VLBA PROPOSAL COVERSHEET

rcvd:

DEADLINES: 1st of Feb., June, Oct.

(1) Date Prepared: September 20, 2007

(2) Title of Proposal: Polarimetric ToO Observations of 3C454.3 at $\lambda\lambda$ 1.3, 0.7 and 0.35 cm

(3) AUTHORS (Add * for new location)	INSTITUTION	E-mail	Students Only G/U	For Thesis?	Ph.D. Year
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(4) Related previous or current VLBI proposal(s): BS157, GK035, GK038, BW086, BS178 ⊗ Resubmission

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(7) Scientific Category: ○ astrometry & geodesy ○ galactic ⊗ extragalactic ○ other:
Rapid Response Science: ○ Known Transient ○ Exploratory ⊗ Target of Opportunity

(8) Wavelength(s) requested (those not available on the global network are indicated with a small circle):
○ 90cm ○ 50cm ◦ 30cm ○ 21cm ○ 18cm ○ 13cm ○ 6cm ◦ 5cm ○ 3.6cm ○ 3.6/13cm
◦ 2cm ⊗ 1.3cm ⊗ 7mm ⊗ 3mm
○ Global Network standard bands ⊗ Special frequencies: 86.2 GHz

(9) Recording format: ○ Default continuum setup (VLBA only), ⊗ VLBA/MkIV, ○ MkIII: Mode
Bandwidth per BaseBand channel: 16
Aggregate bit rate: 512 (8 BB channels at 32 MSamples/sec of ○ 1 bit, ⊗ 2 bit)

(10) ⊗ Multi-epoch observation: 4 epochs of 14 hours each, separated by 15 days

(11) Network	Requested antennas	Total time requested
EVN & MERLIN		
VLBA	ALL	56 hours (4 x 14h)
other NRAO		
Non-VLBI Intruments		

(12) ABSTRACT (Do not write outside this space. Please type)
The huge flare of quasar 3C 454.3 in May 2005 triggered a large amount of multi-frequency observations and detailed studies of this historical flux density outburst became possible. These investigations revealed very unexpected behavior of the source. Most interestingly, no superluminal jet component was detected within our multi-frequency VLBA observations in 2005 and 2006 (projects BS157, BW086). This may suggest very efficient energy dissipation inside the mm-core and calls for new and detailed high-resolution studies of the source. We have a great opportunity now, since the source is currently flaring again. Consequently, we here propose four epochs of polarimetric, high-frequency ToO observations to complement our ongoing VLBA (and single-dish) monitoring as well as GMVA observations (GK038) and to obtain densely time-sampled (bi-weekly) images in total intensity and polarization over the next months. The present proposal concentrates on 3 mm wavelength, and it is thus complementary to the large proposal BM256 (PI: A. Marscher), which monitors the source at 7 mm. Due to the current flaring state, a ToO is absolutely necessary instead of a regular proposal for the October call.

Scheduler use only
(8/03)

(13) Observation type: ⊗ Interferometry, ◯ Spectroscopy, ◯ Pulsar, ◯ Phase referencing

(14) Proposal is ⊗ Suitable ◯ Unsuitable for dynamic scheduling.

(15) Polarization: ◯ Single Polarization ⊗ Dual Circular Polarization

Global network standard for single polarization is LCP for all λs except 13cm (RCP) and 3.6cm (RCP).

(16) Tape usage (Show <recording time>/<total time>): $\approx$ 80%

(17) Assistance required:

Observation Setup: ◯ Consultation, ◯ Extensive help, ◯ Observe file preparation

Postprocessing: ◯ Consultation, ◯ Extensive help, ◯ Calibration service

(18) Processor: ⊗ Socorro, ◯ JIVE, ◯ Haystack, ◯ Bonn, ◯ Washington, ◯ Other______

Special processing: ⊗ XPol, ◯ Pulsar gate, ◯ Multiple Fields: ____

Averaging time: 1 s Spectral channels per baseband channel: 32

◯ Other special processing: ______

(19) Postprocessing Location: MPIfR

(20) Source list: ⊗ J2000 ◯ B1950

If more than 4 sources, please attach list. If more than 30, give only selection criteria and GST range(s)

	Source 1	Source 2	Source 3	Source 4
Name(s)	3C 454.3	3C 279	1749+096	0420-014
RA (hh mm)	22 53	12 56	17 51	04 23
Dec (dd.d)	+16.1	-05.5	+09.4	-01.2
GST range (Europe)				
GST range (US)	01-12	23-01	23-07	07-13
GST range (Other)				
Band(s)	1.3, 0.7, 0.3 cm	1.3, 0.7, 0.3 cm	1.3, 0.7, 0.3 cm	1.3, 0.7, 0.3 cm
Flux density (Total, Jy)	15 Jy @0.3cm	12 Jy @0.3cm	6 Jy @0.3cm	4.4 Jy @0.3cm
Flux density (correlated, mJy)	> 5 Jy @0.3cm	> 4 Jy @0.3cm	> 3 Jy @0.3cm	> 2 Jy @0.3cm
RMS needed (mJy/beam)	< 1.5 mJy/beam	< 3 mJy/beam	< 3 mJy/beam	< 3 mJy/beam
Peak/RMS needed	>2000:1 @0.3cm	>500:1	>500:1	>500:1

(21) Preferred VLBI session or range of dates for scheduling, and why:

The start of the series should take place as soon as possible (ongoing flare). See the scientific justification for more information of the preferrable scheduling strategy.

(22) Dates which are NOT acceptable, and why:

(23) Attach a self-contained scientific justification, not in excess of 1000 words.

Preprints or reprints will not be forwarded to the referees.

Information about the capabilities of the VLBA may be found on the World Wide Web by starting at the NRAO home page, http://www.nrao.edu, and selecting the VLBA from "Sites and Telescopes."

A brief summary of the capabilities of the EVN antennas is given in the EVN STATUS TABLE in the EVN USER GUIDE, which may be found at http://www.evlbi.org/user_guide/user_guide.html.

Please include the full postal addresses for first-time users or for those that have moved (if not contact author).