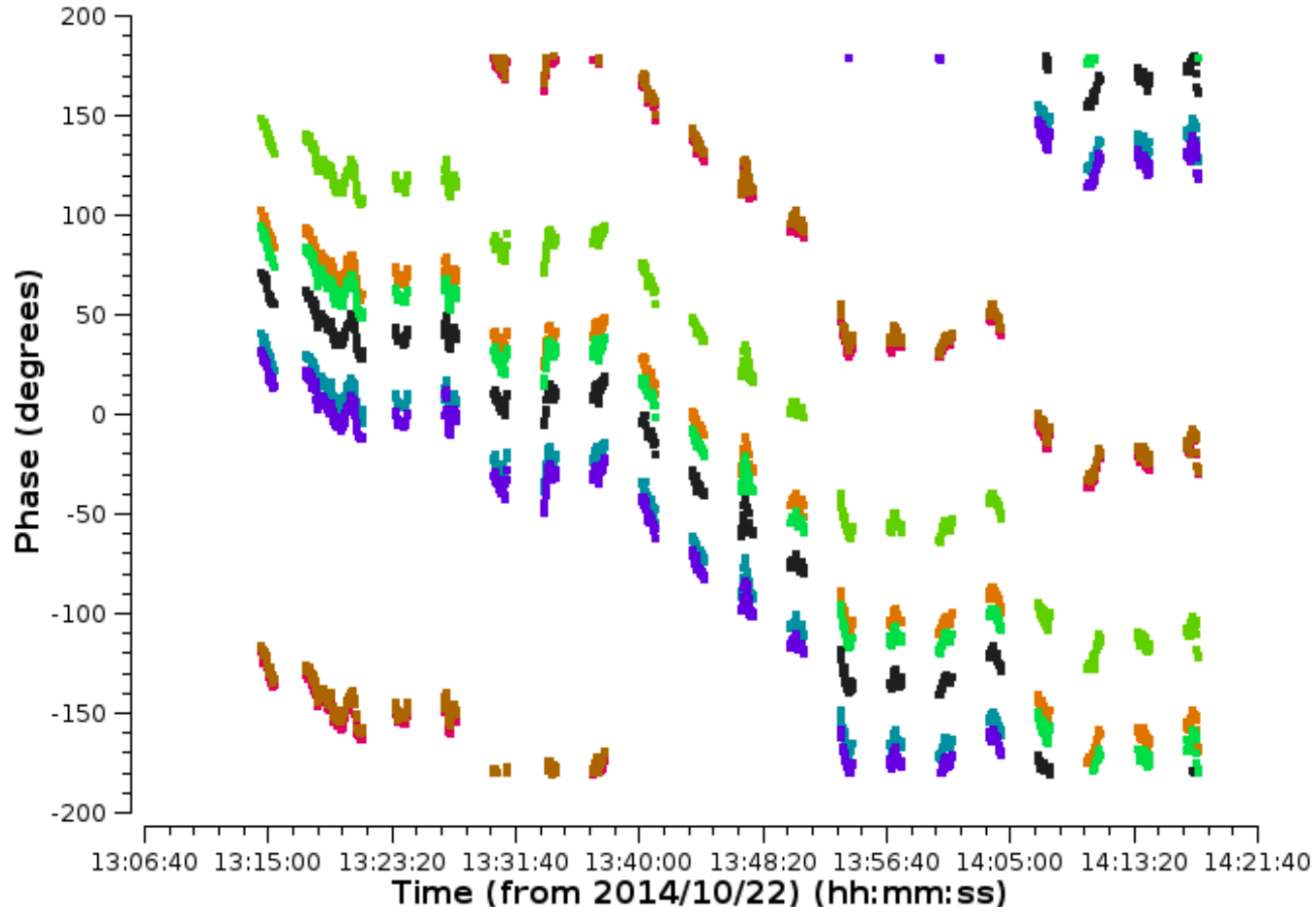
Initial delay correction

**Phase vs. Frequency Baseline: EF@EVN:01 &
HH@EVN:11_8042333m**

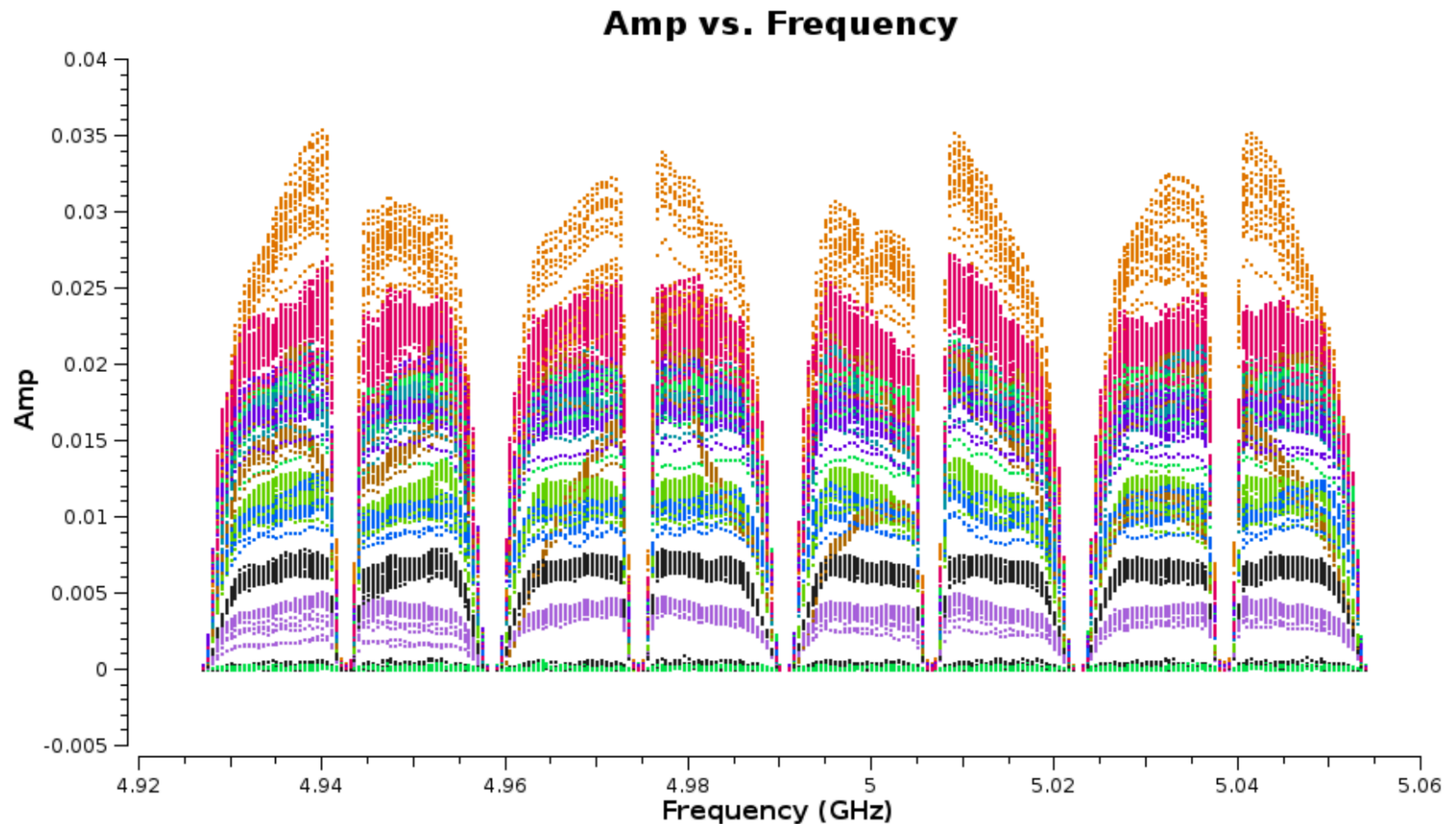


Initial phase correction

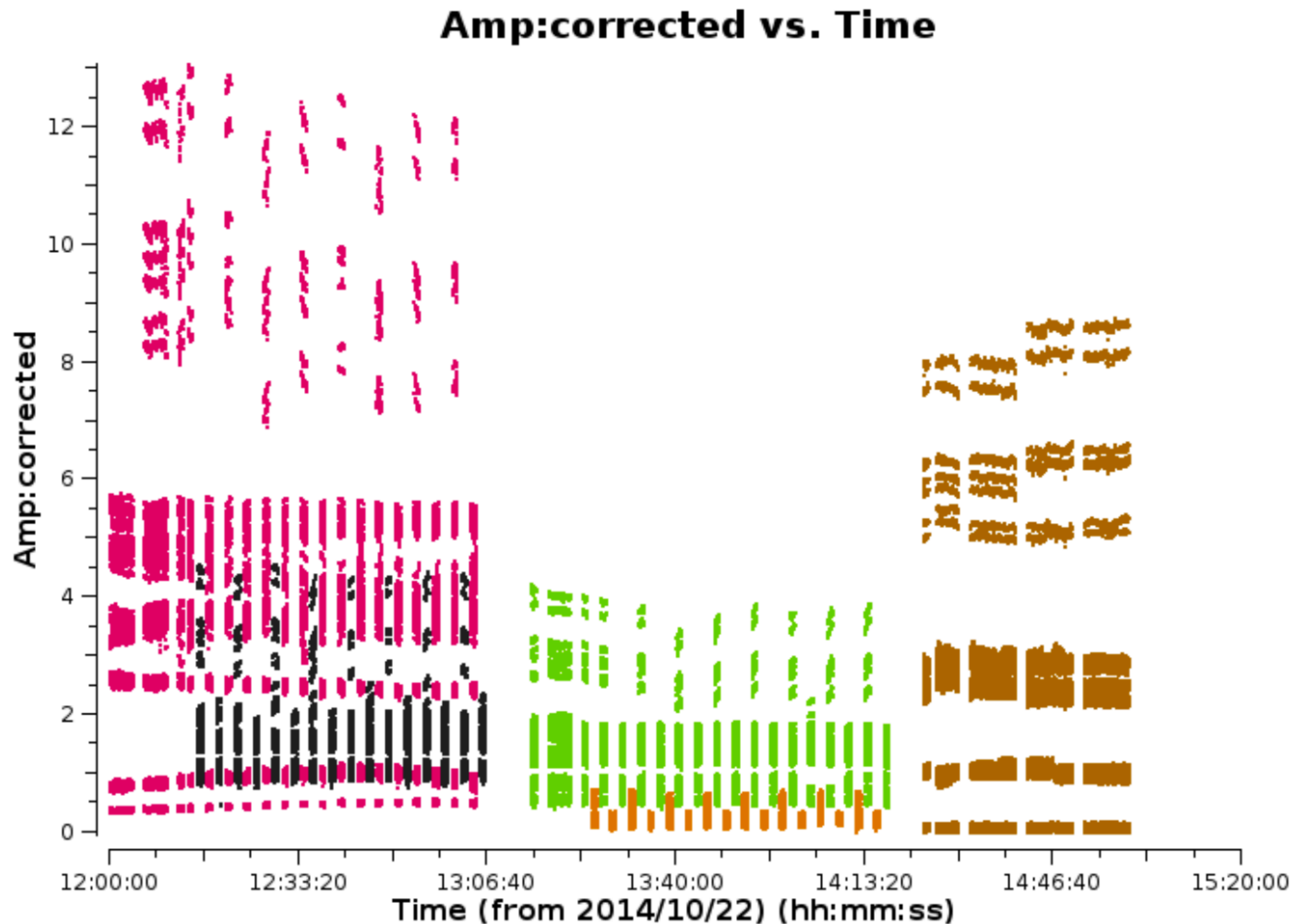
**Phase vs. Time Baseline: EF@EVN:01 &
WB@EVN:02_266520m**



Initial bandpass correction

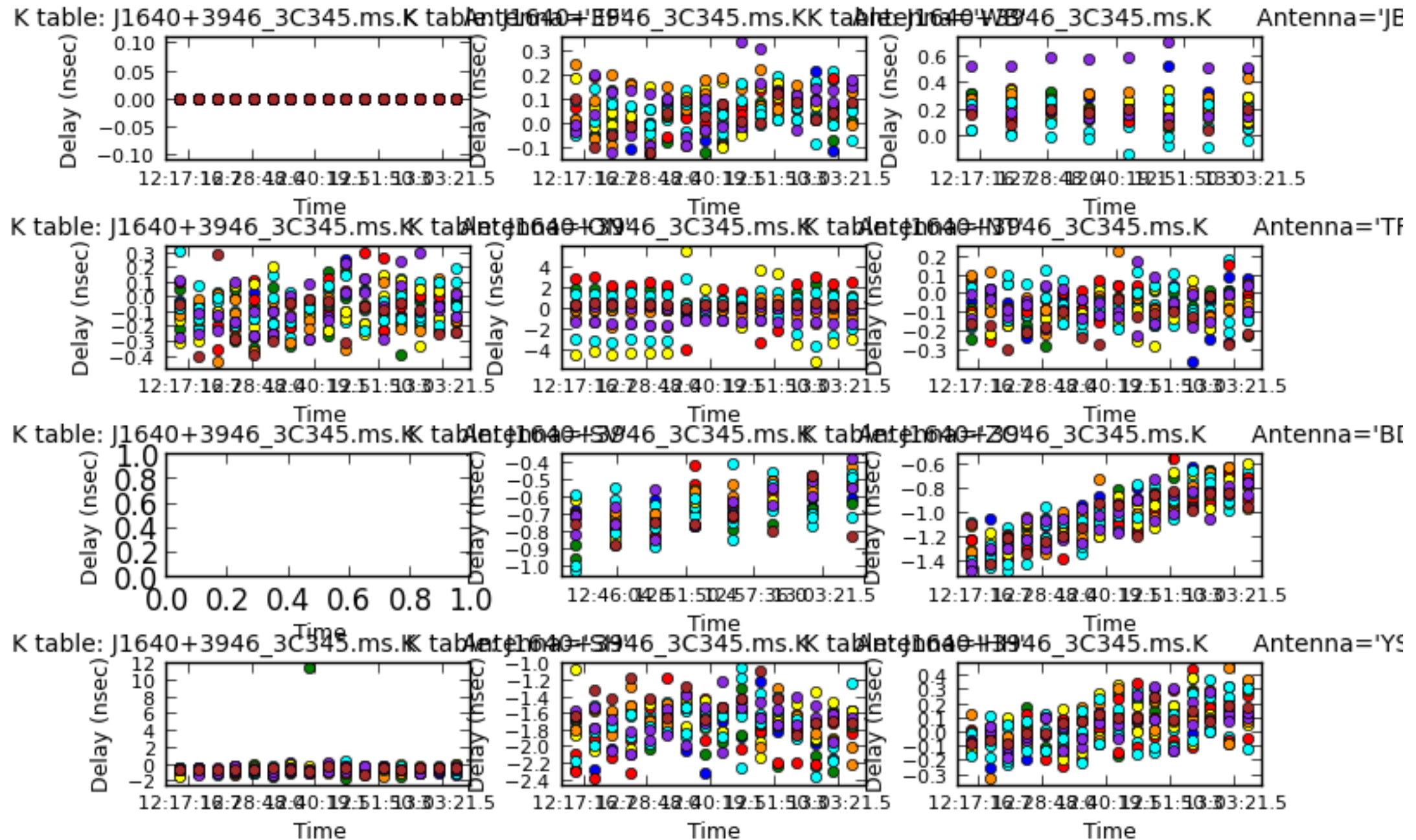


Calibration with a phase calibrator source



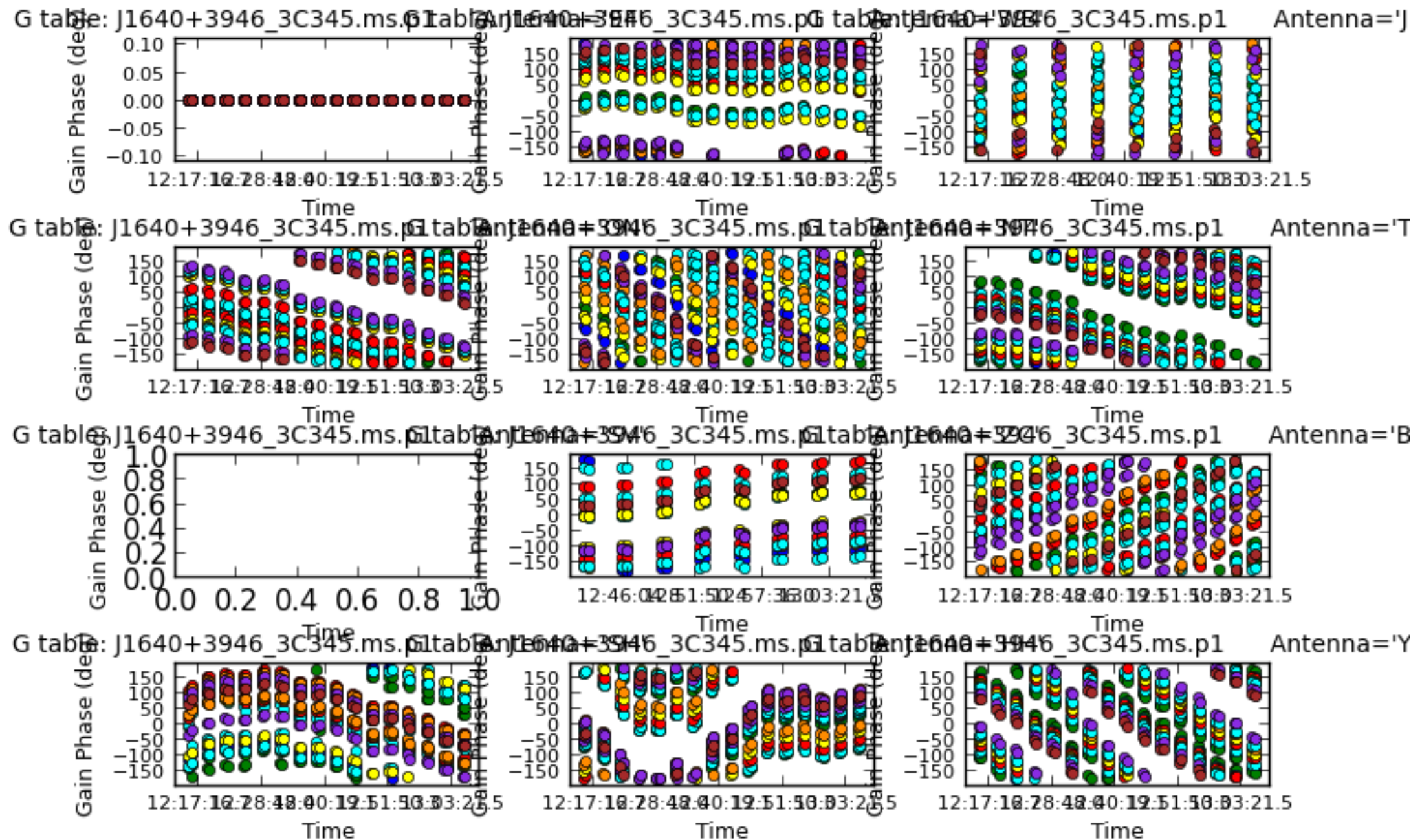
Refining the delay corrections

J1640+3946 (phase cal)



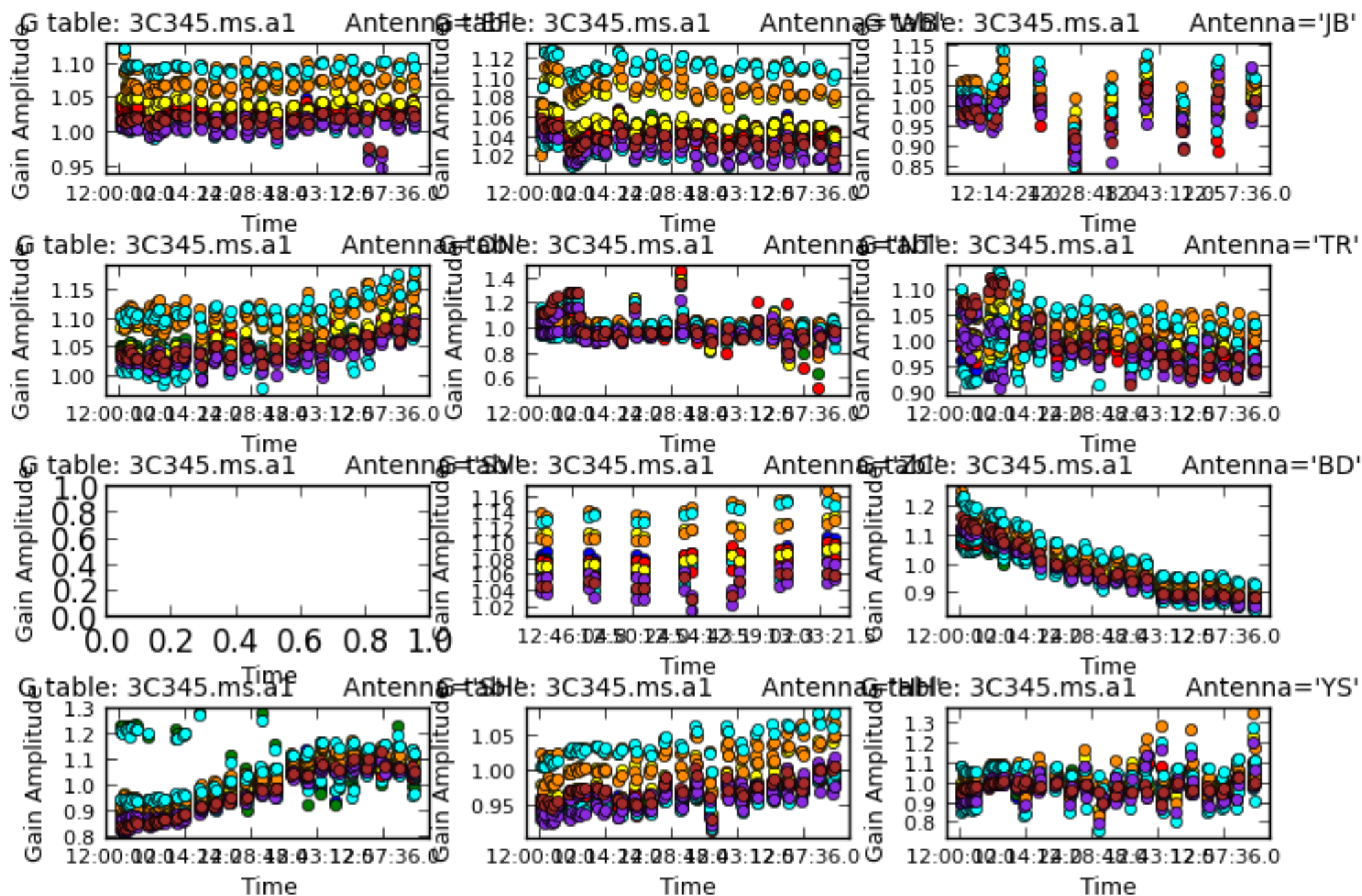
Refining the phase corrections

J1640+3946 (phase cal)

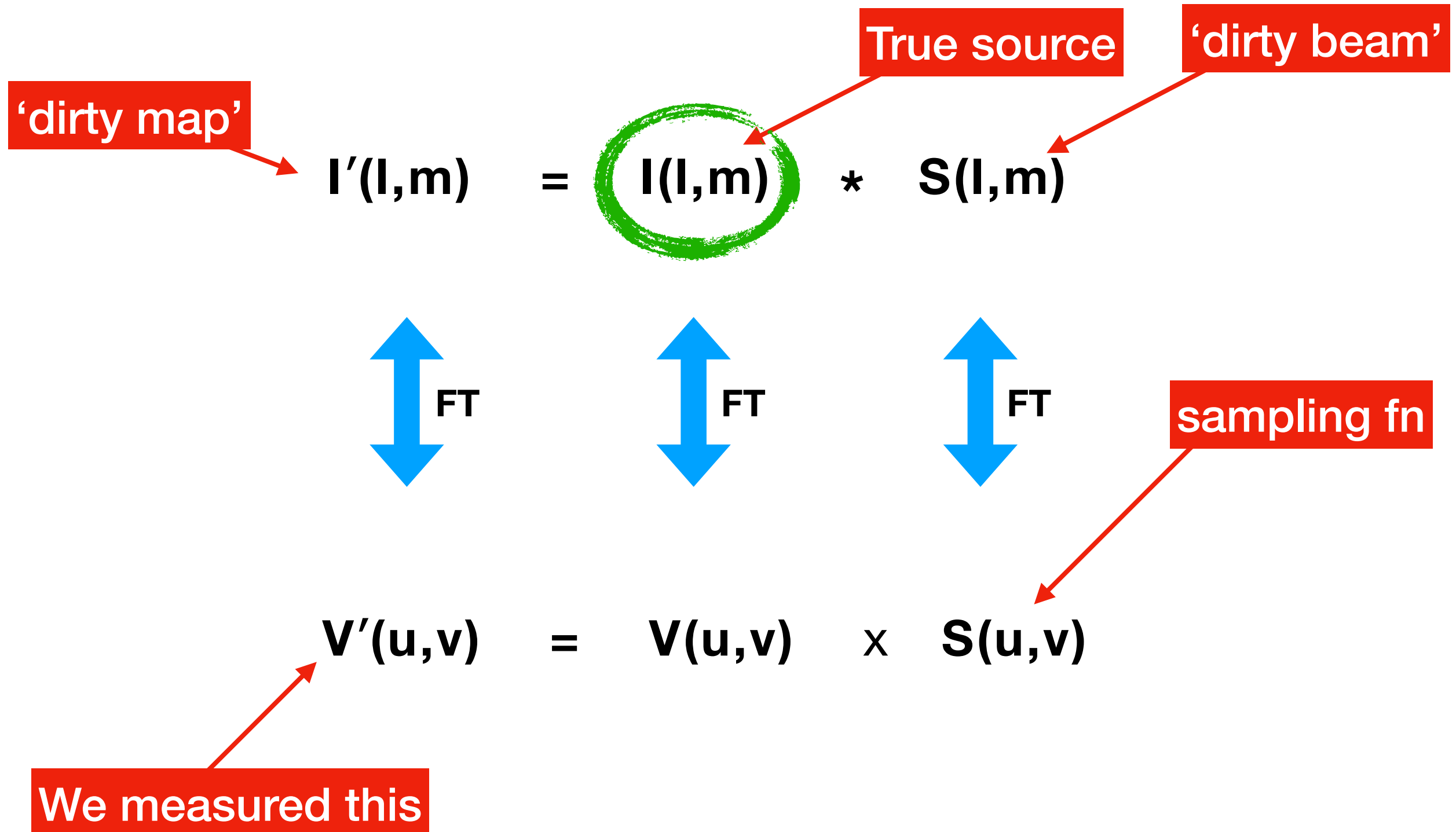


Refining the amplitude corrections

J1640+3946 (phase cal)

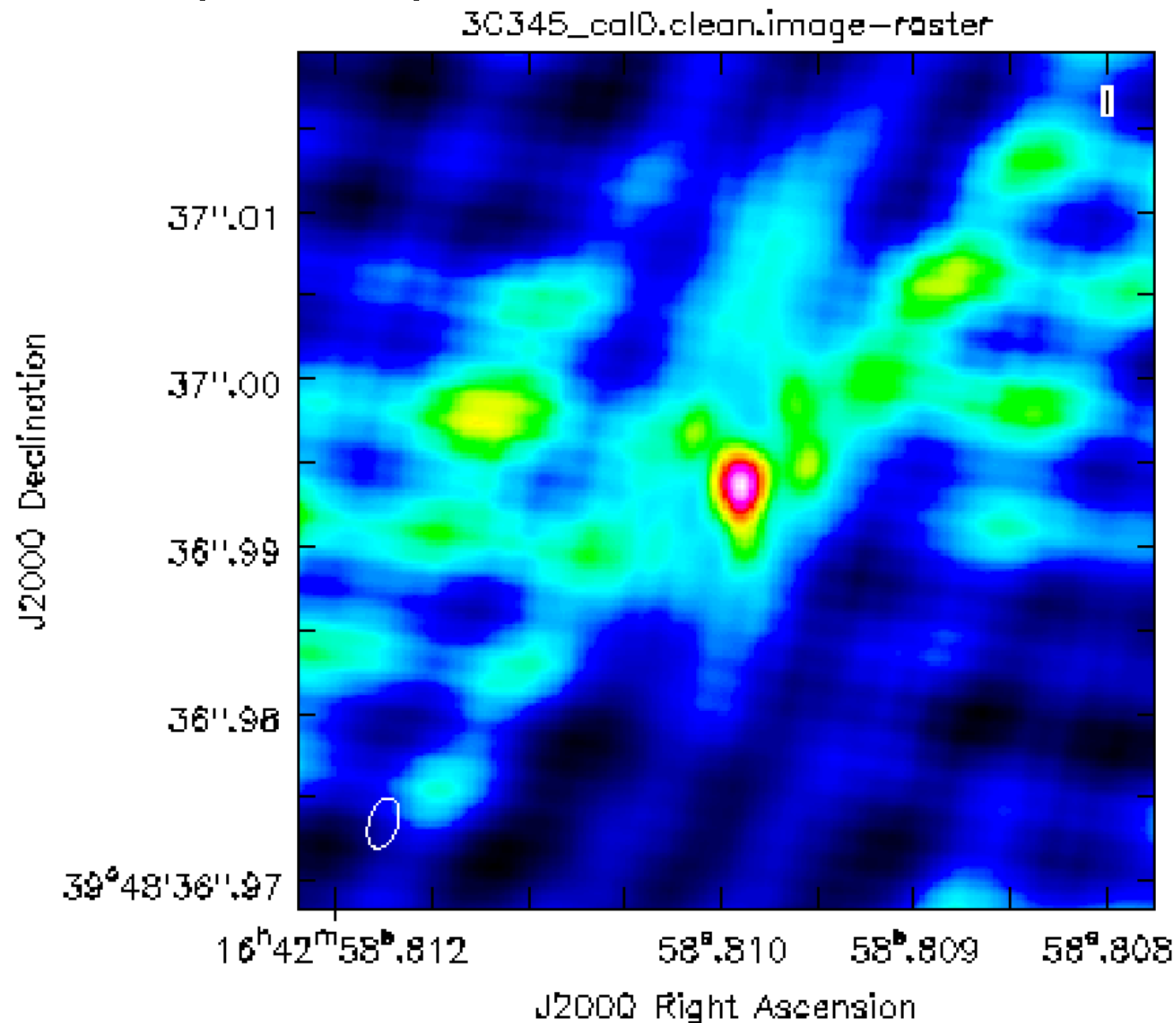


Making images

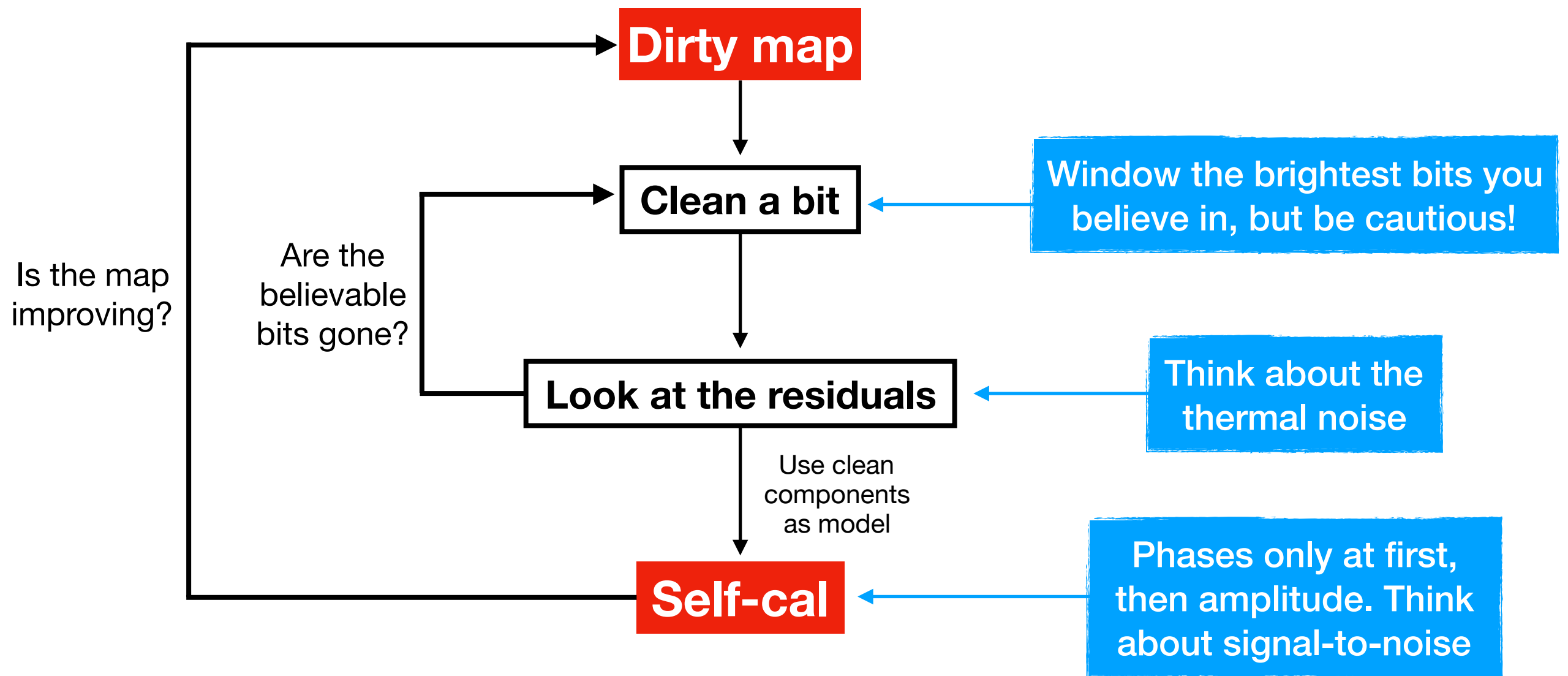


Making images with CLEAN

3C345 (no selfcal)

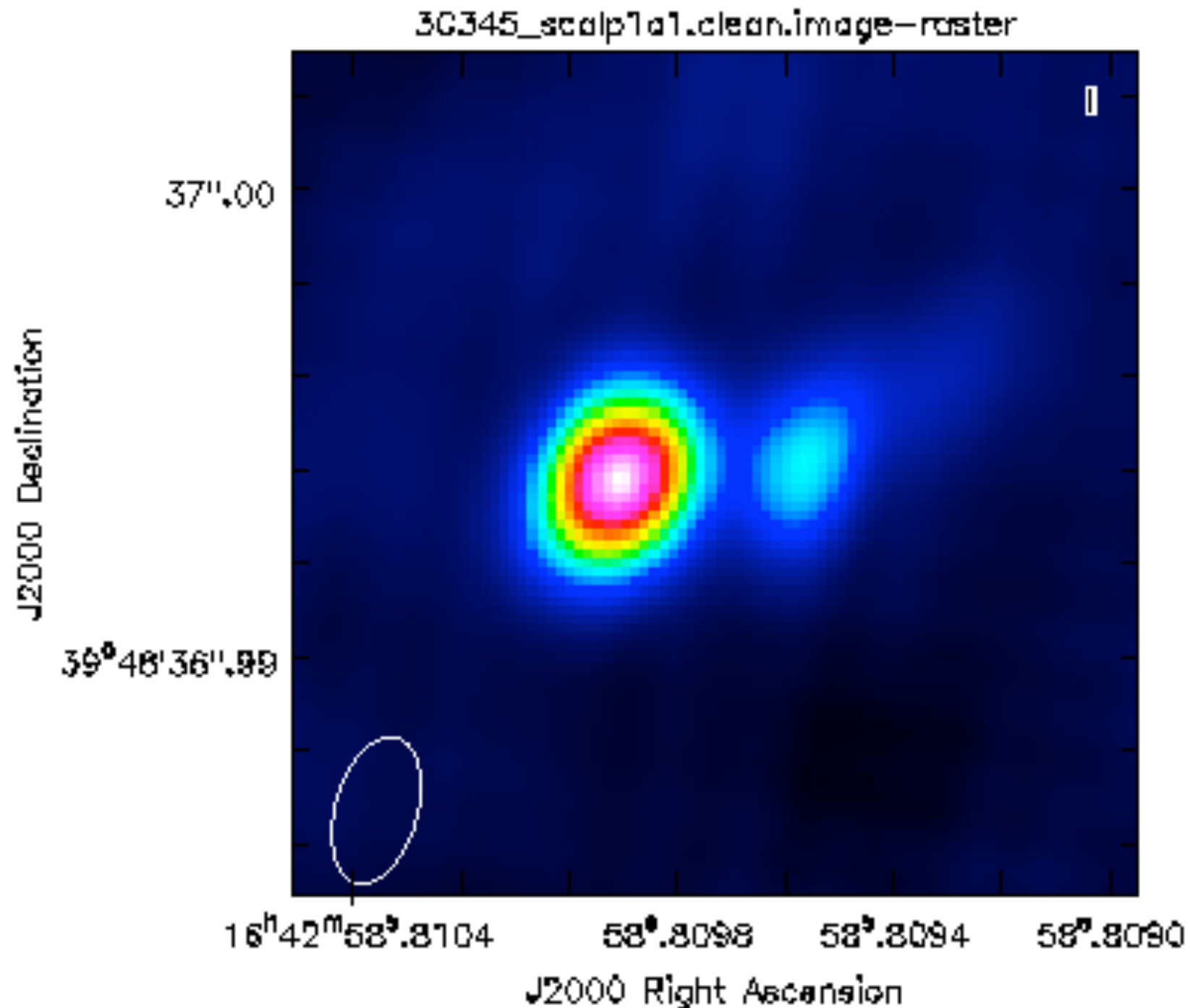


CLEAN & self-calibration



CLEAN & self-calibration

3C345 (after selfcal)



Next week

- Recognising RFI and flagging
- **Advanced imaging of radio galaxy 3C277.1**
- **Calibrating and imaging spectral line data**
- Martin's science talk
- **Identifying errors in your data**
- The life cycle of a project
- Fringe fitting
- Proposals, projects and academia