



**CRITERIA-3**  
**3.5 Collaboration**

**3.5.1: MOUs/Linkages/Collaboration  
2018-19.**

**Linkage between Department of Physics Vs Inter University Center  
for Astronomy and Astrophysics (IUCAA)**

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Prof. A. N. Ramaprakash  
Dean, Visitor Academic Programmes

June 23, 2023.

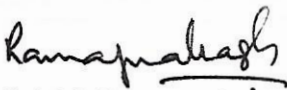
**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that Dr. Biju K.G., an Associate Professor from W.M.O. Arts and Science College, Muttill, Wayanad, Kerala, visited the Inter-University Centre for Astronomy and Astrophysics (IUCAA) during the following dates under IUCAA's Visitor Programme.

1. From October 29, 2017 till November 10, 2017.
2. From April 23, 2018 till May 22, 2018.
3. From December 27-31, 2018.
4. From July 20-22, 2019.

He worked under the able guidance of Professor Joydeep Bagchi, formerly a faculty member at this Centre and used the computing and library facilities at IUCAA for his research work.

IUCAA has paid him TA and DA as per norms, wherever applicable.

  
Prof. A.N. Ramaprakash  
Dean, Visitor Academic Programmes  
<anr@iucaa.in>

Prof. A. N. Ramaprakash  
Scientist-H (Sr. Professor)  
Dean, Visitor Academic Programmes  
Head, Instrumentation  
IUCAA, Pune-411007, INDIA

## 2. ACTIVITY REPORT

### 1. Research work is presented in the Bina Conference, with Joydeep Bagchi as Co- Author.

7/8/23, 10:49 AM

Gmail - [Indico] Abstract submission confirmation (2nd BINA Workshop)



Biju koonammakkil george <kgbiju42@gmail.com>

#### [Indico] Abstract submission confirmation (2nd BINA Workshop)

4 messages

18bina@oma.be <18bina@oma.be>  
To: kgbiju42@gmail.com

Thu, Jun 21, 2018 at 2:01 AM

Dear Biju KG,

The submission of your abstract has been successfully processed.

Abstract submitted: <<https://events.oma.be/indico/event/48/call-for-abstracts/my-abstracts>>.

Status of your abstract: <<https://events.oma.be/indico/event/48/call-for-abstracts/57/>>.

See below a detailed summary of your submitted abstract:

Conference: 2nd BINA Workshop

Submitted by: Mr. KG, Biju

Submitted on: 20 June 2018 20:31

Title: Multi-wavelength studies of Zwicky's Nonet.

#### Content

We present the results of our radio, optical and infrared studies of Zwicky's Nonet, which is a compact group of nine merging galaxies, at the centre of the rich galaxy cluster A 407. Here, all the nine galaxies are packed within a radius of only 25 kpc, with the smallest projected separation between galaxy pair combinations is about 5 kpc. This group is found to be hosting a radio source 4C 35.06, which is having helically twisted and kinked radio jets and diffuse outer lobes, revealed by the Giant Meterwave Radio Telescope (GMRT) observations at 610, 235 and 150 MHz frequencies. The host of the radio source is suggested to be a low luminosity galaxy, which might have stripped of its stars in multiple tidal encounters. A consistently observed low-value of the estimated black hole mass from the K-band magnitude compared to that from stellar velocity dispersion for all the galaxies in the sample is pointing to this possibility.

Optical and infrared studies show that all the galaxies in the group are of low-excitation class. We have acquired data from DOT 3.6m telescope via some deep observations for this exotic source. Preliminary results are very promising. We will present the multi-wavelength properties of Zwicky's Nonet and discuss the results from DOT 3.6m."

#### Summary

Application for a BINA grant (see "BINA Grants")  
None

Justification for the need of financial support

I apply for a presentation via Skype  
None

#### Primary Authors:

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Prof. BAGCHI, Joydeep (Inter University Centre for Astronomy and Astrophysics(IUCAA), P.B No.7, Ganeshkhind, Pune-411 007, India) <joydeep@iucaa.in>

<https://mail.google.com/mail/u/0/?ik=49e3588b42&view=pt&search=all&permthid=thread-f:1603824996959625362&simpl=msg-f:16038249969596253...> 1/3

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Contact person	E-mail	Telephone	Date
P. De Cat	Peter.DeCat@oma.be	+32 2 373 67 85	October 12, 2018

**Subject:** Participation to the 2nd BINA workshop

To whom it may concern,

I hereby confirm that **Mr. Biju Koonammakkil George** submitted an abstract for the 2nd BINA workshop "BINA as an expanding international collaboration" that was held in the Meridian room of the Royal Observatory of Belgium from October 9, 2018 to October 12, 2018 (<http://aa.oma.be/18bina>). His abstract entitled "Multi-wavelength studies of Zwicky's Nonet" was accepted as a contributed talk of 20 minutes. The presentation was presented via Skype on Wednesday October 10, 2018 at 16:00.

Sincerely yours,

Peter De Cat  
(Main organizer workshop)