



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

Affiliated to Mahatma Gandhi University, Kottayam
NAAC Re-Accredited 'A' grade institution



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.
2. "Exploring Episodic Jet Activity in Radio Loud AGNs: A Morphology Independent Search and uGMRT Observation of Ten Candidate Sources," dated 15-01-2023.



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

Dr. Beena Mary John
Head, Dept. of Physics



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 co-investigator (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://wocollege.ac.in/uploads/GMRT_Project1.pdf

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8	E mail regarding observation on 04-08-2022

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

Proposal ID	Title	PI	Action
44_037	Exploring Episodic Jet Activity in Radio Loud AGNs: A Morphology Independent Search and OGMRT Observation of Ten Candidate Sources	Aparna Raj	View
42_067	GMRT mapping of eight episodic radio source candidates	Aparna Raj	View
29_062	Probing the precessing jet morphology of the radio source 4C 29.09 with deep imaging at 325 MHz	BIJU.K.G	View
29_061	GMRT observations of the largest radio source hosted by a grand-design spiral	Jaydeep Bagchi	View
27_067	GMRT observations of Giant Radio Sources	BIJU.K.G	View



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 version 1.44 cover sheet generator script running in L^AT_EX 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 250-500 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 pilot 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
Aparna Raj	Newman College	Yes	rajaparna45@gmail.com	INDIA	Yes
BLJU,K.G	WMOC	No	kghju42@gmail.com	INDIA	No
Joe Jacob	Newman College	No	drjosephysics@gmail.com	INDIA	No
C.H. IshwaraChandra	NCRA	No	ishwar@ncra.tifr.res.in	INDIA	No

Phd Students table:

Student	Project Title	Year of Completion
Aparna Raj	Investigation of the nature and environmental interactions of episodic radio sources	2023

PI Contact Details:

Address: Moolayil House
Changanacherry
Kurumpanadom P.O



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3. Observation 16-07-2022



Biju koonammakkil george <kgbiju42@gmail.com>

GTAC Obs Log : 14386

1 message

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

Sat, Jul 16, 2022 at 9:12 AM

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. Observer'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 : /gsbifrddata1/16jul/42_067_16jul2022_gsb.lta, /gwbifrddata2/16jul/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 : Aparna Raj, BIJU.K.G. Joe Jacob, C.H. IshwaraChandra
4. Observer'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) : Nilesh
8. Command File : /data1/gtac/cmd/42_067/42_067_17Jul2022_1600_cmd.py
9. LTA File : /gsbifrddata1/17jul/42_067_17jul2022_gsb.lta, /gwbifrddata1/17jul/42_067_17jul2022_gwb.lta
10. LogFlag File :

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

1 message

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

Mon, Jul 18, 2022 at 6:01 AM

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

GTAC Observation Log

1. Date : 18/07/2022
2. Observation Sr. No. : 14396
3. Observer : Aparna Raj, BIJU.K.G. Joe Jacob, C.H. IshwaraChandra
4. Observer'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) : Surender
8. Command File : /data1/gtac/cmd/42_067/42_067_18Jul2022_0400_cmd.py
9. LTA File : /gsbifrddata1/18jul/42_067_18jul2022_gsb.lta, /gwbifrddata1/18jul/42_067_18jul2022_gwb.lta
10. LogFlag File :

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



Department of Physics

WMO Arts & Science College, Muttil

6. Observation on 22-07-2022

Gmail Biju koonammakkil george <kgbiju42@gmail.com>

GTAC Obs Log : 14409
1 message

gtaclog@gmrt.ncra.tifr.res.in <gtaclog@gmrt.ncra.tifr.res.in> Fri, Jul 22, 2022 at 6:00 AM
To: ishwar@ncra.tifr.res.in, drjoephysics@gmail.com, kgbiju42@gmail.com, rajapama45@gmail.com

GTAC Observation Log

1. Date : 22/07/2022
2. Observation Sr. No. : 14409
3. Observer : Apama Raj, BIJU.K.G, Joe Jacob, C.H. IshwaraChandra
4. Observer'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) : Rupsing <mailto:drjoephysics@gmail.com>
8. Command File : /data1/gtac/cmd/42_067/42_067_22Jul2022_0200_cmd.py
9. LTA File : /gsbifrddata1/22jul/42_067_22jul2022_gsb.lta, /gwbifrddata1/22jul/42_067_22jul2022_gwb.lta
10. LogFlag File :

ANTENNA SETTINGS :

11. RF Band(MHz) & Solar Attn(dB)- RF1 : 591 MHz, RF2 : 591 MHz, SA1 : 0 dB, SA2 : 0 dB
12. Ist LO (MHz) & IVth LO (MHz): ILO1 : 540 MHz, ILO2 : 540MHz, IVLO1 : 61 MHz, IVLO2 : 51 MHz
13. IF Attn(dB) , IF BW(MHz) & IF ALC : IF-CH1 : 4+12 dB, 32 MHz, ON, IF-CH2 : 4+12 dB, 32 MHz, ON

GSB SETTINGS :

7. Observation on 04-08-2022

Gmail Biju koonammakkil george <kgbiju42@gmail.com>

GTAC Obs Log : 14460
1 message

gtaclog@gmrt.ncra.tifr.res.in <gtaclog@gmrt.ncra.tifr.res.in> Thu, Aug 4, 2022 at 8:20 PM
To: ishwar@ncra.tifr.res.in, drjoephysics@gmail.com, kgbiju42@gmail.com, rajapama45@gmail.com

GTAC Observation Log

1. Date : 04/08/2022
2. Observation Sr. No. : 14460
3. Observer : Apama Raj, BIJU.K.G, Joe Jacob, C.H. IshwaraChandra
4. Observer'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, Nilesh, Rupsing
8. Command File : /data1/gtac/cmd/42_067/42_067_04Aug2022_1800_cmd.py
9. LTA File : /gsbifrddata1/04aug/42_067_04aug2022_gsb.lta, /gwbifrddata1/04aug/42_067_04aug2022_gwb.lta
10. LogFlag File :

8. Observation on 04-08-2022

Gmail Biju koonammakkil george <kgbiju42@gmail.com>

GTAC Obs Log : 14461
1 message

gtaclog@gmrt.ncra.tifr.res.in <gtaclog@gmrt.ncra.tifr.res.in> Thu, Aug 4, 2022 at 10:02 PM
To: ishwar@ncra.tifr.res.in, drjoephysics@gmail.com, kgbiju42@gmail.com, rajapama45@gmail.com

GTAC Observation Log

1. Date : 04/08/2022
2. Observation Sr. No. : 14461
3. Observer : Apama Raj, BIJU.K.G, Joe Jacob, C.H. IshwaraChandra
4. Observer'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, Nilesh, Rupsing
8. Command File : /data1/gtac/cmd/42_067/42_067_04Aug2022_2000_cmd.py
9. LTA File : /gsbifrddata1/04aug/42_067_04aug2022_gsb.lta.1, /gwbifrddata1/04aug/42_067_04aug2022_gwb.lta.1
10. LogFlag File :