CS-1 developments: 2 - 9 May 2007

1) **General**

Menno Norden

report

2) **Rollout status**

HBA installation activities still ongoing

Outstanding/new 'technical' commissioning issues:

3) Stations

- 200 MHz mode problems: no progress

- clock issues: meeting last week

- 'autocorrelation' dips in LBA/160 data (or CEP problem ?)

- antenna malfunctioning (ANTENNA CS016, dipole 8, X)

- Y-polarization RFI problem at low frequencies

- 8ch-periodicity in RFI signals at low frequencies (intermodulation?)

4) CEP (SAS/MAC/OLAP)

- storage nodes crashes !

STATION or CEP

- delay error ! (large phase gradient across subband; see later)

Progress reports on observations and data analysis

5) New observations

- weekend 4-6 may --> 20h good data on 4/5 may (L2113)

- second 24h crashed

6) Calibration:

- Status BBS processing: see Pandey presentation

7) Imaging

- positions issue still not 100% laid to rest

8) Noise / RFI analysis

- peculiar RFI patterns (8ch periodicity and Y-polarization) needs to be taken up with RFI team

Progress reports on modeling and simulation activities

Ronald Nijboer overview at the end of the meeting:

§ **Beam modeling**

§ **Ionospheric modeling:**

- Maaijke Mevius to report

11) Source models (LSM, GSM, fluxscale)

12) Processing issues (convergence, speed)

13) Data quality & DR

14) RFI and intermodulation

Observing schedule and planning (9 - 16 May 2007)

SAS/MAC control and queue scheduling needed asap --> only weekend observations

Currently waiting in queue:

'Astronomical' commisioning:

- Pulsars with HBA/160 to allow high frequencies up to 230 MHz (Stappers)

- Transient area (Law, Miller-Jones) : 1x12h done (L2113)
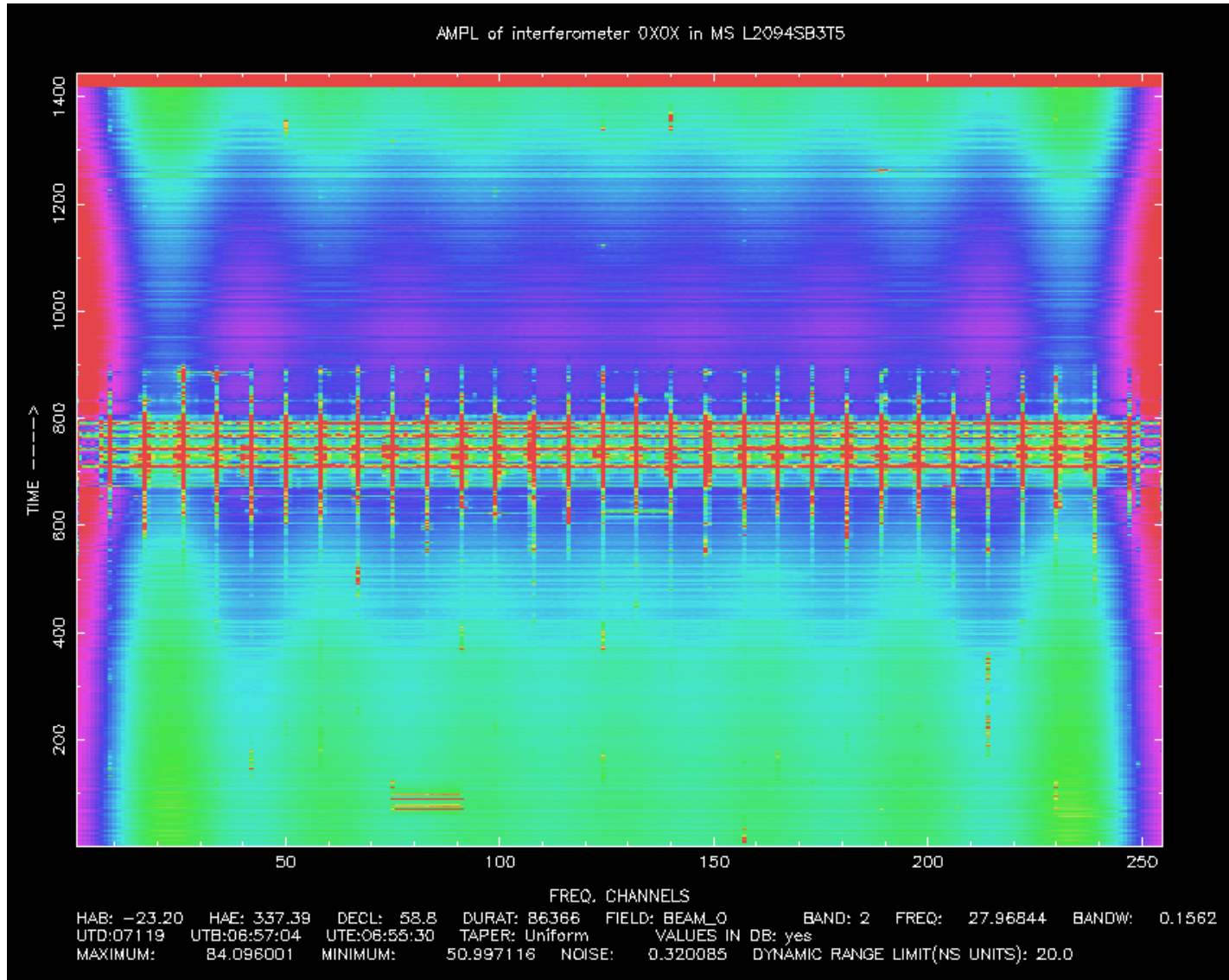

'Technical' commissioning HBA:

- HBA dipole/tile/station tests

- HBA beamformer studies

- HBA grating lobe issues

- LBA 160/200 MHz 'dip' tests

RFI at low frequencies
## 28.0 MHz   0X0X   29-Apr-07, L2094, 24h

AMPL of interferometer 0X0X in MS L2094SB3T5

HAB: −23.20   HAE: 337.39   DECL: 58.8   DURAT: 86366   FIELD: BEAM_0   BAND: 2   FREQ: 27.96844   BANDW: 0.1562
UTD:07119   UTB:06:57:04   UTE:06:55:30   TAPER: Uniform   VALUES IN DB: yes
MAXIMUM: 84.096001   MINIMUM: 50.997116   NOISE: 0.320085   DYNAMIC RANGE LIMIT(NS UNITS): 20.0

RFI at low frequencies
28.1 MHz   0Y0Y   29-Apr-07, L2094, 24h
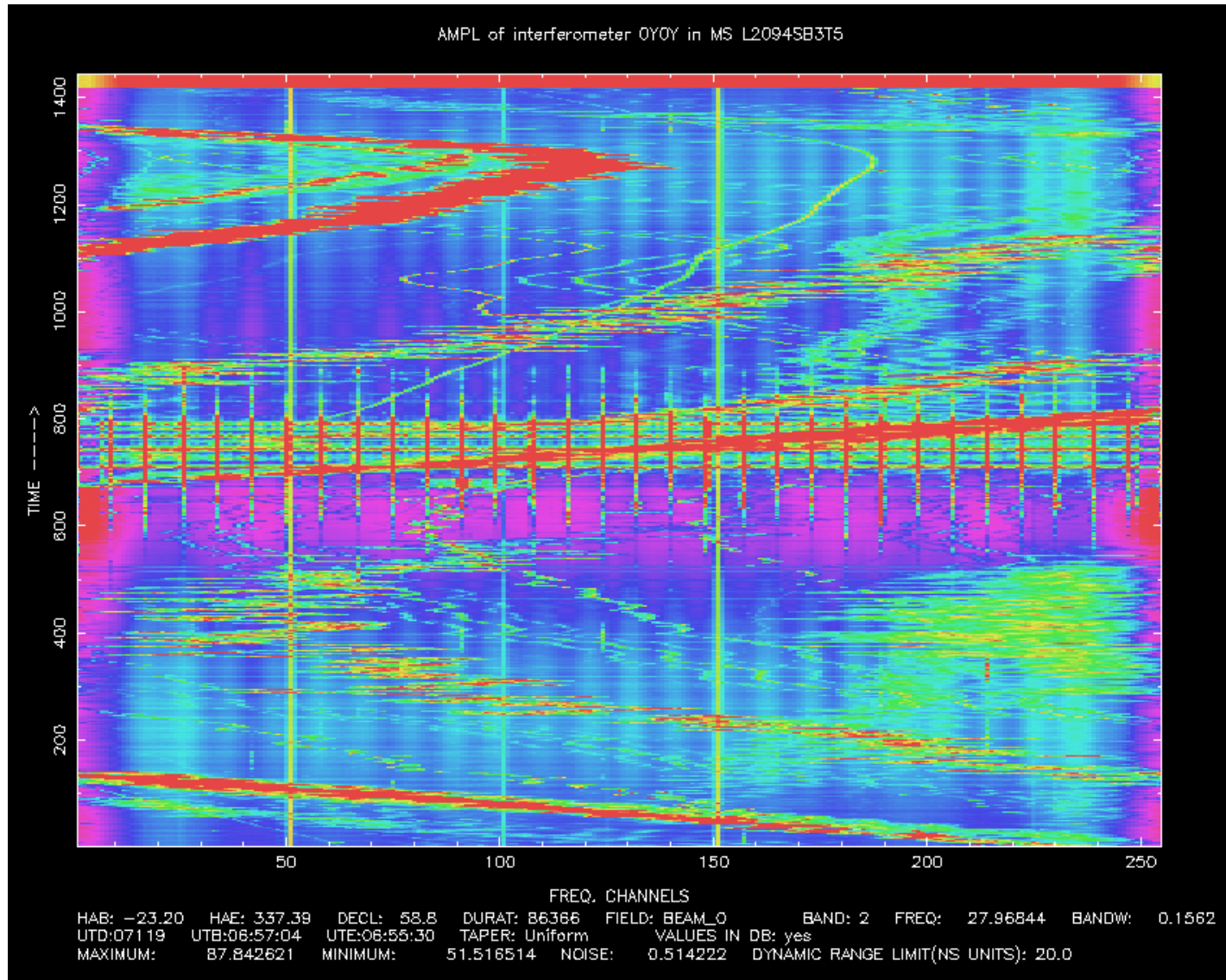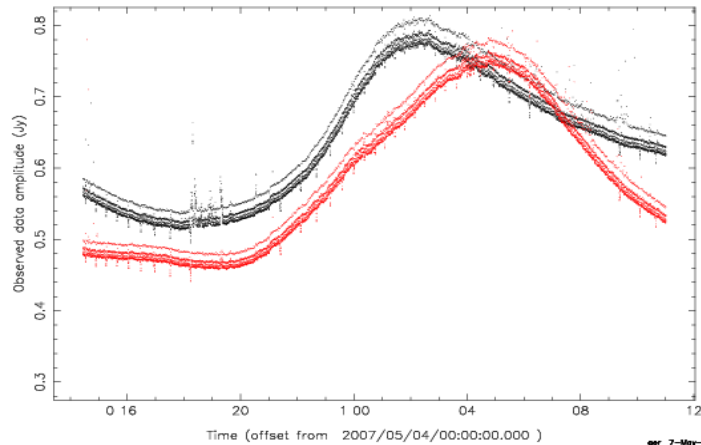
CS016 autocorrelations
4-May-07, L2113, 20h   (ANT15X dead)
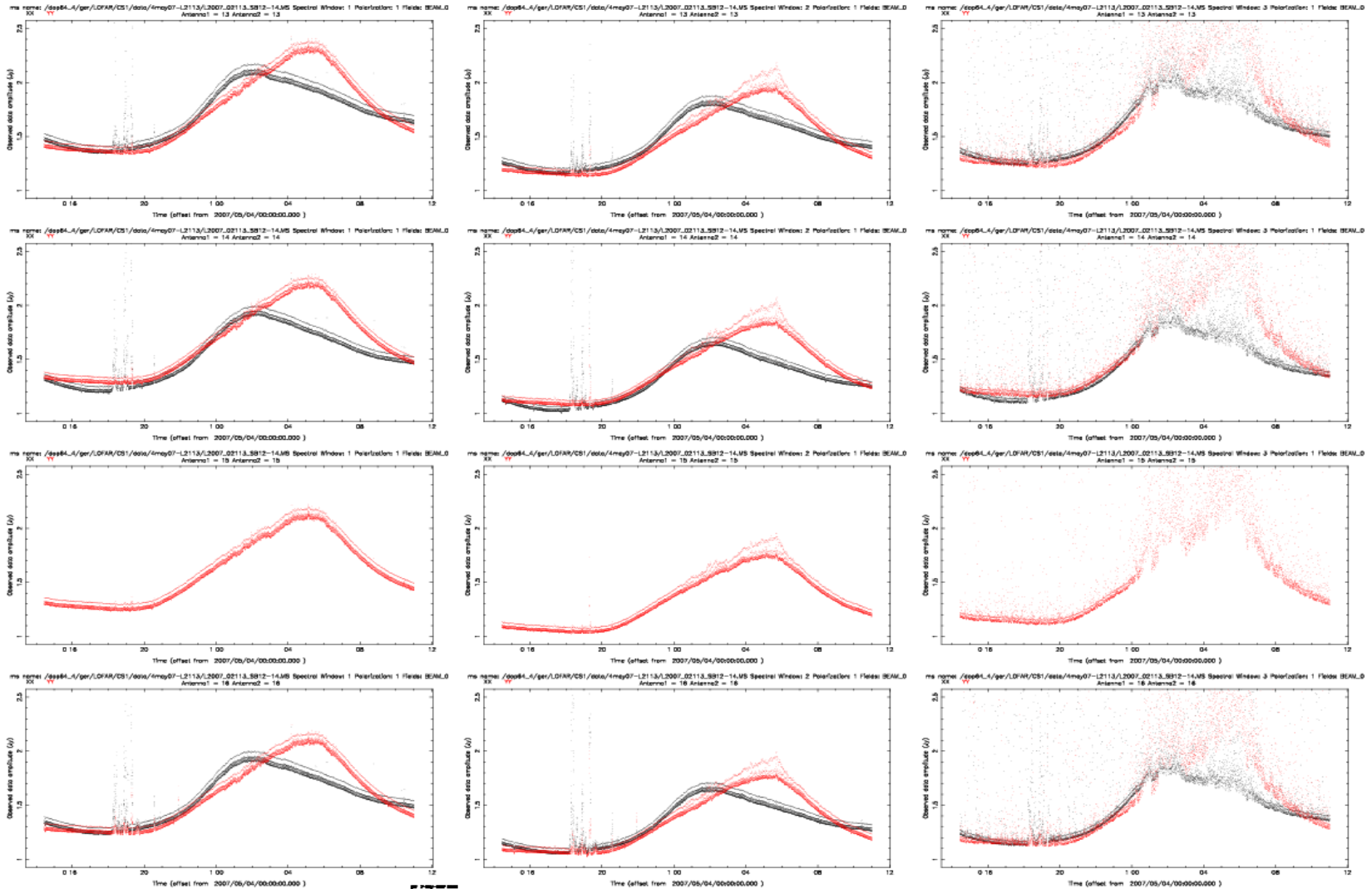
CS001 autocorrelation 'dips'
49 MHz   4-May-07, L2113
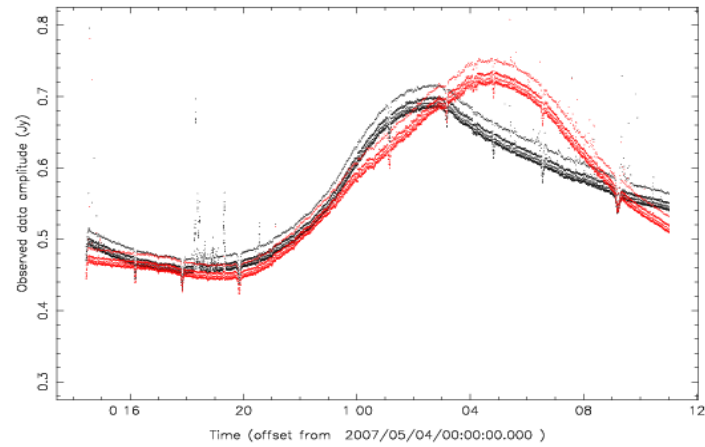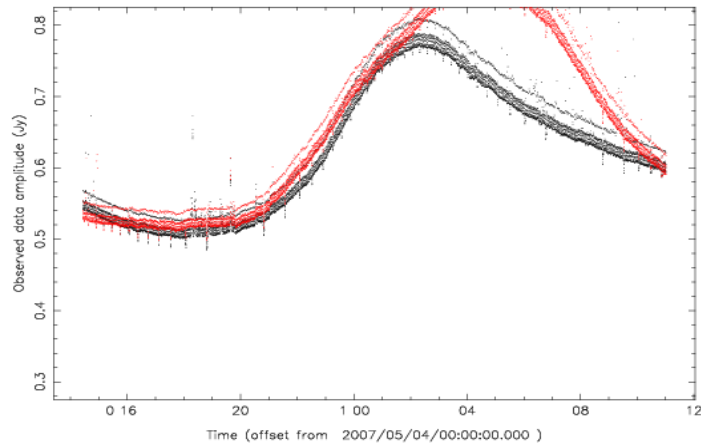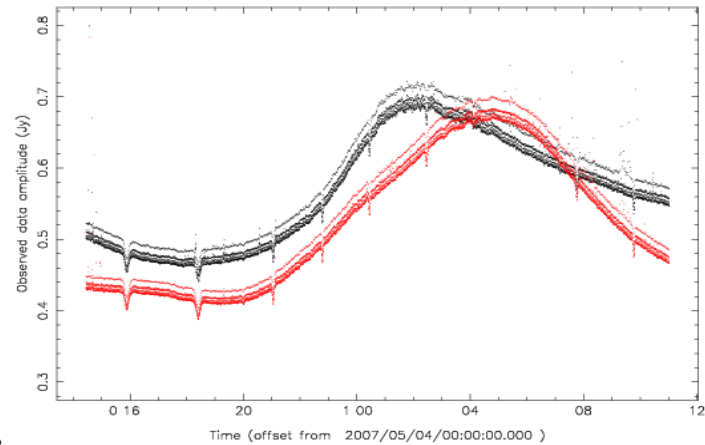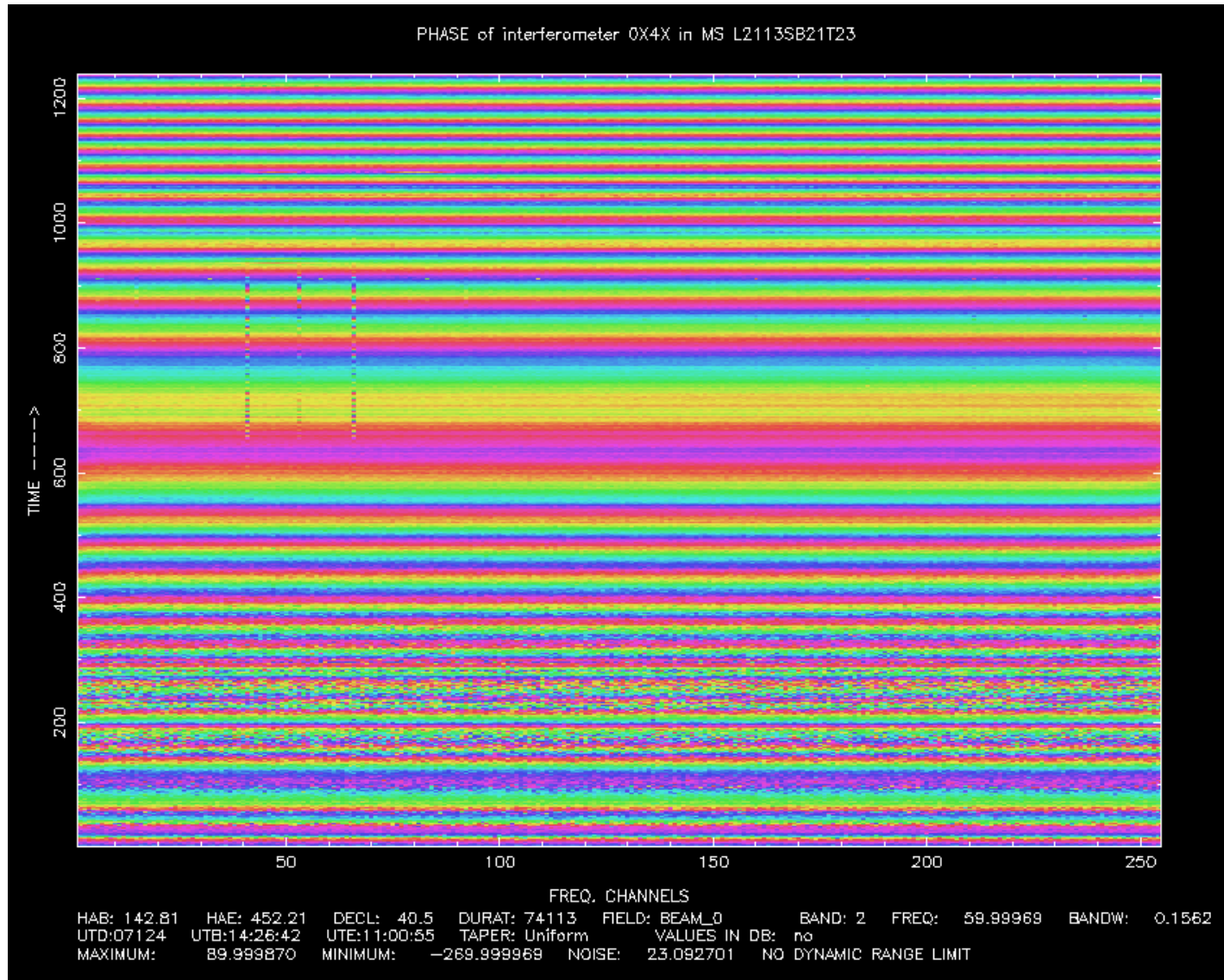
Frequency dependent phase--> timedelay error
49.2 MHz ifr 0x-13x   4-May-07, L2113, 20h
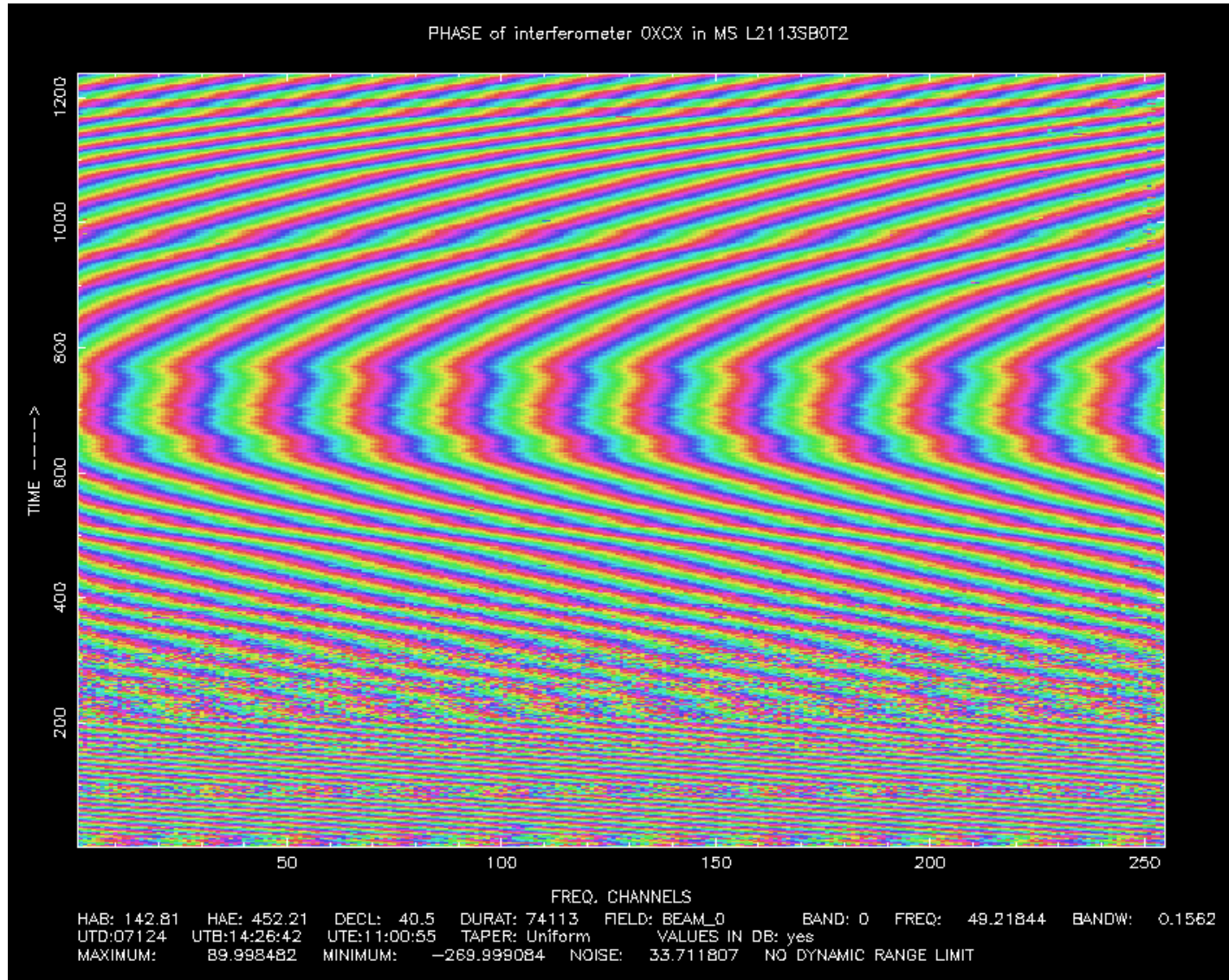
Frequency dependent phase--> timedelay error
60.0 MHz ifr 0x-13x   4-May-07, L2113, 20h

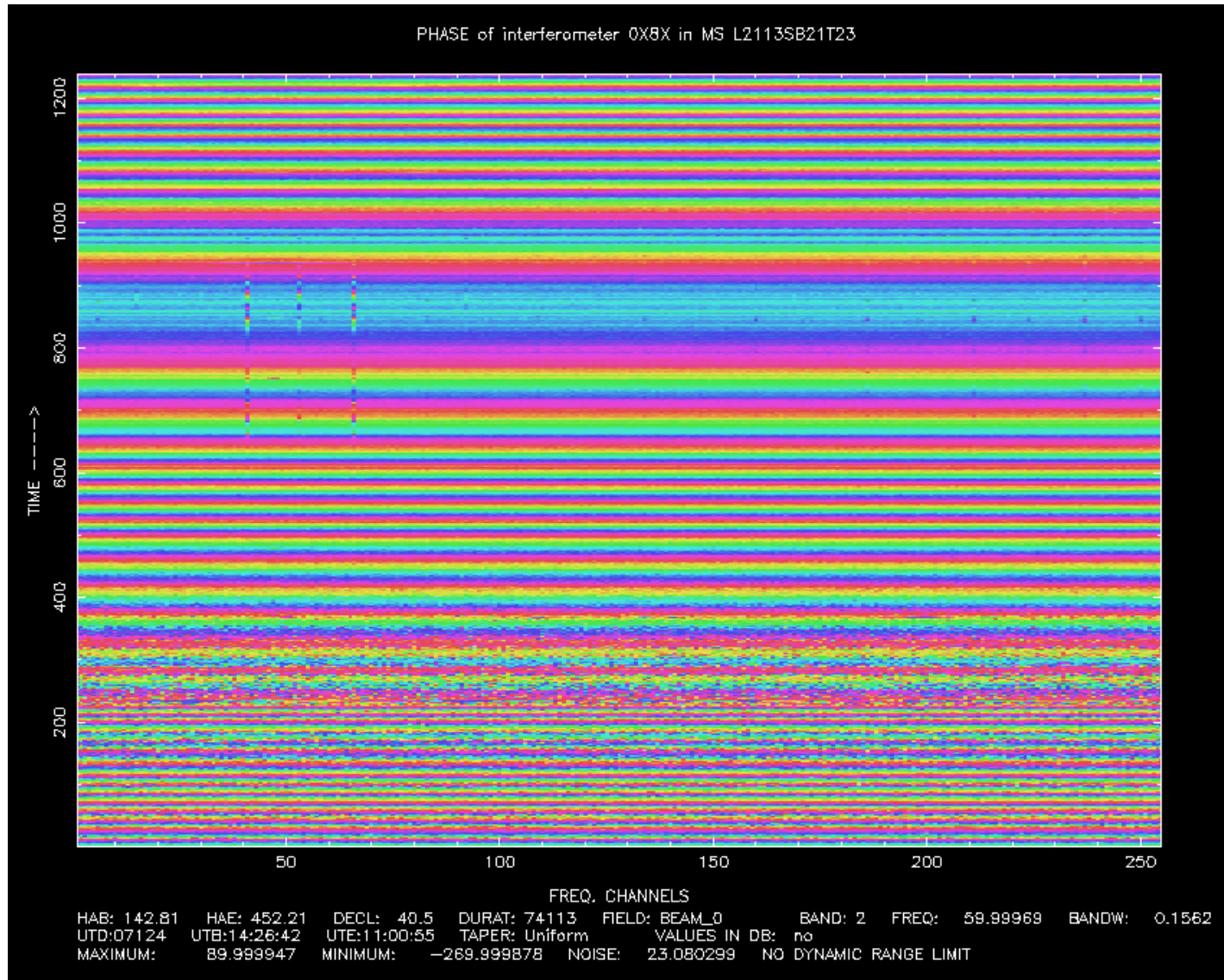PHASE of interferometer OXCX in MS L2113SB21T23
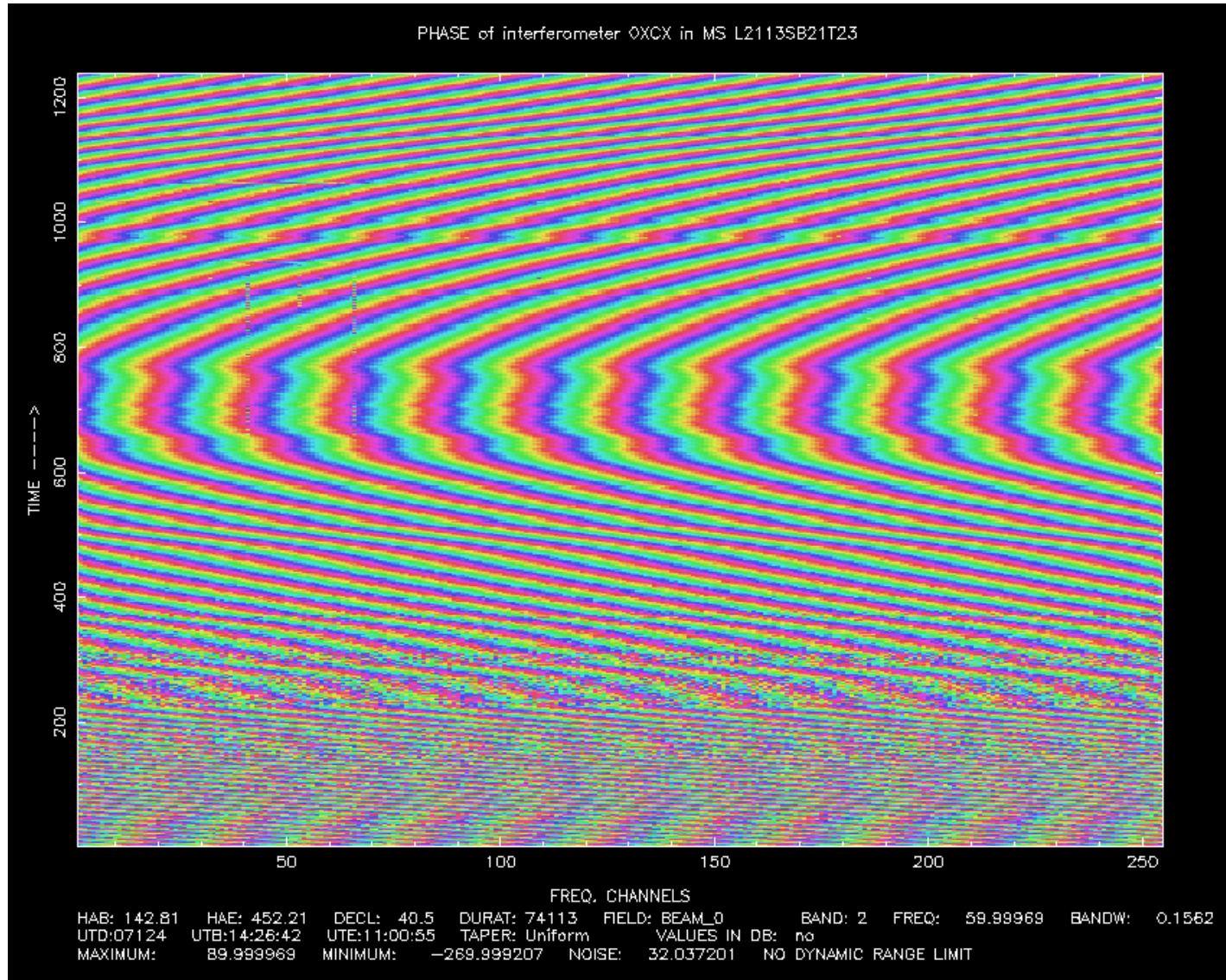
Frequency dependent phase--> timedelay error
60 MHz ifr 0x-4x   4-May-07, L2113, 20h

Frequency dependent phase--> timedelay error
60 MHz ifr 0x-8x   4-May-07, L2113, 20h

Calculation of timedelay

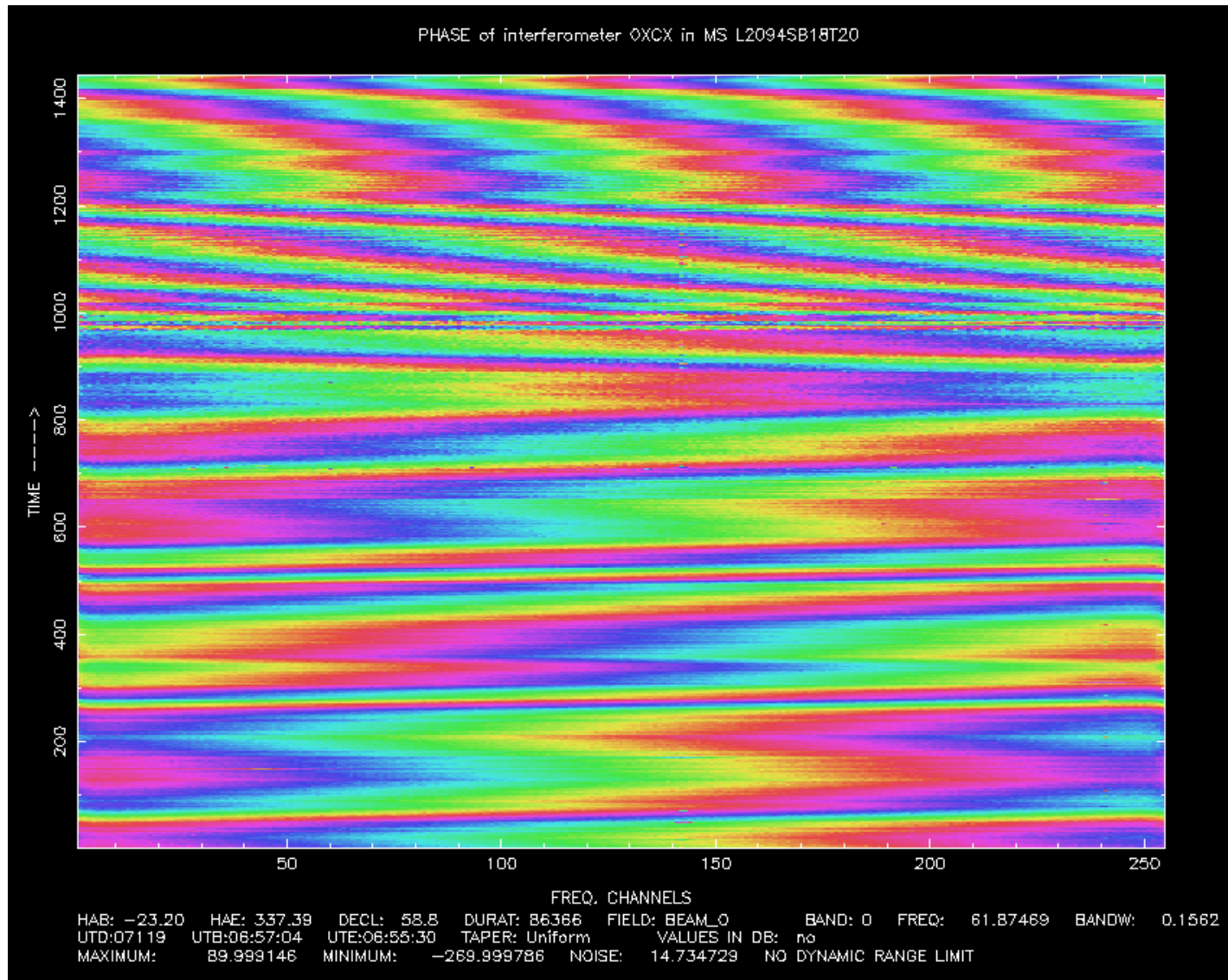About 12 complete phase wraps over a full subband of 0.156 MHz

$$\Delta t \cdot \Delta \nu = 12$$

→ $\Delta t \sim 12 \times 1/156250 = 77 \ \mu s$

(NB: one 'sample' equals $1/156250 = 6.25 \ \mu s$)

Frequency dependent phase--> timedelay error
59 MHz ifr 0x-13x   29-Apr-07, L2094, 24h

Frequency dependent phase--> timedelay error
59 MHz ifr 0x-4x   29-Apr-07, L2094, 24h