

Transients KSP – imaging

Jess Broderick (ASTRON) on behalf of the LOFAR TKP

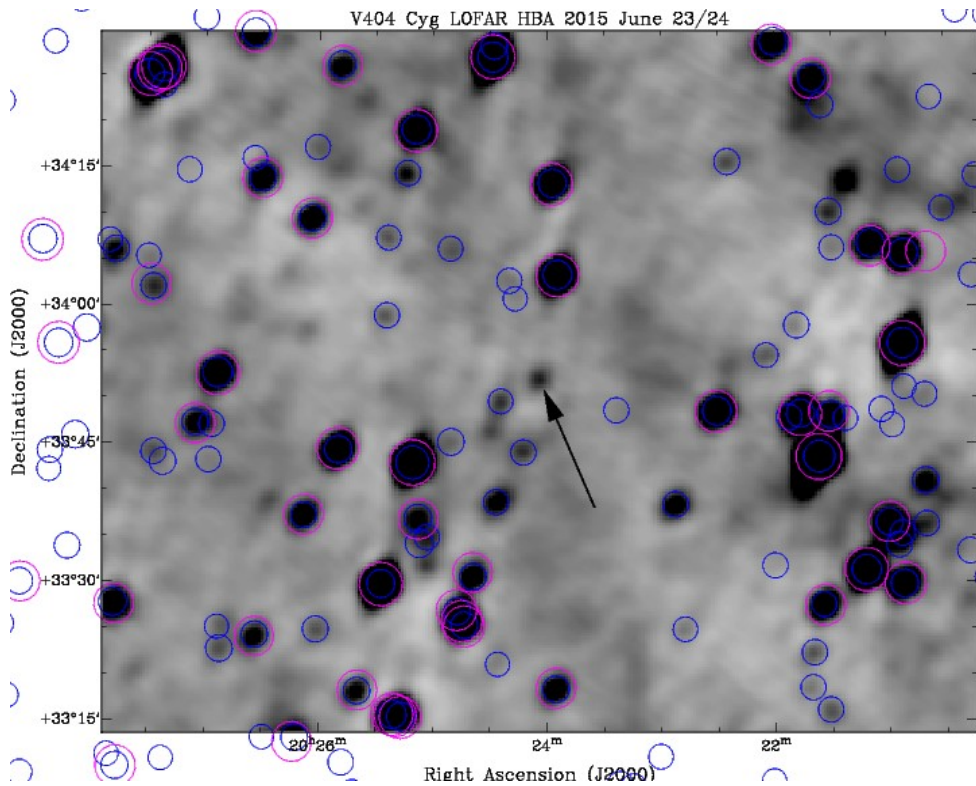
* Status update

- Recent papers: Stewart et al. 2016 (NCP transient); Carbone et al. 2016; Broderick et al. 2016. Also Marcote et al. 2016; Curran et al. 2015.

- Low-frequency synchrotron transient predictions rather bleak? (Metzger et al. 2015). Short-time-scale imaging of radio sky monitor (RSM) data remains challenging (Pietka et al. in prep.).

- Recent focus on DDTs for (semi-)prompt follow-up of events detected at other frequencies: 2015 V404 Cyg outburst, 2015 LIGO gravitational wave detection (Antonia Rowlinson's talk on Wednesday).

2015 V404 Cygni outburst – LOFAR monitoring



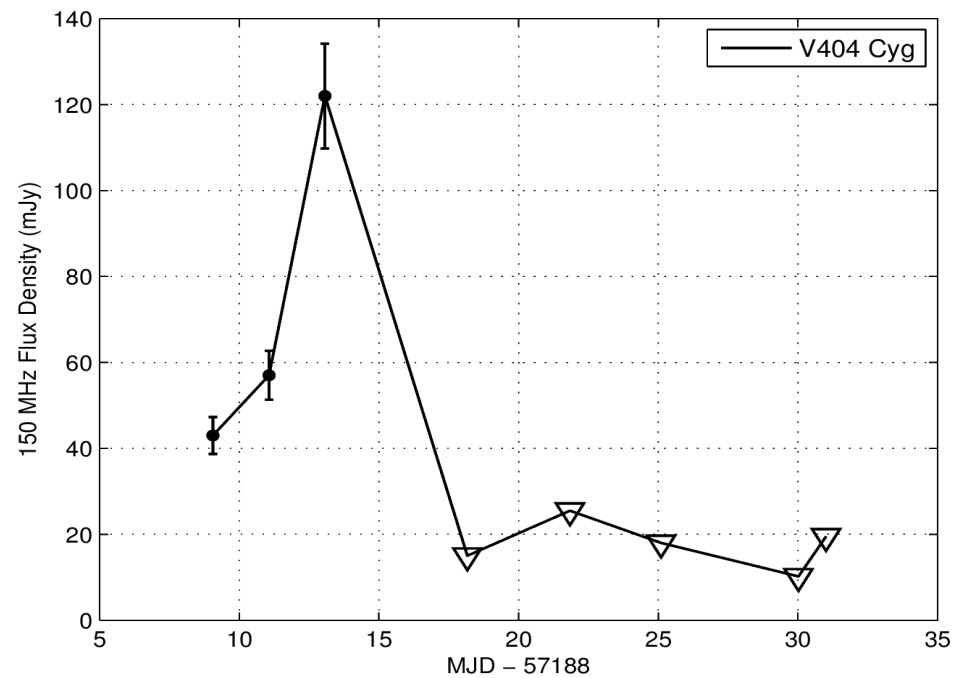
WENSS NVSS

* A lot of interaction with the ASTRON Radio Observatory - crucial to the success of our observing campaign.

* Lessons learned for next similar event (e.g. coordination of observations).

* Brightest X-ray binary outburst for a decade or so.

* LOFAR one of many facilities tracking outburst.



* **ATel #7720 (Broderick et al. 2015).**
First LOFAR detection of a transient X-ray binary.

* Proposal submission / observational setup and processing / interaction with Radio Observatory

- Observatory has been very helpful, as always – particular thanks to Aleksandar Shulevski.

- DDT cover sheets: cannot fully enter observational setup.

- MoM interface still clunky for typical TKP projects - introduce some sort of easily accessible summary of the most crucial settings?

- LTA:
Data still goes missing sometimes when being copied over from CEP.

Option to link programs that are ongoing over several semesters?

More flexibility in the observation/pipeline ID patterns?

Program Name	Status	ID	Description
PanSTARRS	active		Wide field searches for image-plane radio transients
HBA Zenith IF test			Radio Sky Monitor zenith strip 2014-01-15
HBA Zenith BF test			Radio Sky Monitor zenith strip 2014-01-15
HBA Zenith 20140115			Radio Sky Monitor zenith strip 2014-01-15
POINTING11_20140115			Preprocessing:POINTING11_20140115
POINTING12_20140115			Preprocessing:POINTING12_20140115
POINTING13_20140115			Preprocessing:POINTING13_20140115
POINTING14_20140115			Preprocessing:POINTING14_20140115
POINTING15_20140115			Preprocessing:POINTING15_20140115
P150115/3C295/1/CO	successful	[190675]	P150115/3C295/1/CO (Calibration Observation)
P150115/3C295/1/CPG	finished	[199115]	P150115/3C295/1/CPG (Preprocessing)
P150115/BEAM0/1/TO	successful	[190676]	P150115/BEAM0/1/TO (Target Observation)
BEAM0	successful		BEAM0
BEAM1	successful		BEAM1
BEAM2	successful		BEAM2
BEAM3	successful		BEAM3
BEAM4	successful		BEAM4
BEAM5	successful		BEAM5
BEAM6	successful		BEAM6
P150115/BEAM0/1.0/TP	finished	[199116]	P150115/BEAM0/1.0/TP (Preprocessing)
P150115/BEAM1/1.1/TP	finished	[199117]	P150115/BEAM1/1.1/TP (Preprocessing)
P150115/BEAM2/1.2/TP	finished	[199118]	P150115/BEAM2/1.2/TP (Preprocessing)
P150115/BEAM3/1.3/TP	finished	[199119]	P150115/BEAM3/1.3/TP (Preprocessing)
P150115/BEAM4/1.4/TP	finished	[199120]	P150115/BEAM4/1.4/TP (Preprocessing)
P150115/BEAM5/1.5/TP	finished	[199121]	P150115/BEAM5/1.5/TP (Preprocessing)
P150115/BEAM6/1.6/TP	finished	[199122]	P150115/BEAM6/1.6/TP (Preprocessing)
P150115/3C295/2/CO	successful	[190677]	P150115/3C295/2/CO (Calibration Observation)
P150115/3C295/2/CPG	finished	[199123]	P150115/3C295/2/CPG (Preprocessing)
P150115/BEAM0/2/TO	successful	[190678]	P150115/BEAM0/2/TO (Target Observation)
P150115/BEAM0/2.0/TP	finished	[199124]	P150115/BEAM0/2.0/TP (Preprocessing)
P150115/BEAM1/2.1/TP	finished	[199125]	P150115/BEAM1/2.1/TP (Preprocessing)
P150115/BEAM2/2.2/TP	finished	[199126]	P150115/BEAM2/2.2/TP (Preprocessing)
P150115/BEAM3/2.3/TP	finished	[199127]	P150115/BEAM3/2.3/TP (Preprocessing)
P150115/BEAM4/2.4/TP	finished	[199128]	P150115/BEAM4/2.4/TP (Preprocessing)
P150115/BEAM5/2.5/TP	finished	[199129]	P150115/BEAM5/2.5/TP (Preprocessing)
P150115/BEAM6/2.6/TP	finished	[199130]	P150115/BEAM6/2.6/TP (Preprocessing)
POINTING16_20140115			Preprocessing:POINTING16_20140115
POINTING17_20140115			Preprocessing:POINTING17_20140115
POINTING18_20140115			Preprocessing:POINTING18_20140115
POINTING19_20140115			Preprocessing:POINTING19_20140115
POINTING20_20140115			Preprocessing:POINTING20_20140115
POINTING21_20140115			Preprocessing:POINTING21_20140115

* Further comments/suggestions:

- Rapid response mode! Maximizing science yield for e.g. fast coherent transients. Synergies with AARTFAAC and WSRT/Apertif.
- Rapid access to pre-processed data for key datasets (bypass LTA).
- Rapid feedback on when successful observations are completed.
- Commensal observing modes.

* Other remarks:

- We acknowledge all the hard work that has gone into the pipeline framework, FACTOR and the latest AWimager. We look forward to using these on a more regular basis, rather than our somewhat outdated pipelines.
- Flux scale issues; artificially steep in-band spectral indices. Still problematic for some of the X-ray binaries that we have been looking at (e.g. SS433).
- AARTFAAC status update on Wednesday (Peeyush Prasad's talk).