Pulsar Busy Week #15

Jason Hessels (ASTRON / UvA)
+LOFAR Pulsar Working Group

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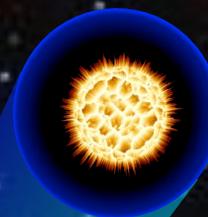
PBW #15: Participants

Anastasia Alexov: offline pipeline, processing
Masaya Kuniyoshi: polarization calibration
Aris Noutsos: polarization pipeline
Charlotte Sobey: polarimetry data analysis
Maciej Serylak: Nançay standalone observations
Evan Keane: Effelsberg standalone observations and M31 search reduction
Aris Karastergiou: Chilbolton standalone observations and overall single station coordination
Vlad Kondratiev: analysis of single-pulse data
Joeri van Leeuwen: analysis of B0943+10 simultaneous XMM + LOFAR data
Jason Hessels: simultaneous LOFAR observations, catalog of low-frequency pulse profile evolution
**Maura Pilia**: pulse profile data reduction
Joris Verbiest: pulsar timing
**Sander ter Veen**: MSSS commensal beam-formed observations

Timing Observations
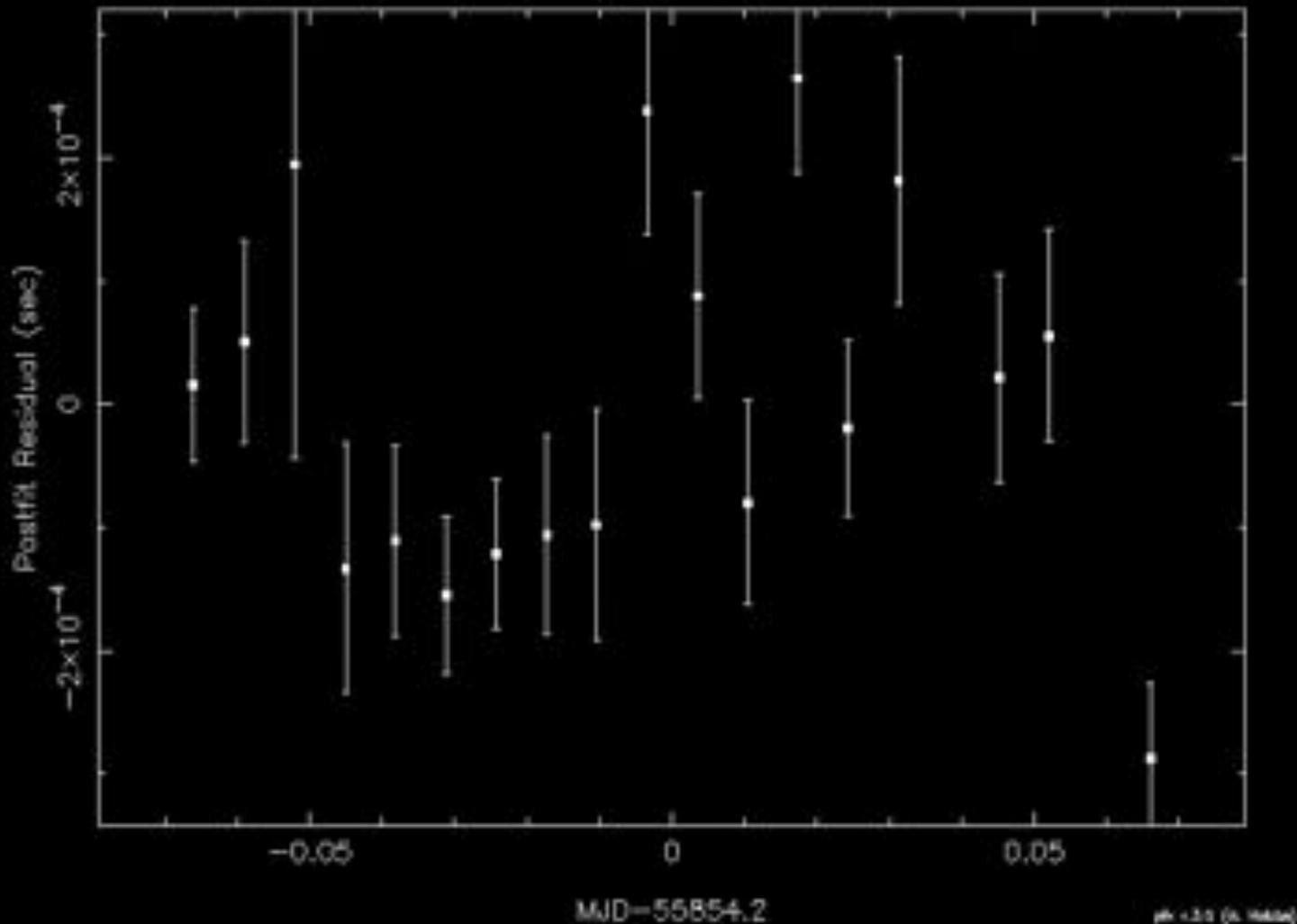
From 20 3-min observations of B0834+06, each spaced by 10 minutes

Credit: Verbiest

Measuring Earth's Ionosphere


PSR B0834+06
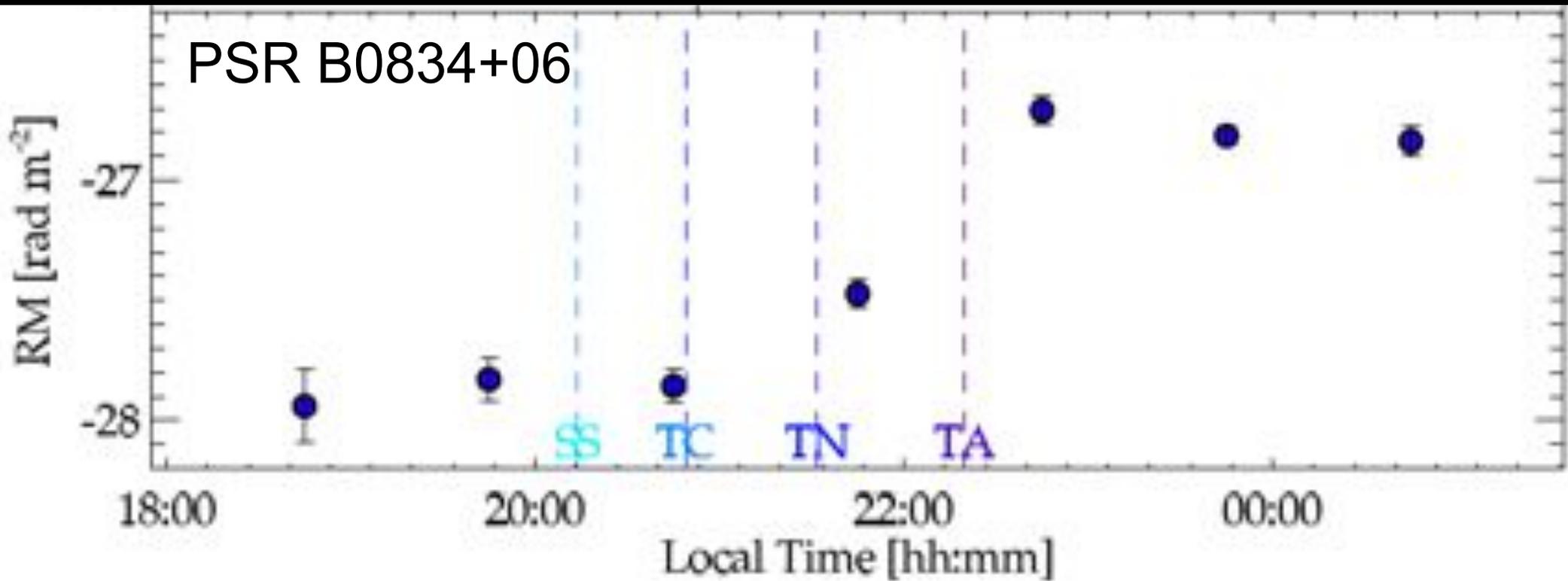
Plan to do for multiple pulsars simultaneously

Credit: Sobey

Measuring Earth's Ionosphere
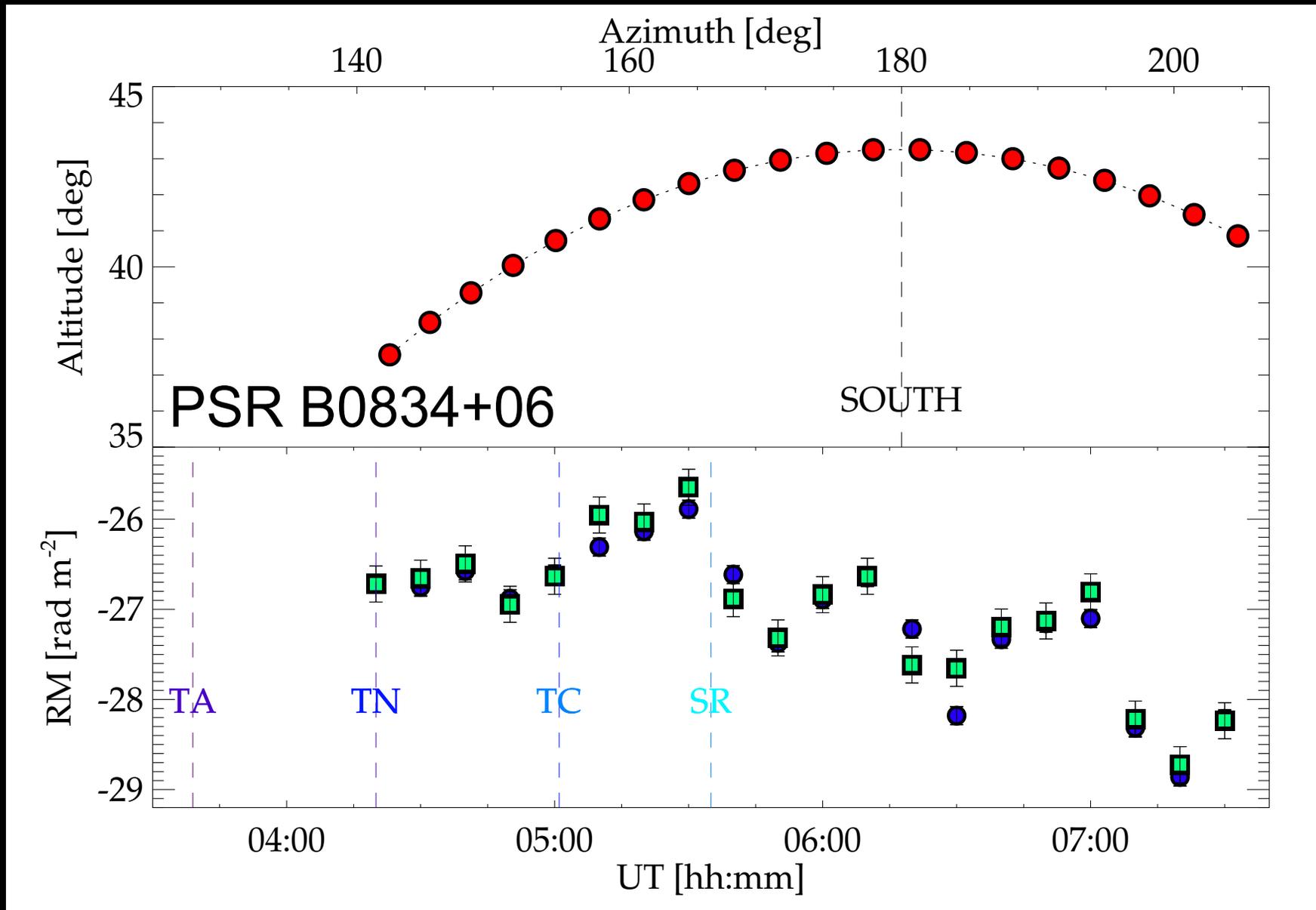
Credit: Sobey

Plan to do for multiple pulsars simultaneously

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Measuring Earth's Ionosphere
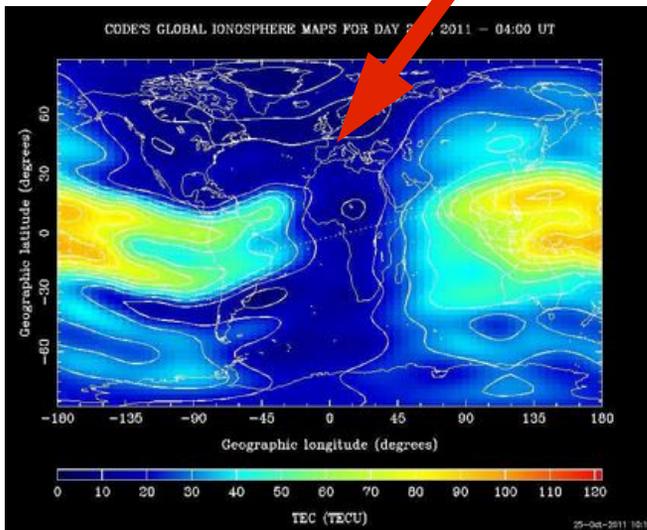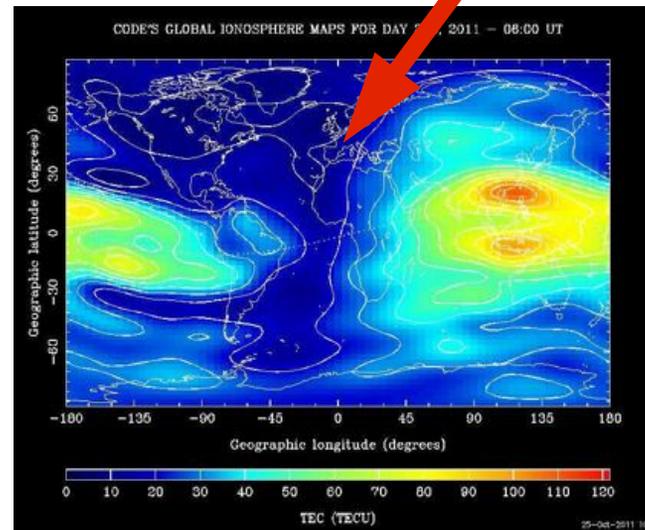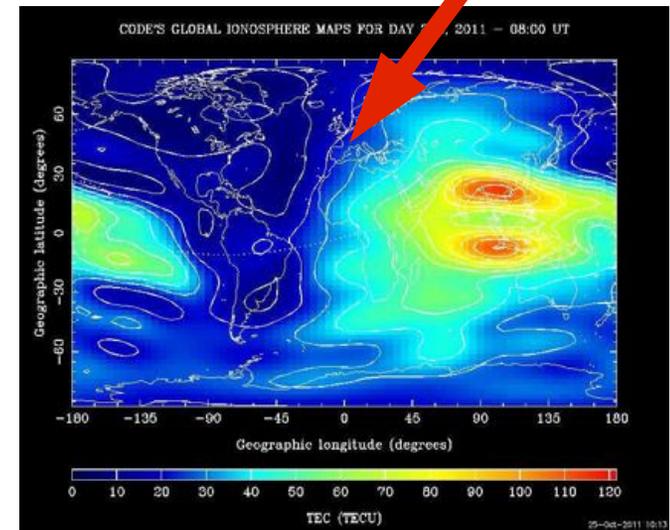
Oct. 20th, 2011

Plan to do for multiple pulsars
simultaneously and for 24hrs

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Low-Frequency Polarimetry
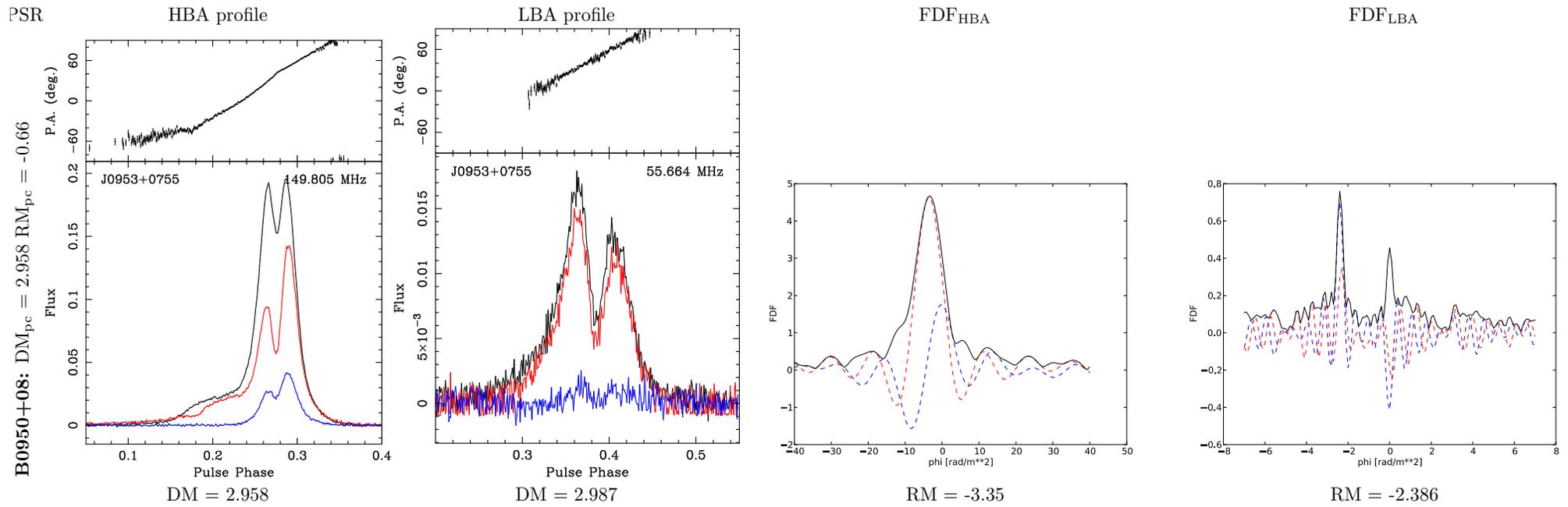
Close to the only pulsar polarimetry at < 100MHz

Credit: Sobey

Polarization Calibration

0329+54 with lumpwcal
(1min observation with DE601, RM=-63, New Jones Matrix zap-150MHz)
昨日の結果との違いはzapの違いだと思われる

Credit: Kuniyoshi

Low-Frequency Pulse Profiles

Credit: Hessels
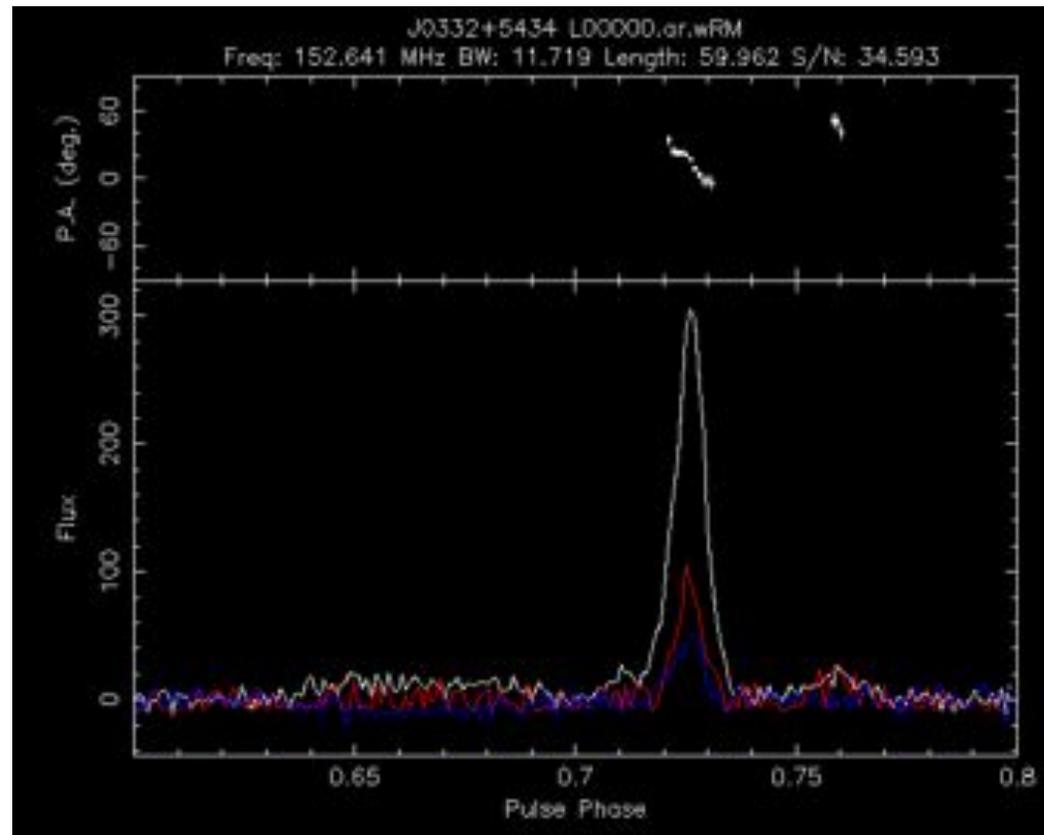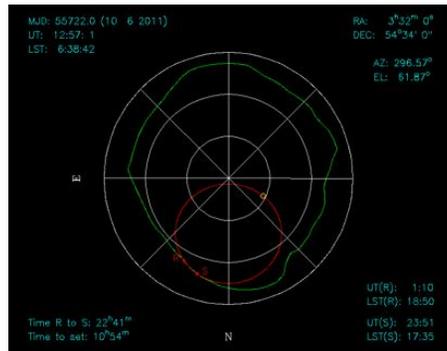
Fitting Pulse Profile Evolution

B0809+74
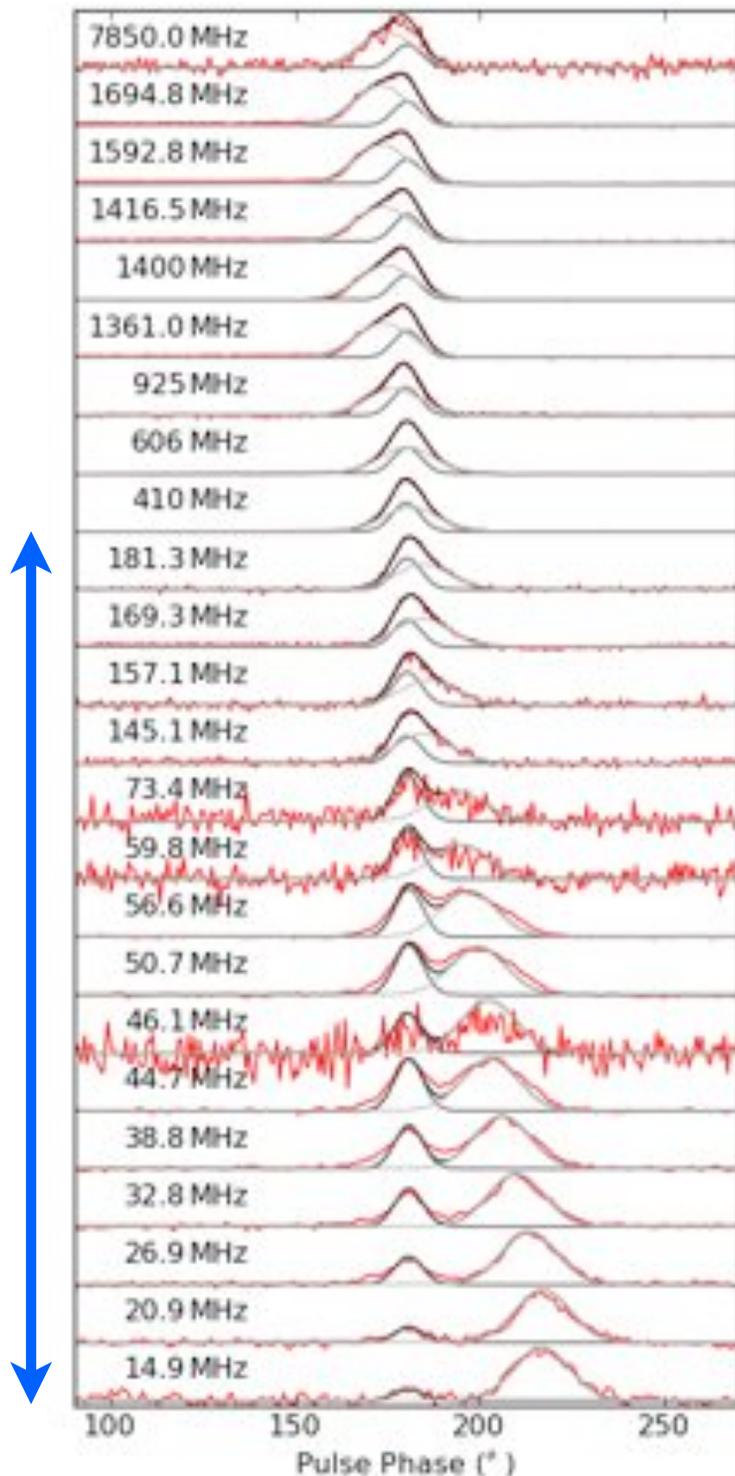
- Two Gaussians with frequency dependent amplitudes, widths, and separation.

- Simultaneous, so no DM variation.

- Nice demonstration of simultaneous observations.

Hassall et al., submitted

LOFAR v1.0: Beam-Formed Modes

Beam-Formed Observation (+ imaging)

1-8 SAPs

Coherent Stokes (+) Incoherent Stokes

1-8 SAPs

1-300 TABs

1, 16, 32, 64, 128, 256 channels per subband

Online coherent dedispersion

I   IQUV   XXYY   I   IQUV

5us - 10ms (or more) time res.
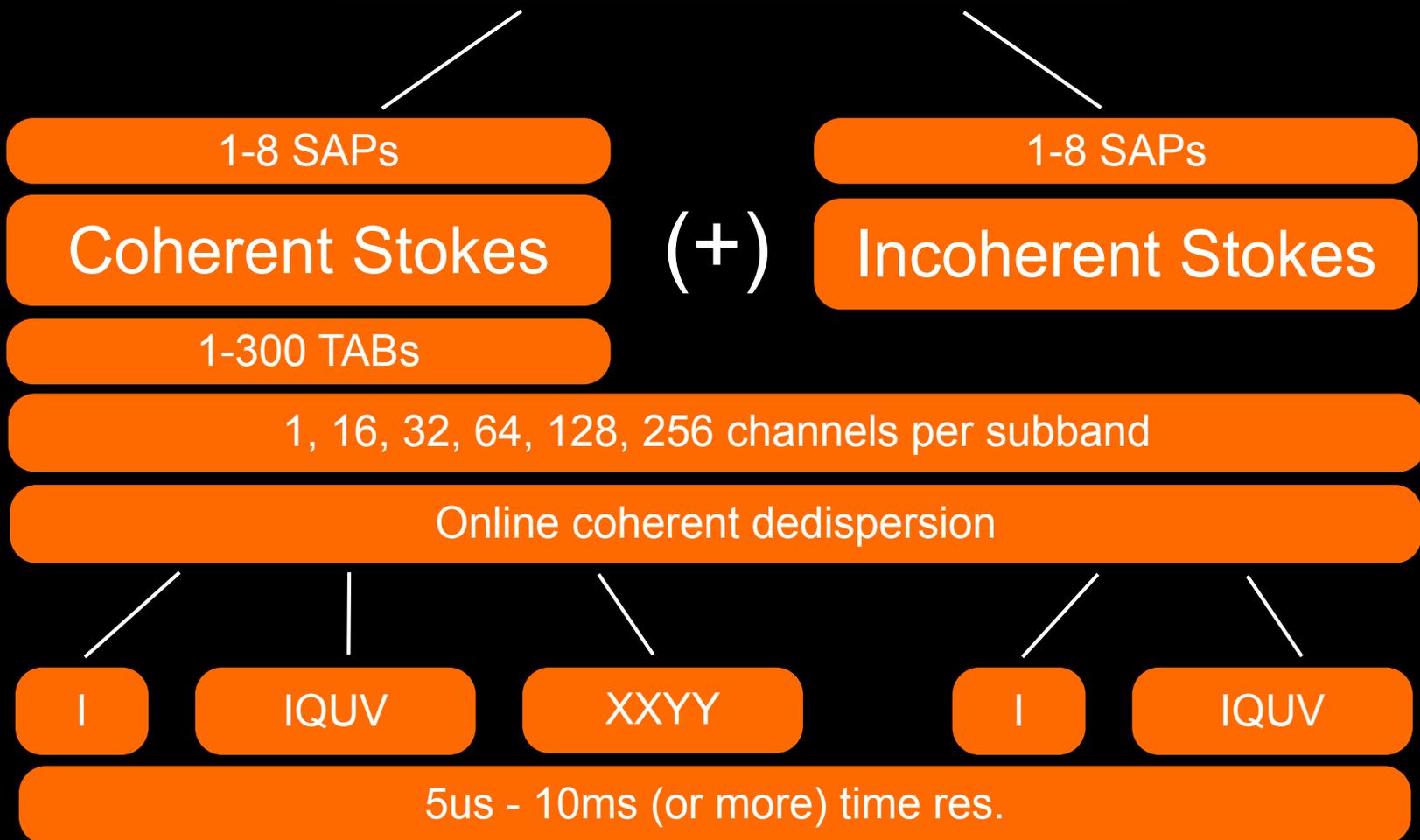
All written to HDF5 with metadata

Summary

There will be a lot of standard Beam-Formed functionality available in LOFAR v1.0.

BF modes serve: pulsars, planets, magnetism, cosmic rays, flare stars, fast transients, and general polarimetric calibration.

We're picking up momentum on getting more science results out the door.