

“Bursts, Pulses, and Flickering: Wide-field Monitoring of the Dynamic Radio Sky”



Kerastari, Greece
11-15 June 2007

Roger Cappallo





ΒΙΟΜΗΤΡΙΚΟ ΚΕΝΤΡΟ ΚΕΡΑΤΑΡΙΟΥ
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ΑΝΤΩΝ ΚΑΙ ΕΛΛΗΝ
ΒΟΥΝΙΣ 1990

THIS IS THE FIRST
IN THE WORLD
AND



Relevant Talks

- **Andrew Lyne** - *RRATs and Intermittent Pulsars*
 - *RRATs have $P = 3-4$ sec*
 - *Burst interval 4m - 3h*
 - *0.1-4Jy @ 1.3GHz*
 - *Pulsar B1931+24 intermittent (1 week on, 4 weeks off)*
 - *Sudden transition to off (not precession)*



Relevant Talks (cont'd)

- **Rachel Osten** - *Transient Emissions from Radio-Active Stars*
 - Flare starts similar to sun, but more energetic, w/ lots of circular pol & times scales from ms-hr
 - Superflares get up to ~10 mJy at 300 MHz (strongest above 20 GHz)
 - Low duty cycles (<1%) for most intense flares

Relevant Talks (cont'd)

- **Gregg Hallinan** - *Ultracool Dwarfs: A New Class of Pulsar*
 - *Observed brown dwarf periodicity*
 - *Pulse profiles similar to pulsars*
 - *Pulse (and presumably rotation) period of 2 hr*
 - *Circularly polarized, observed at 5 & 8 GHz*

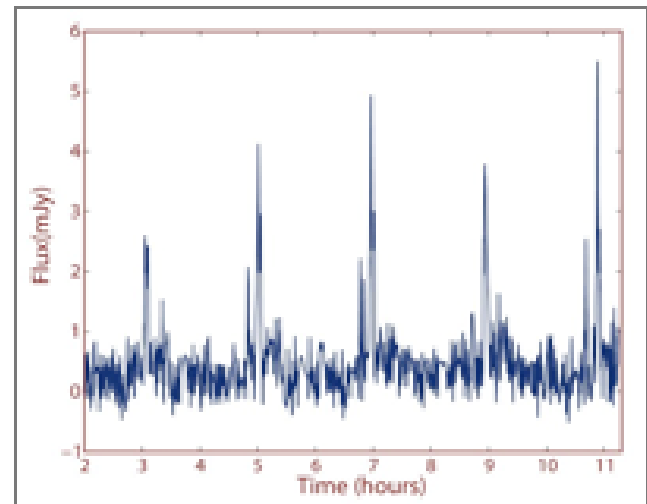


Figure 3: Time series of the radio emission detected with the VLA from the M9 dwarf TVLM 513-46546. Every 1.958 hours a periodic pulse is detected when extremely bright, beams of radiation originating at the poles sweep Earth when the dwarf rotates.



Relevant Talks (cont'd)

- Paul Ray / Subhashis Roy - *GCRT J1745-3009*
 - Observed 5 times (i.e. 5 pulses) in 2002, 2003, 2004
 - 77 minute period
 - 0.1 - 1 Jy at 330 MHz
 - No more pulses (10mJy limit), albeit at low duty cycle
 - No IR or X-ray counterpart (6" error circle)
 - Pol goes from RR→LL (~30%) over 4 min span



Relevant Talks (cont'd)

- **James Miller-Jones** - *Low-frequency Radio Observations of Galactic Microquasars*
 - SS433 seen at 74/330 MHz VLA, and 115-170 MHz WSRT
 - Cyg X-3 seen at 140 MHz during outburst
- **Dave Jauncey** - *Scintillation Surveys, Serendipitous, Systematic, and MASIV*
 - *IDV history, nice plots of delayed amplitude between ATCA and VLA*
 - *IDV = Scintillation*
 - *MASIV: 56% of sources have scintillation on t scales from days to years*



Relevant Talks (cont'd)

- **Hayley Bignall** - *Rapid Interstellar Scintillation of Extragalactic Sources*
 - Megamasers of NGC3079 have time scales of hrs
- **Geoff Bower** - *Wide Field Surveys for Transients at Centimeter Wavelengths*
 - Looked in archived VLA calibration data for transients
 - Data spanned 1983-2003; 5 & 8 GHz
 - 400 μ Jy rms (integrated to 2.5 μ Jy)
 - 10 deg²
 - Found 10 transients; unable to classify
 - ATA will do FIGSS 5 GHz Sky Survey on 10⁴ deg² at galactic cap, but considering low dec fields too



Relevant Talks (cont'd)

- **Joe Lazio** - *The Radio Transient Sky and MWA*
 - *Science areas: relativistic particles, H1*
 - *20-80 MHz*
 - *50 stns, spread over 400 km*
 - *LINDA: demonstrator array @ VLA site*
 - *60-80 MHz*
 - *1.6 MHz BW*
 - *16 elements + 1 outlier*
 - *SW Consortium: UNM, NRL, ARL, UT, LANL, Ulowa*



Relevant Talks (cont'd)

- **Rob Fender** - *LOFAR Transients and the Radio Sky Monitor*
 - 30-80 & 110-240 MHz
 - EOR/Surveys/Transients&Pulsars/Cosmic Rays/Other
 - 77 stns x 96 ant/stn (both low & high)
 - Currently 1 Dutch & 1 German station
 - Dec 2008 - 20 stns; Dec 2009 - full array
 - Sky tiled with beams, but traded off for BW



Relevant Talks (cont'd)

- **Casey Law** - *Early Results from a Transient Survey with LOFAR-CS1*
 - *“CS1 survey”*
 - *4 MHz BW*
 - *50-70 MHz*
 - *24hr synthesis*
 - *rms noise of a few Jy*
 - *Null result so far*



Group Sentiment

- Low f sky at sensitivities of new instruments will be littered with transient objects
- Main problem will be identification/classification
- Coordinating alerts is important - false positives need to be avoided
- Coordination between observatories is highly desirable; test experiments under consideration (e.g. MWA-LOFAR and MWA-LWA)

