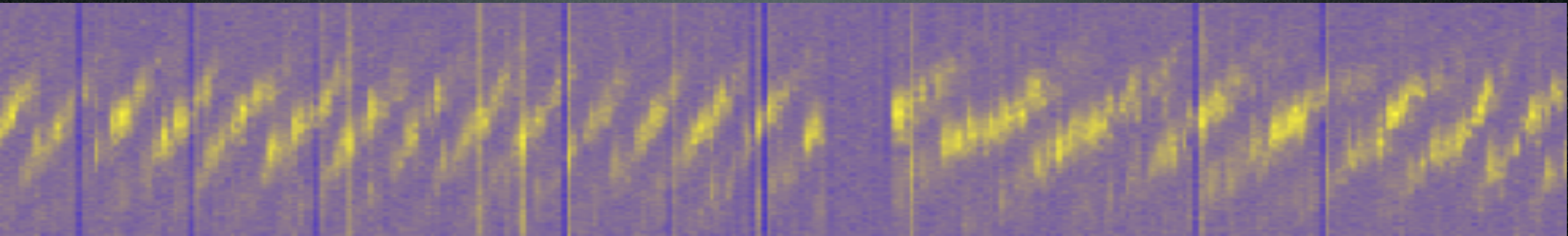


LOFAR Pulsar Observations Over Christmas 2009 Part II



Jason Hessels

on behalf of

Tom Hassall, Ben Stappers, and
LOFAR Pulsar Working Group



LOFAR Status Meeting
ASTRON - January 20th, 2010



LOFAR Pulsar XMAS Obs

- Took ~10TB of data over the two week Christmas break.
- Observed the Crab with LBAs in FE mode (3 stations).
- **Observed MSPs J2145-0750 and B1957+20.**
- Long track on Zenith with LBAs.
- Long tracks on B0809+74 with LBAs.
- **Stability test of HBAs using B1508+55.**

LOFAR Pulsar XMAS Obs

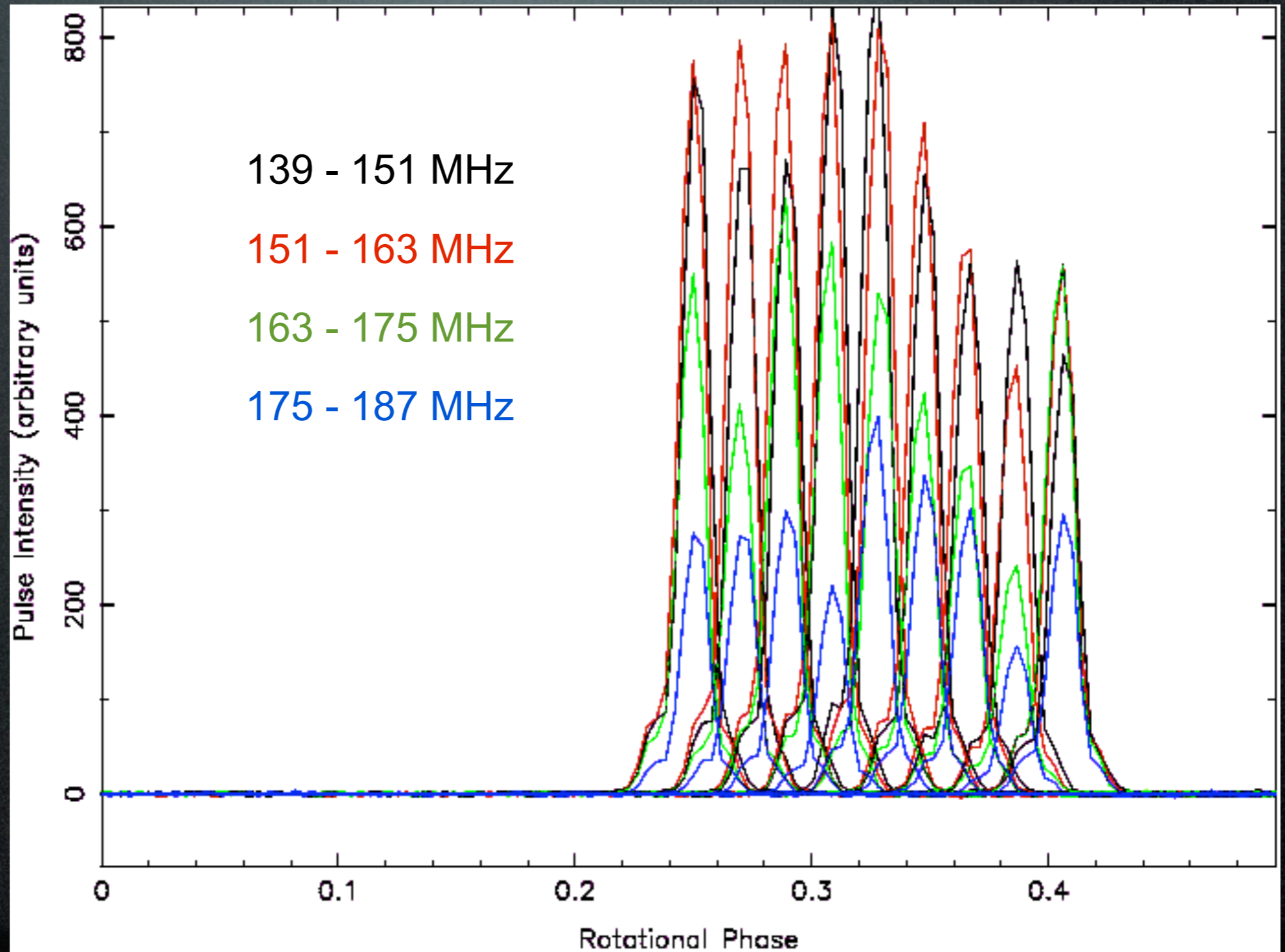
Master List of LOFAR Pulsar Commissioning Observations

Pulsar Christmas Observations: Dec 24, 2009 - Jan 4, 2010

Obs ID	Date	Source	Band	Duration	Storage	Archive	Comments
L2010_16282	2010-01-06	B0809+74	HBA	18hr	lse01[3-5] /d4		Inc (2e jaars students)
L2010_16281	2010-01-06	B1508+55	LBA	1hr	lse01[3-5] /d3		Inc (2e jaars students)
L2010_16280	2010-01-06	B1508+55	HBA	1hr	lse01[3-5] /d3	lse013	FE+Inc (2e jaars students)
L2010_16279		B0809+74	LBA	18hr	lse01[3-5] /d3		Inc
L2010_16278		B0809+74	LBA	16hr	lse01[3-5] /d3		Inc
L2010_16277		B1508+55	HBA	1hr	lse01[3-5] /d3	lse013	FE + Inc
L2009_16268		B1508+55	HBA	1hr	lse01[45] /d3	lse013	FE + Inc
L2009_16267		B0531+21	LBA	5hr	lse01[45] /d3	lse013	FE + Inc
L2009_16254		B1508+55	HBA	1hr	lse01[3-5] /d3	lse013	FE + Inc
L2009_16253		B0531+21	LBA	5hr	lse01[3-5] /d3	lse013	FE + Inc
L2009_16241		B1508+55	HBA	1hr	lse01[3-5] /d3	lse013	FE + Inc
L2009_16223		B1957+20	HBA	1hr	lse01[0-5] /d3		RAW DATA
L2009_16218		B1508+55	HBA	1hr	lse01[3-5] /d3	lse013	FE + Inc
L2009_16217		B0531+21	LBA	5hr	lse01[3-5] /d3	lse013	FE + Inc
L2009_16216		J2145-0750	HBA	30min	lse01[3-5] /d3	lse013	Inc / 32 chan
L2009_16209		B1508+55	HBA	1hr	lse01[3-5] /d3	lse013	FE + Inc

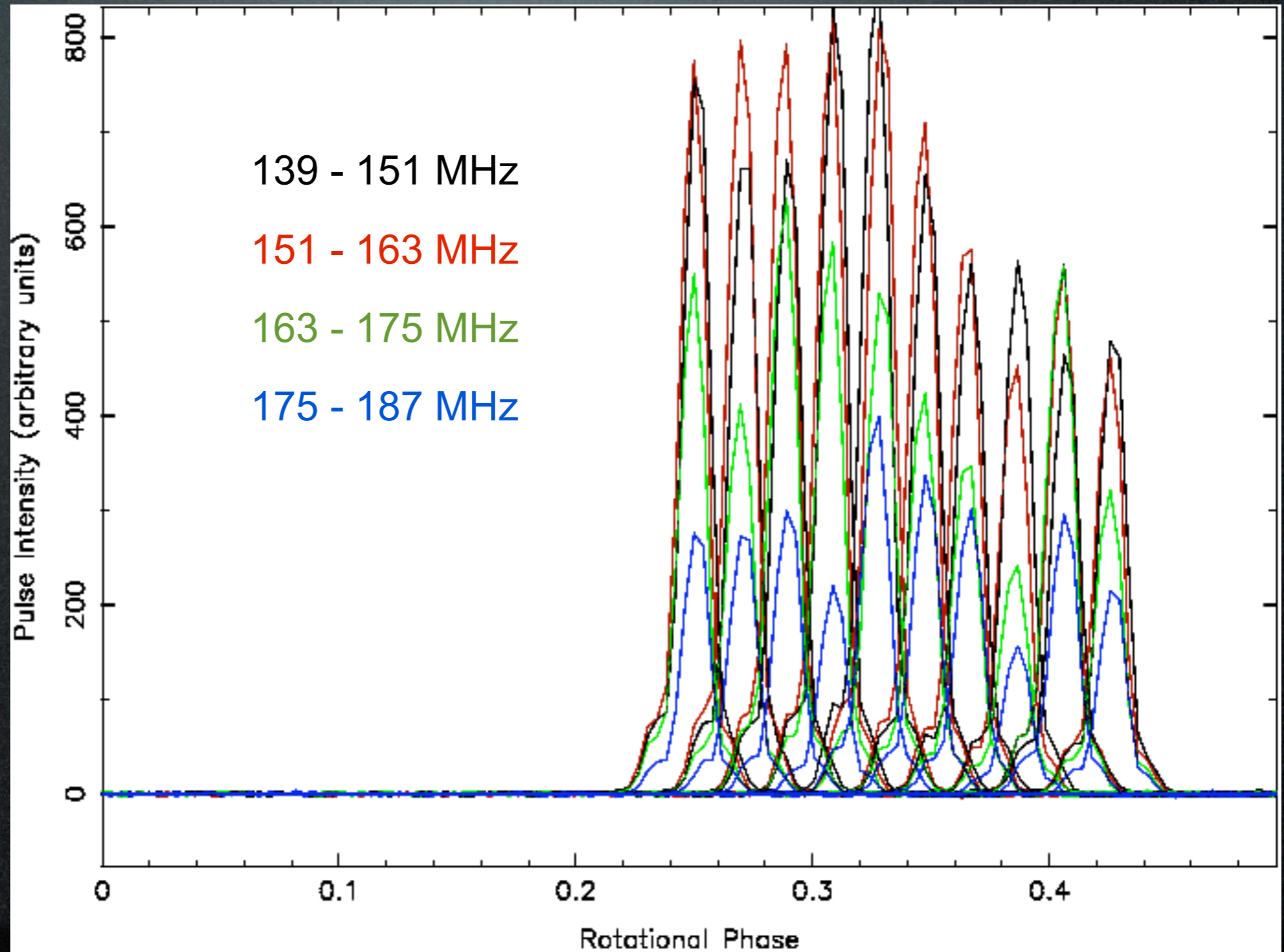
Stability of HBAs

2009-12-24
2009-12-25
2009-12-27
2009-12-28
2009-12-29
2009-12-30
2009-12-31
2010-01-02
2010-01-05



Stability of HBAs

2009-12-24
2009-12-25
2009-12-27
2009-12-28
2009-12-29
2009-12-30
2009-12-31
2010-01-02
2010-01-05
2010-01-20

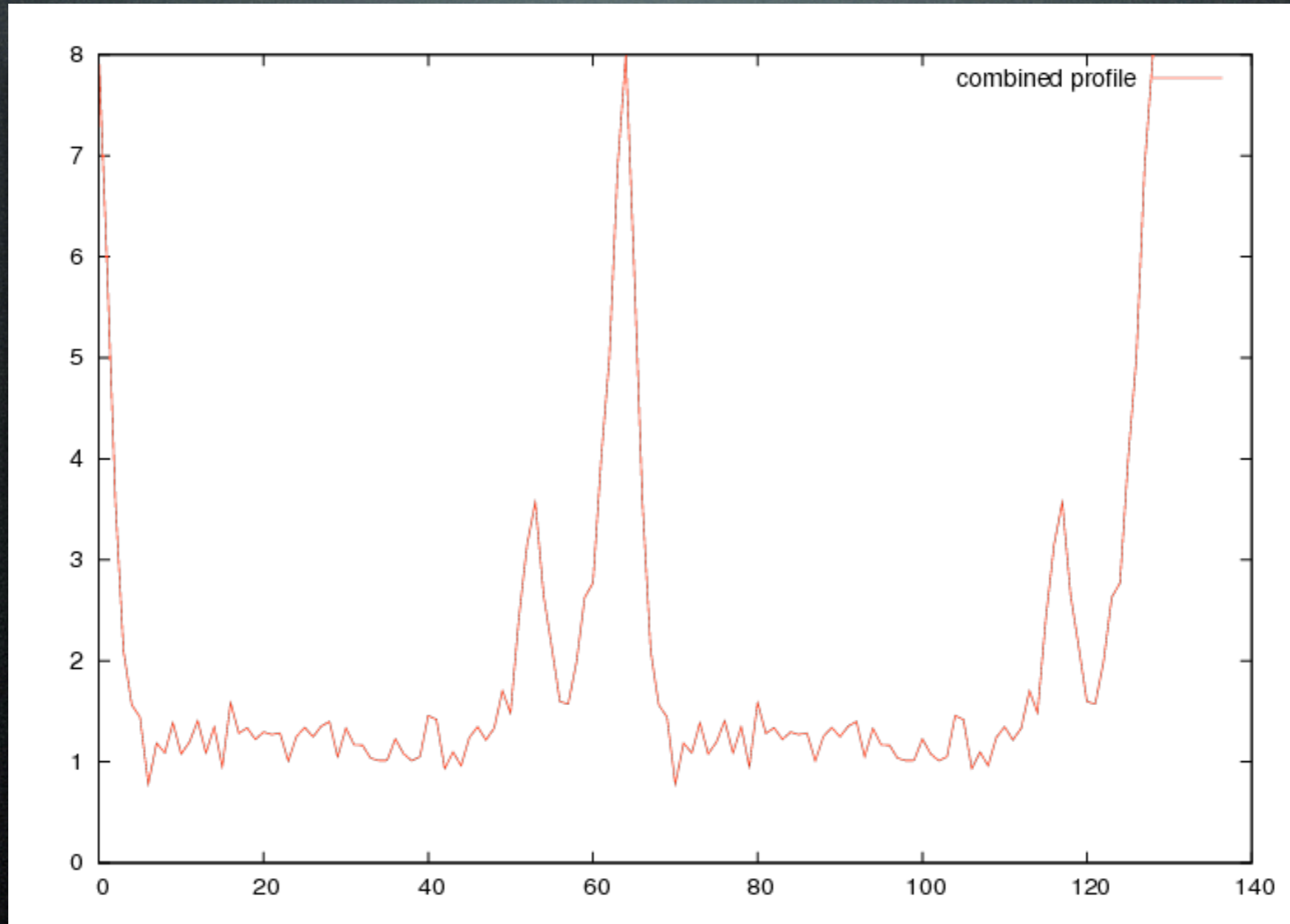


Possible Causes for Variability

- RFI
- Scintillation
- Snow
- Intrinsic to pulsar

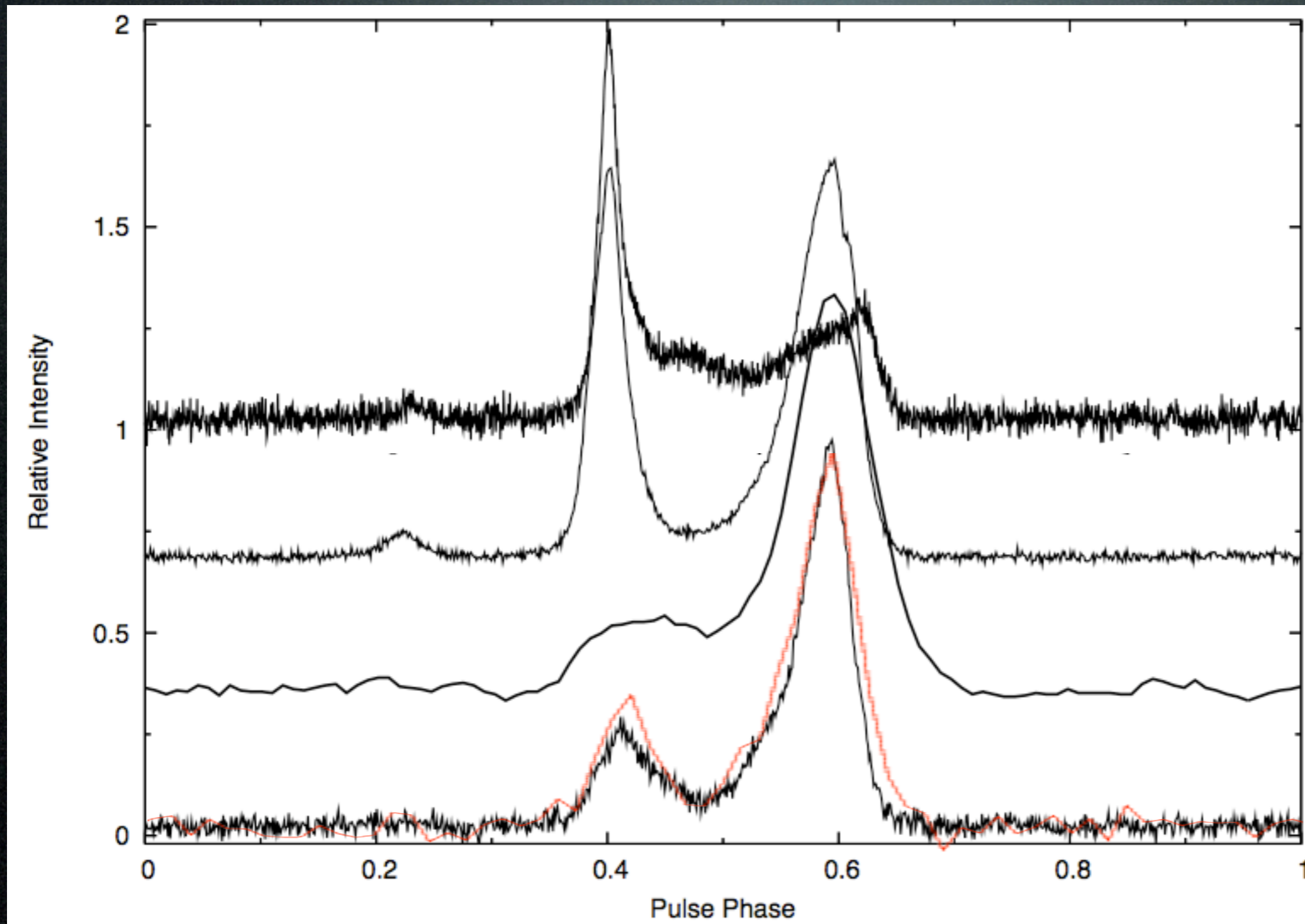
LOFAR's First Millisecond Pulsar Detection!

J2145-0750: $S=480\text{mJy}$, $P=16\text{ms}$, $DM=9\text{pc cm}^{-3}$



HBA: CS302+RS106+RS208+RS307+RS503

LOFAR's First Millisecond Pulsar Detection!



WSRT - 1.4GHz

WSRT - 350MHz

KL99 - 100MHz

WSRT - 150MHz

LOFAR - 160MHz

Stappers, Karuppusamy & Hessels 2007

Summary

- First millisecond pulsar detected with LOFAR (J2145-0750).
- Processing of pulsar Christmas observations is underway, with more results to come soon (e.g. 1.6-ms pulsar B1957+20).
- Repeated observations of B1508+55 show day to day variability that we are trying to understand. Data from individual stations will help sort this out we hope.