ATCA 12mm System

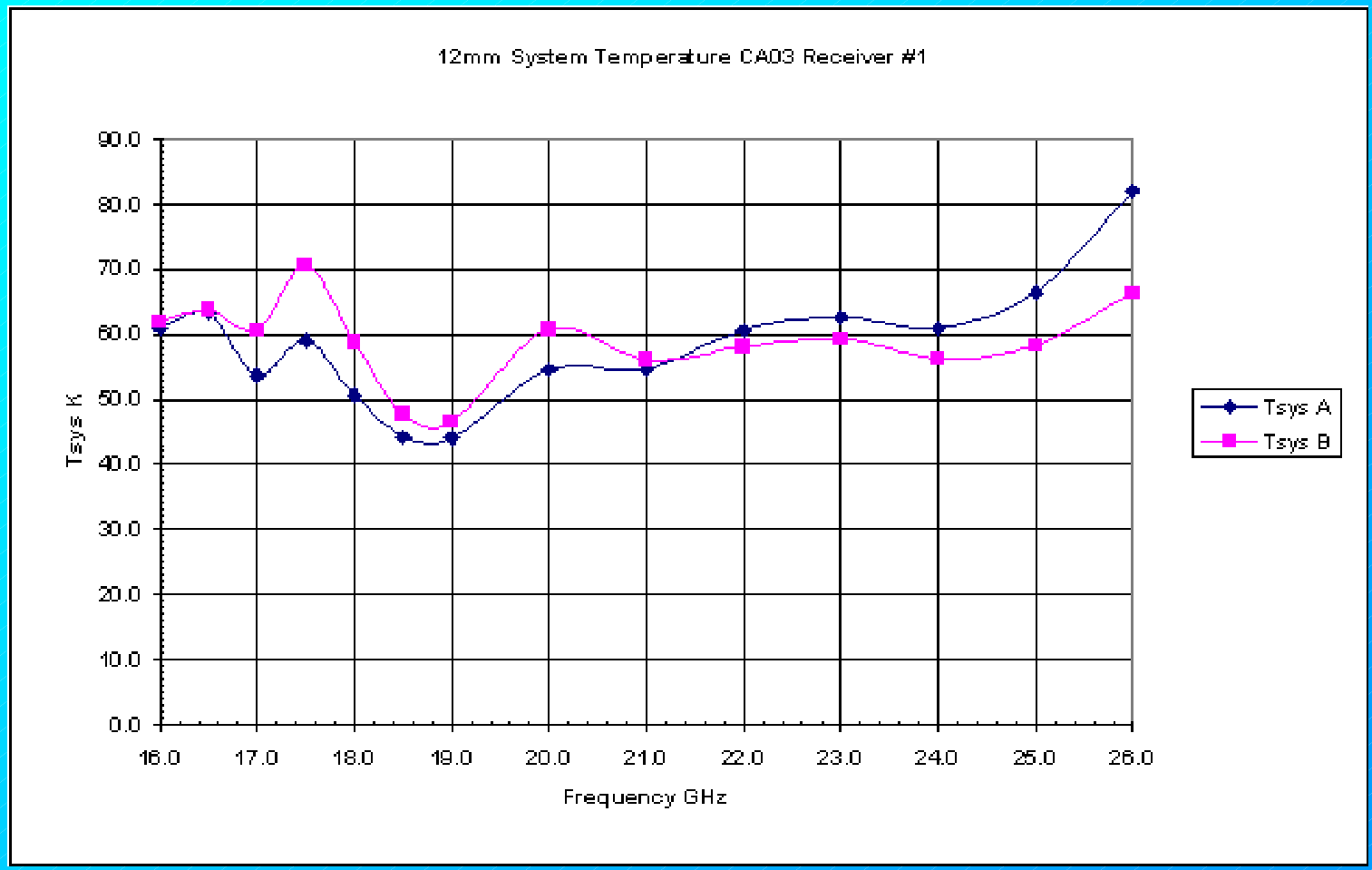
12mm systems currently installed on CA02, CA03 and CA04

Available frequency ranges 16.1-18.9 GHz and 20.1-22.5 GHz

Requires module swap to change bands

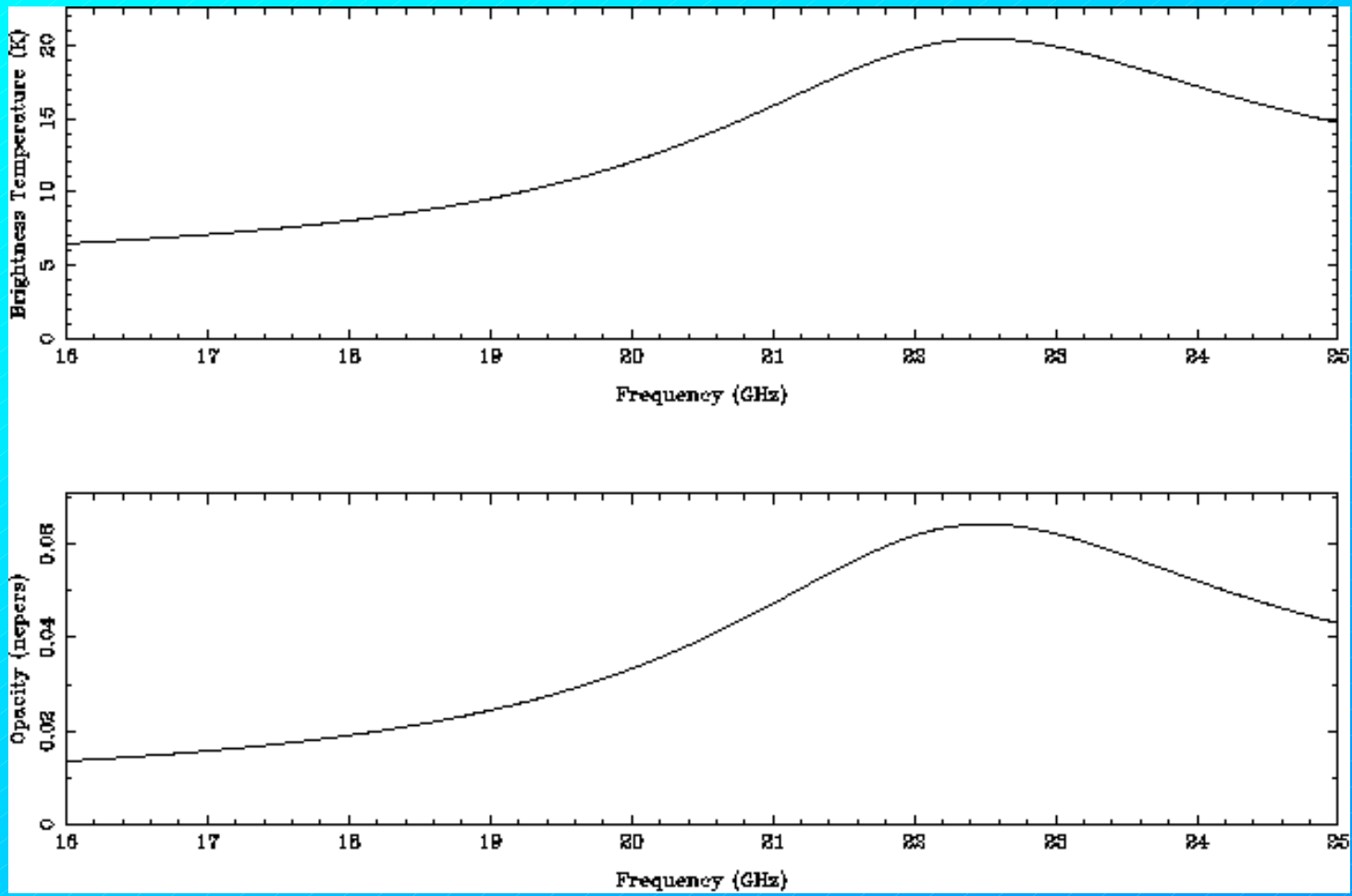
Measured System Temperature

Polarisations A and B on CA03 at zenith



Atmospheric antenna temperature and opacity

(for good conditions at Narrabri: clear, humidity 20%)



MIRIAD task: **OPPLT**

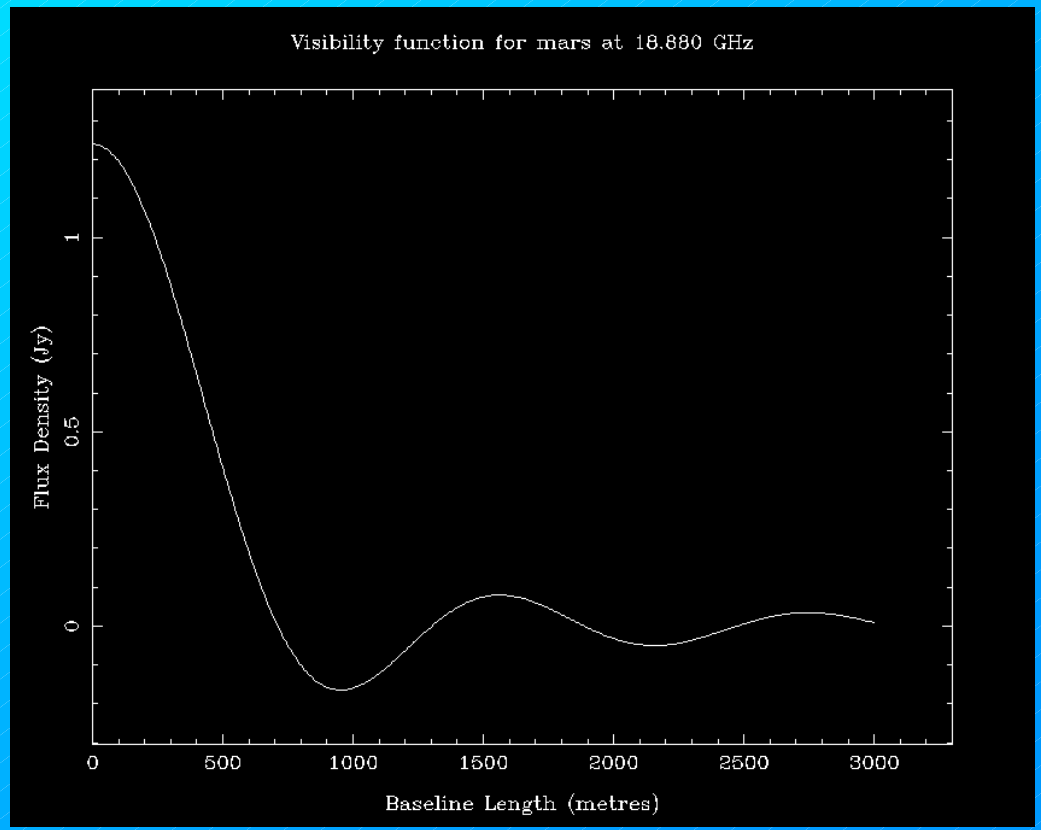
Calibration

Phase:

- ~2000 sources known with S_{20} > 400 mJy. More from WB survey.
- Most vary in flux density, some resolved on long baselines.

Amplitude:

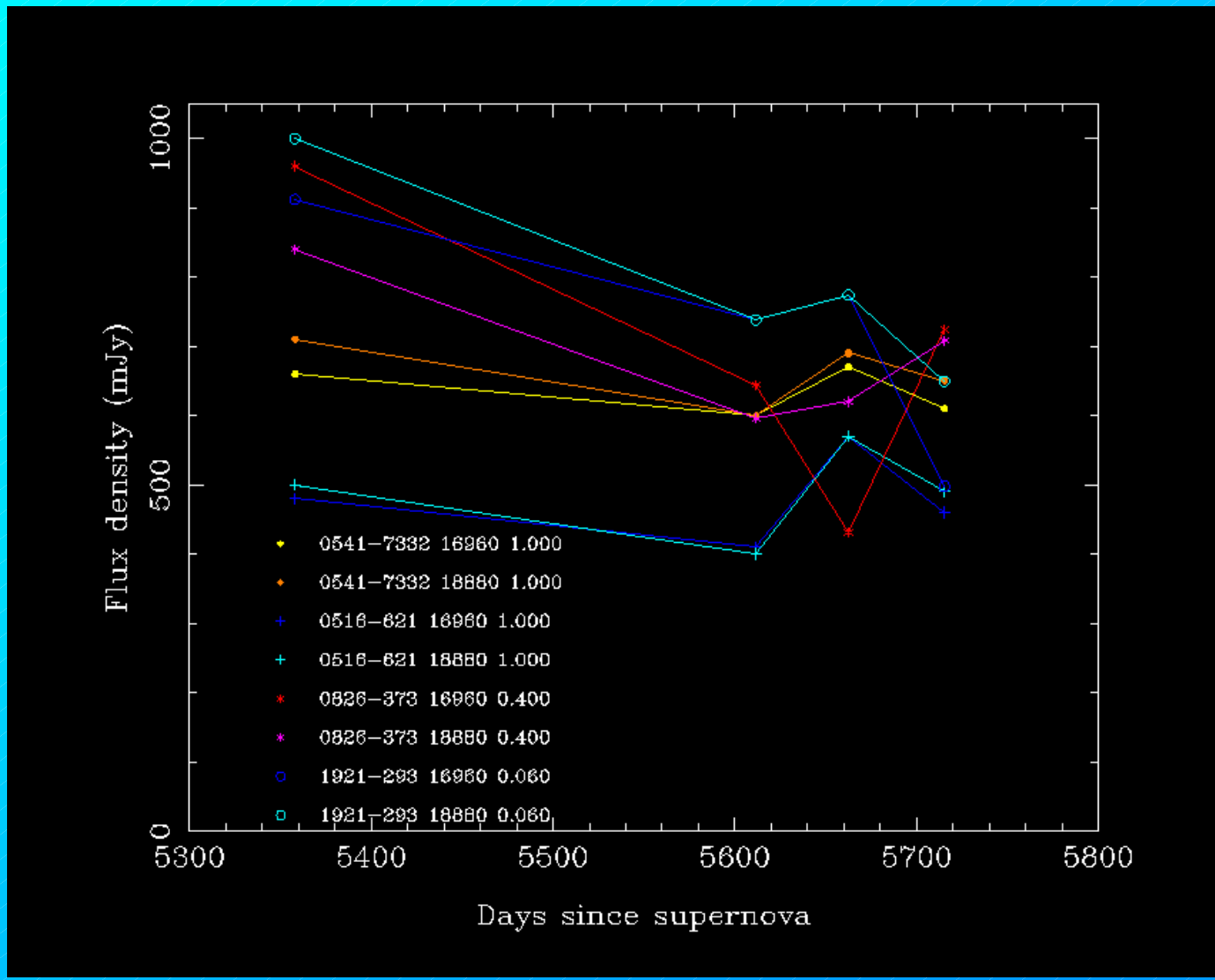
- No unresolved and stable sources known
- Most reliable calibration from Mars.
- MIRIAD tasks **PLPLOT** and **PLBOOT**



Calibrator Flux Densities

Mars used as primary calibrator: 0.3 – 1.5Jy. **PLBOOT** predicts flux density as function of baseline and time.

Uranus also OK (~300 mJy and ~2 arc sec) – but gives flux scale 40% lower!



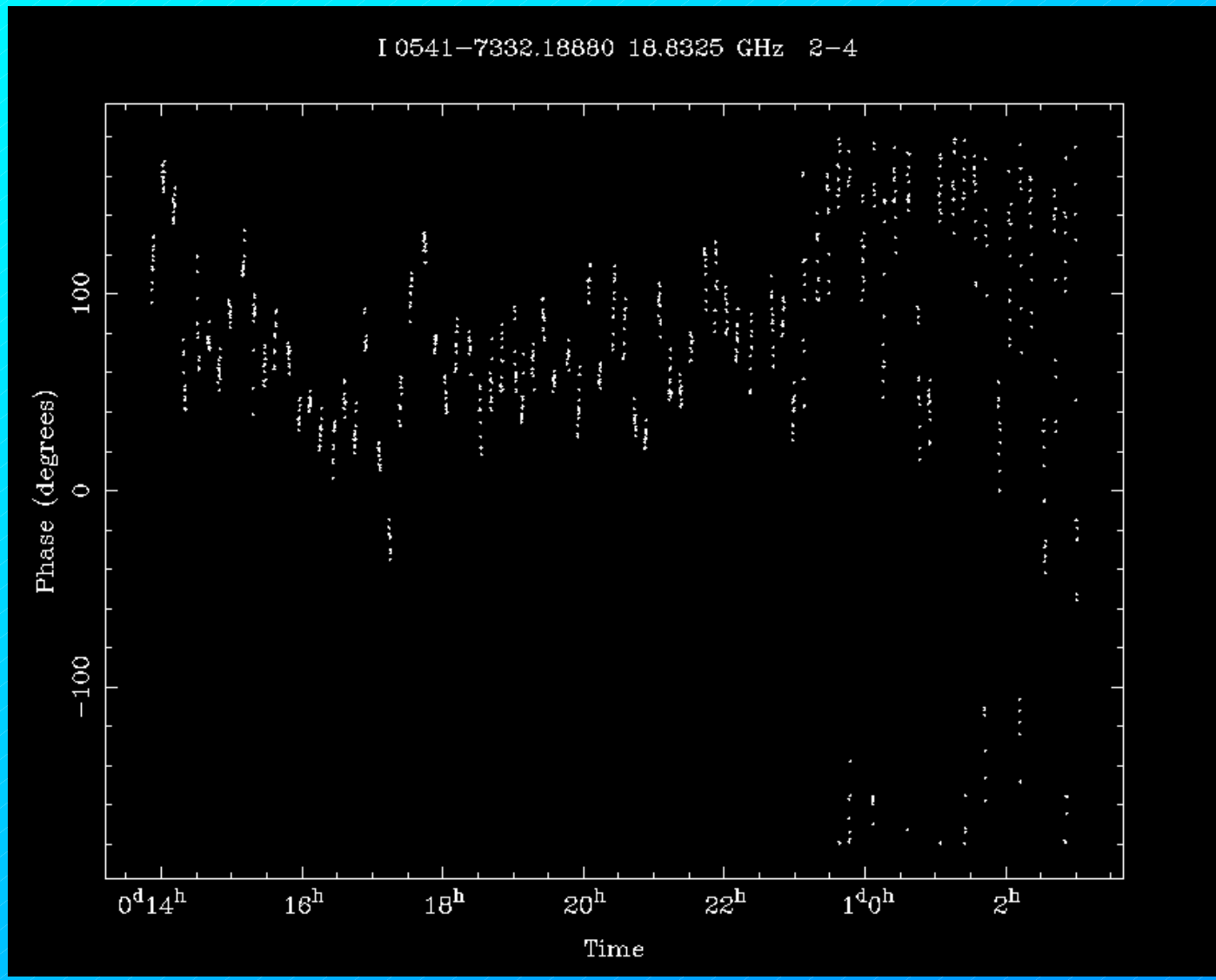
12mm Phase Stability

18.88 GHz

0541-7332 (0.7 Jy)

1990m baseline
(125 kλ)

Not Bad!



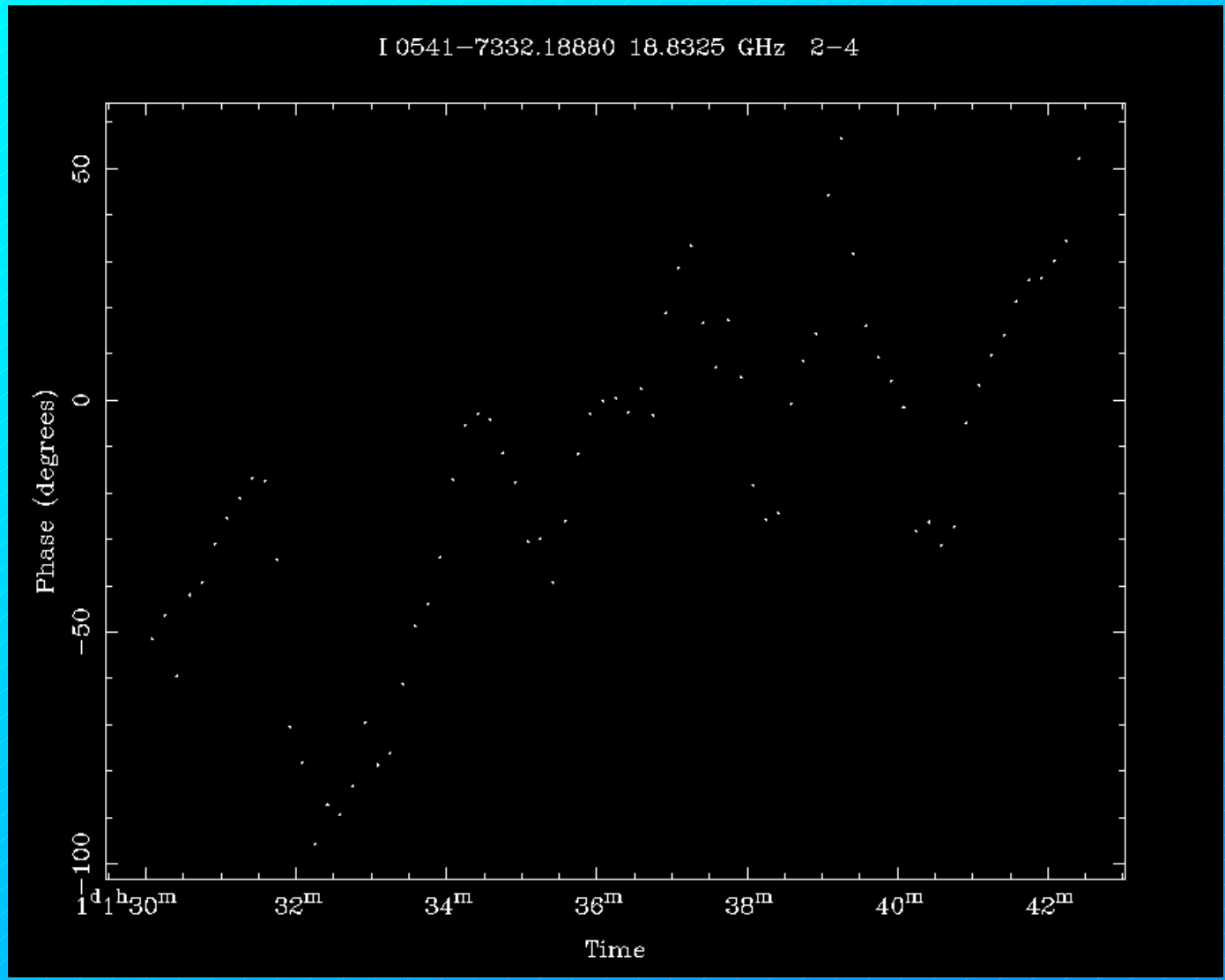
12mm Phase Stability

18.88 GHz

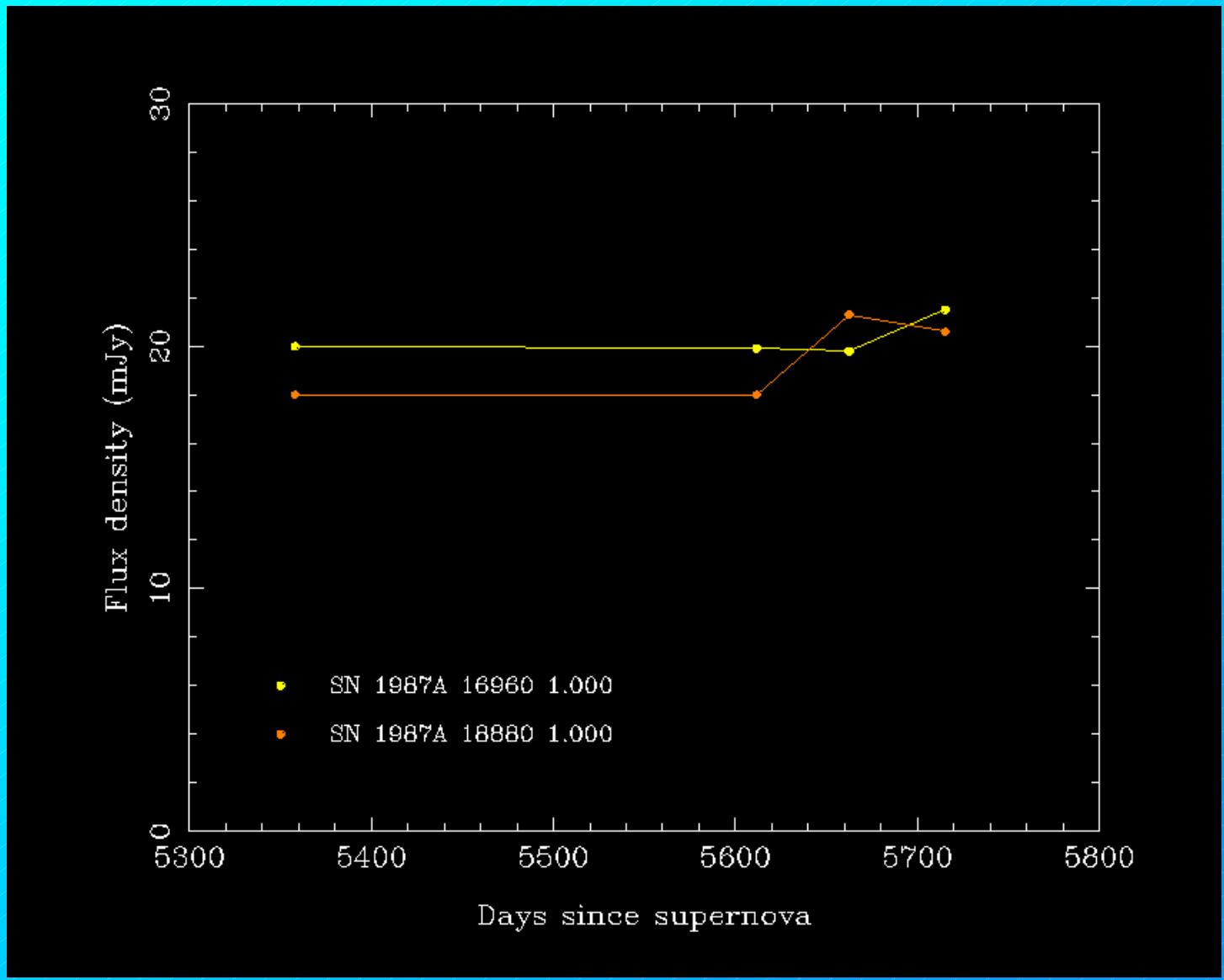
0541-7332 (0.7 Jy)

560m baseline
(35 kλ)

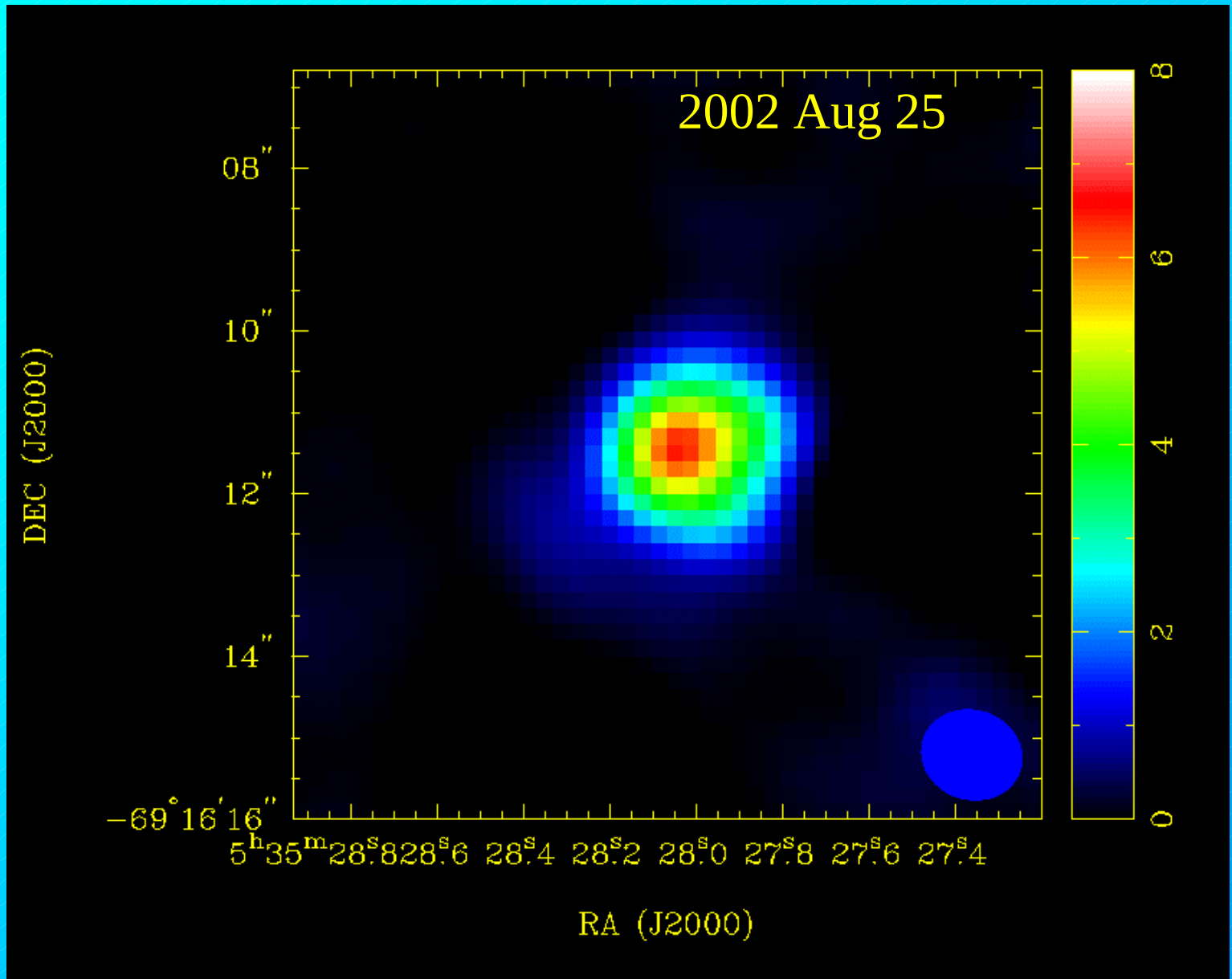
Bad!



SN 1987A at 12mm



SN 1987A at 12mm (2km baseline)



12mm Systems: Present

Final systems under construction

Future

- **1 May 2003 – Final systems installed on antennas 1, 5 and 6.**
- **1 June 2003 – Systems on antennas 2, 3 and 4 updated.**

6 antennas, 6 km baseline

Tunable over 16 – 26 GHz