Radio observations of Mrk501 with INAF/IRA radio telescopes

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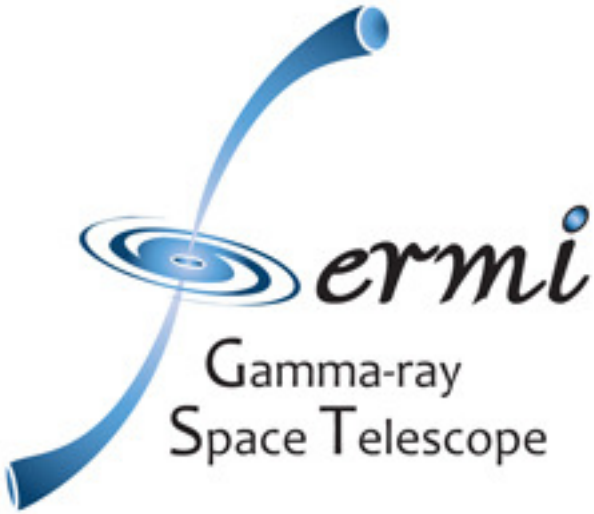


Foreword

- Four events take place (almost) simoultaneoulsly:
  - I enter the collaboration
  - the multi-l campaign is launched
  - a mm-VLBI proposal on Mrk501 is accepted and obs scheduled in May
  - INAF/IRA call for proposal, with new K-band receiver announced
- I decide to join the campaign, although:
  - I am new to the collaboration
  - I am new to multi-l campaigns
  - I am new to single dish observations
- Acknowledge help from
  - P. Leto, G. Maccaferri, A. Orlati, D. Paneque, D. Thompson

Observations – single dish

- Two compromises needed
  - maximize core/extended flux density ratio (variable/steady emission) without pushing instruments beyond their capabilities
    - Noto telescope (32m), active surface, 43 GHz
    - Medicina telescope (32m), 8 and 22 GHz
  - maximize # of epochs with limited experience and short notice
    - Noto: 7 epochs (2 March, 2 April, 1+2 May)
    - Medicina: 9 epochs (5+4, early May)

Observations – mm-VLBI

- Although originally part of a jet structure project (see Giroletti et al. 2008 in press)
  - interesting to compare to MOJAVE images/flux densities
  - provides the core flux density least contaminated by extended non-variable radio emission
- Scheduled, correlated by GMVA staff
  - Global Millimeter-VLBI Array
  - http://www.mpifr-bonn.mpg.de/div/vlbi/globalmm/

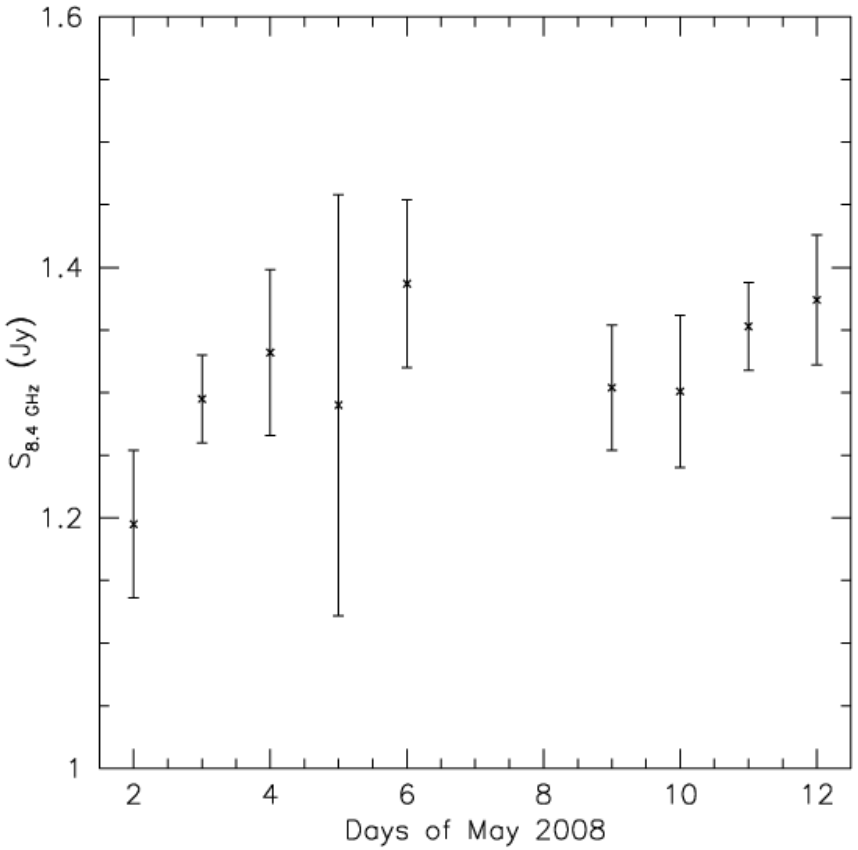
M. Giroletti – observations of Mrk501 with the INAF radio telescopes – EVO meeting

Observations – Summary

Instrument	**# epochs**	**Frequency**	**Comments**
Medicina 32m.	9	8, 22 GHz	
Noto 43m.	7	43 GHz	
GMVA	1	86 GHz	sub-parsec scale resolution

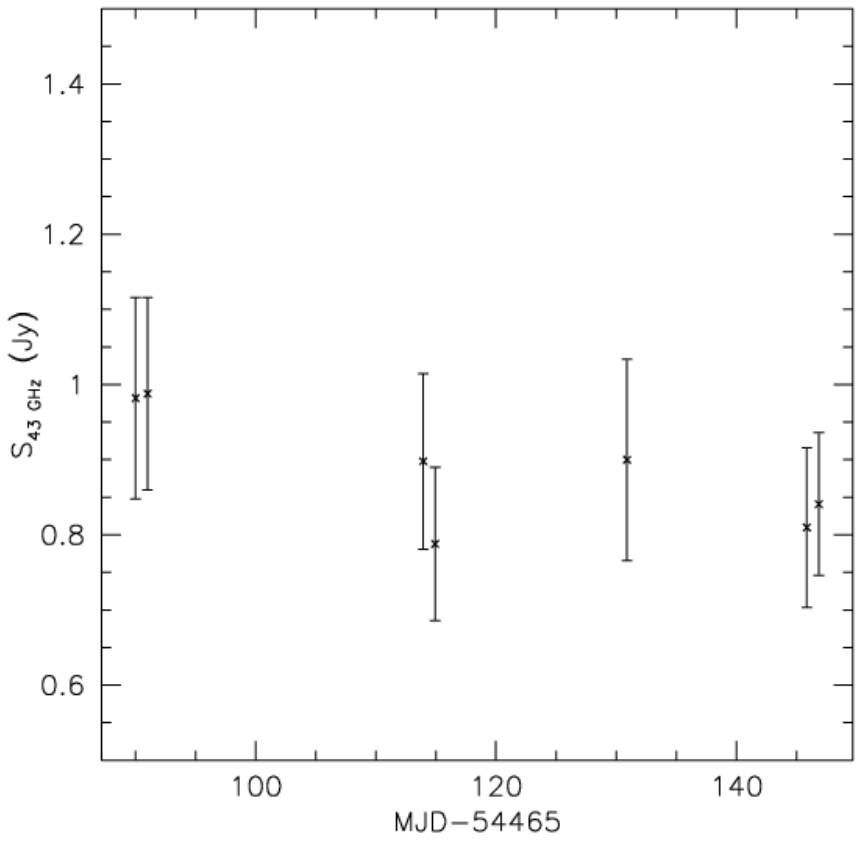
Results - Medicina

- Observations on 1, 2, 3, 4, 5, 8, 9, 10, 11 May
- about 45 min at X band, 90 min at K band (on source)
- X band data ok, K band data ko
  - new receiver not calibrated yet, old receiver not maintained anymore
- no significant variability seen during nights and from night to night
- S = 1.31 +/- 0.06 Jy

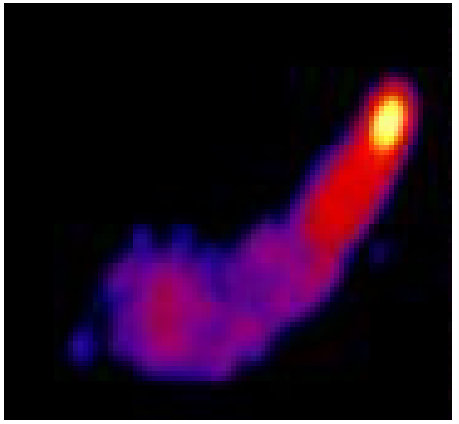


Results - Noto

- Observations on March 30, 31; April 23, 24; May 5, 25, 26
- about 30 min at Q band
  - data ok
- no significant variability seen over this period
- S = 0.89 +/- 0.08 Jy
- 8.4-43 GHz spectral index ~0.24



Results – VLBI



- mm-VLBI observations (8 may)
  - correlated but still not available
  - snowstorm at Pico Veleta (Spain, most sensitive interferometer element)
  - maybe only total flux density will be available, still good for spectral index
- VLBI is also available thanks to MOJAVE
  - observations at 15 GHz, sub-mas resolution
  - May 1st, Core flux density 479+-2 mJy
  - June 25th, Core flux density 534+-9 mJy
  - provided by M. Kadler (ask also Y. Kovalev)

Summary (so far)

- So far
  - 16 radio data points available for the campaign
  - 1 pending (mm-VLBI) - highest frequency ☺ single epoch, PV failure ☹
  - no clear variability on different timescales, different frequencies
    - no IDV, no flaring, not diluted by extended emission
- Future
  - this campaign: connection to other instruments
  - other campaigns: gained a lot of experience!