

CRITERIA-3

3.5 Collaboration

3.5.1: MoUs/Linkages/Collaboration 2017 - 22

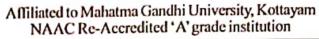
Linkage between Dr. Biju K G (Associate Professor, Department of Physics, WMO Arts and Science College, Muttil) vs. Newman College, Thodupuzha - Idukki

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NEWMAN COLLEGE

THODUPUZHA, IDUKKI KERALA, INDIA - 685585





No:

Date: 23/06/2023

CERTIFICATE OF COLLABORATION

Dr. Biju KG, Associate Professor of Physics at WMO Arts and Science College, has been collaborating with the Research Department of Physics at Newman College, Thodupuzha, since 2010. He was a research student in the physics department of Newman College from 2010 to 2016, and his research supervisor was Dr. Joe Jacob, Associate Professor (Rtd) at Newman College. Dr. Biju KG has co-authored three research publications with Dr. Joe Jacob, and he continues to collaborate with Dr. Joe Jacob and Ms. Aparna Raj, a research student in the Department of Physics at Newman College.

Dr. Biju KG is the Co-Investigator in the following astronomy projects, with Ms. Aparna Raj as the Principal Investigator:

- 1. "GMRT mapping of eight episodic radio source candidates," dated 15-01-2022.
- "Exploring Episodic Jet Activity in Radio Loud AGNs: A Morphology Independent Search and uGMRT Observation of Ten Candidate Sources," dated 15-01-2023.

THOOLING & S82 S88

DR. BIJIMOL THOMAS PRINCIPAL-IN-CHARGE NEWMAN COLLEGE THODUPUZHA

Dr. Beers Mary John Head, Dept. of Physics



Department of Physics WMO Arts & Science College, Muttil

ACTIVITY REPORT

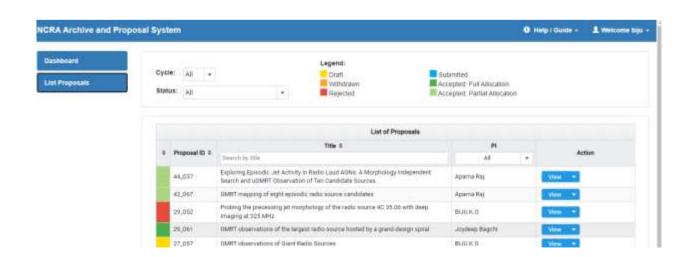
LINKAGES WITH NCRA & NEWMAN COLLEGE.

Dr. Biju KG, Associate professor of Physics, WMO Arts and Science College, Muttil is having collaborative research activities with Prof. Ishwara Chandra CH (NCRA, Pune) and Dr. Joe Jacob and Ms Aparna Raj of the Newman college, Thodupuzaha. During the 2017- 2022 Dr. Biju KG is the coinvestigator (Co-I) of the radio astronomy project entitled "GMRT mapping of eight episodic radio source candidates". This project is approved in the 42nd GMRT observational cycle with id 42_067. Ms. Aparna Raj (Assistant Professor, CMS college, Kottayam & Research Student, Newman college, Thodupuzha) is the Principal Investigator. Prof. Ishawara Chandra and Dr. Joe Jacob are also Co-I of this project.

Link: https://wmocollege.ac.in/uploads/GMRT Project1.pdf

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5	E mail regarding observation on 18-07-2022		
6	E mail regarding observation on 22-07-2022		
7	E mail regarding observation on 04-08-2022		
8	E mail regarding observation on 04-08-2022		

1. NCRA Archive and Proposal System (NAPS) Screen shot.





Department of Physics WMO Arts & Science College, Muttil

2. Face sheet of the approved project.



GMRT Observing Application

Cycle No: 42 Primary Backend: GWB

(Note: This PDF is generated by session 1.44 coversheet generator script running in B/IgX mode)

Proposal Code: 42,067

Submission Date: 15-01-2022

Title: GMRT mapping of eight episodic radio source candidates

Related Proposals:

Abstract:

Radio loud Active Galactic Nuclei (AGN) are observed to exhibit episodic jet activity with the active phases being short term compared to the life time of
the galaxy. The search for such episodic radio sources is a tedious process and most of the known ones were identified based on their morphology with clear
two pairs of lobes (double-double radio sources). We have developed a new morphology independent method to look for radio sources with episodic activity
based on the spectral index at low and high radio frequencies. The goal of this search is to increase the number of known episodic sources which may not follow
clear double-double morphology. Using this technique, we have found over 100 candidate episodic radio sources by cross matching VLSS, TGSS, NVSS and
PMN catalogues at frequencies ranging from 74 MHz to 4.8 GHz. Here we propose to observe eight new episodic radio source candidates from our sample with
uGMRT at 250-300 MHz (band-3) and 550-850 MHz (band-4). These sources have significantly excess radio emission at low frequencies as compared to high
frequencies (concave spectra). The main goals of this study is to understand its morphology, spectral index properties and to understand the origin of excess
emission at low radio frequencies. We intend this observation to be a piket study leading to an extensive survey identifying larger number of episodic sources. We
request two hours per band for all the eight objects; 16 hours at 250-500 MHz (band-3) and another 16 hours at 550-850 MHz (band-4) with a total of 32 hours.

Proposers:

The first name on the list of proposers is the Principal Investigator for this proposal.

Proposer	Institution	Observer	Email	Nationality	PhD Student
Apsrna Raj	Newman College	Yes	rajaparna459 gmail.com	INDIA	Yes
BIJU.K.G	WMOC	No	kgbiju42@gmail.com	INDIA	No
Joe Jacob	Newman College	No	drjoephysics@gmail.com	INDIA	No
C.H. Ishwara/Chandra	NCRA	No	ishwar@nera.tifr.res.iu	INDIA	No

Phd Students table:

Student	Project Title	Year of Comple- tion	
Aparna Raj	Investigation of the nature and environmental interactions of spisodic radio sources	2023	

PI Contact Details:

Address: Moolayil House

Changanacherry Kurumpanadom P.O



Department of Physics WMO Arts & Science College, Muttil

3. Observation 16-07-2022



Biju koonammakkil george <kgbiju42@gmail.com>

GTAC Obs Log: 14386

1 message

Sat, Jul 16, 2022 at 9:12 AM

gtaclog@gmrt.ncra.tifr.res.in <gtaclog@gmrt.ncra.tifr.res.in> To: ishwar@ncra.tifr.res.in, drjoephysics@gmail.com, kgbiju42@gmail.com, rajapama45@gmail.com

GTAC Observation Log

- 1. Date: 16/07/2022
- 2. Observation Sr. No.: 14386
- 3. Observer : Aparna Raj, BIJU.K.G, Joe Jacob, C.H. IshwaraChandra
- 4. Observert's Email: rajapama45@gmail.com, kgbiju42@gmail.com, drjoephysics@gmail.com, ishwar@ncra.tifr.res.in
- 5. Project Name: GMRT mapping of eight episodic radio source candidates
- 6. Project Code: 42 067
- 7. Operator(s): Deepak, Shilpa, Surender
- 8. Command File: //data1/gtac/cmd/42_067/42_067_16Jul2022_0600_cmd.py
 9. LTA File: //gsbliftdata1/16jul/42_067_16jul2022_gsb.lta, //gwbliftdata2/16jul/42_067_16jul2022_gwb.lta
 10. LogFlag File:

4. Observation 17-07-2022



Biju koonammakkil george <kgbiju42@gmail.com>

GTAC Obs Log: 14394

1 message

gtaclog@gmrt.ncra.tifr.res.in <gtaclog@gmrt.ncra.tifr.res.in>

Sun. Jul 17, 2022 at 6:14 PM

To: ishwar@ncra.tifr.res.in, drjoephysics@gmail.com, kgbiju42@gmail.com, rajapama45@gmail.com

GTAC Observation Log

- 1. Date: 17/07/2022
- 2. Observation Sr. No.: 14394
- 3. Observer: Apama Raj, BIULK.G. Joe Jacob, C.H. IshwaraChandra.
 4. Observer's Email: rajapama45@gmail.com, kgbiju42@gmail.com, drjoephysios@gmail.com, ishwar@ncra.tifr.res.in
 5. Project Name: GMRT mapping of eight episodic radio source candidates.
- 6. Project Code: 42_067 7. Operator(s): Nilesh
- 9. LTA File: /gsbifrdata/17jul/42_067_17jul/2022_gsb.lta, /gwbifrdata/17jul/42_067_17jul/2022_gwb.lta

ANTENNA SETTINGS:

- 11. RF Band(MHz) & Solar Attn(dB)- RF1 : 306 MHz .RF2 : 306 MHz, SA1 : 0 dB, SA2 : 0 dB 12. Ist LO (MHz) & IVth LO (MHz): ILO1 : 255 MHz, ILO2 : 255MHz , IVLO1 : 51 MHz, IVLO2 : 51 MHz
- 13. IF Attn(dB), IF BW(MHz) & IF ALC: IF-CH1: 4+14 dB, 32 MHz,ON, IF-CH2: 4+14 dB, 32 MHz,ON

5. Observation on 18-07-2022



Biju koonammakkil george <kgbiju42@gmail.com>

GTAC Obs Log: 14396

gtaclog@gmrt.ncra.tifr.res.in <gtaclog@gmrt.ncra.tifr.res.in> To: ishwar@ncra.tifr.res.in, drjoephysics@gmail.com, kgbiju42@gmail.com, rajapama45@gmail.com

Mon. Jul 18, 2022 at 6:01 AM

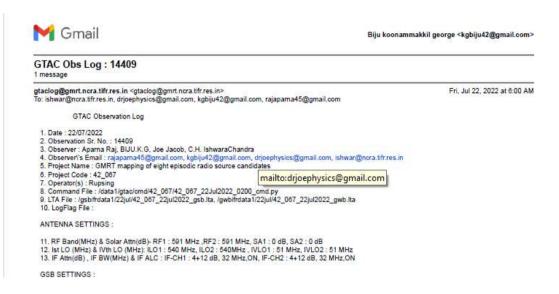
- Date: 18/07/2022
 Description Sr. No.: 14396
 Solverwarion Sr. No.: 14396
 Solverwarion Sr. No.: 14396
 Solverwarion Sr. No.: 14396
 Solverwarion Sr. No.: 14396
 Observer's Email: trajapama+filogomail.com, kgbu+2@gmail.com, drjoephysios@gmail.com, ishwar@ncra.ttfrres.in
 Project Code: 142,087
 Project Code: 42,087
 Solverwarion Survender
 Solverwarion

- 11. RF Band(MHz) & Solar Atin(dB)- RF1 : 306 MHz, RF2 : 306 MHz, SA1 : 0 dB, SA2 : 0 dB 12. bst.0 (MHz) & IVbt.10 (MHz), ILO1 : 256 MHz, ILO2 : 255MHz, IVL01 : 51 MHz, IVL02 : 51 MHz J3 : PAtin(dB), IF BW(MHz) & IF ALC : IF-CH1 : 4+14 dB, 32 MHz, ON, IF-CH2 : 4+14 dB, 32 MHz, ON



Department of Physics WMO Arts & Science College, Muttil

Observation on 22-07-2022



7. Observation on 04-08-2022



8. Observation on 04-08-2022

