

Curriculum Vitae

Sumana Nandi

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Personal Information: Date of Birth -12/09/1981; Gender-Female; Citizenship: Indian

Education: Ph. D. in Physics at ARIES and degree provided by, Kumaun University
2013, Thesis title: **Large Radio Sources and Episodic Nuclear Activity**

Master of Science in Physics, (2003 – 2005)
Siksha Bhavana, Visva Bharati University, Santiniketan, India

Bachelor of Science in Physics (Honours), Mathematics, Chemistry, (2000 – 2003)
Siksha Bhavana, Visva Bharati University, Santiniketan, India

h-index: 13 (Google Scholar); **Citations** 338; **ORCID:** <https://orcid.org/0000-0002-8142-4619>

Google Scholar link: <https://scholar.google.se/citations?user=kbcxaCYAAAAJ&hl=en>

Research Position

Assistant Professor; Manipal Centre for Natural Sciences at Manipal Academy of Higher Education, Manipal, Karnataka	February 2022-June 2025
Post-doctoral fellow; National Centre for Radio Astrophysics Tata Institute of Fundamental Research, Pune	June 2019
Post-doctoral fellow; Indian Institute of Astrophysics , Bangalore	October 2017- June 2019
Post-doctoral fellow under Wenner-Gren ; foreign postdoctoral fellowship programme. KTH Royal Institute of Technology, Department of Physics, Oskar Klein Centre , Stockholm, Sweden.	June 2015-May 2017
BELSPO Post-doctoral Fellow at University Gent, Belgium.	Nov 2013-April 2015
Visiting Researcher at ARIES, Manora Peak, Nainital, Uttarakhand	Feb 2013-October 2013

Accomplishments

Selected as a two-year member (2024,2025) of the High Luminosity AGN (HLA) Science Review Panel (SRP), The National Radio Astronomy Observatory (NRAO, VLA), United States National Science Foundation.

Referee for the peer-reviewed Journal Astronomy & Astrophysics, Publisher: EDP Sciences for European Southern Observatory, Monthly Notices of the Royal Astronomical Society

National and International telescope time proposal reviewer.

Membership of professional societies : The Astronomical Society of India.

Awards, Fellowships, Grants

SERB grant, under state university research excellence scheme 2023. This project is for a period of 3 years. Project title is "Radio loud AGN jets: their evolution, intermittency & precession" and SERB file number is SUR/2022/003864 ([This is a ongoing project](#)).

The Science and Engineering Research Board -National Post Doctoral Fellowship (NPDF) 2019 (file no PDF/2018/002833).

Wenner-Gren foreign postdoctoral fellowship, Host Institution KTH Royal Institute of Technology, Sweden.

Post Doctoral Research Fellowships of the Belgian Federal Science Policy (BELSPO), co-funded by the Marie Curie Actions of the European Commission.

Research Fellowship under the project " Imaging of Giant Radio Galaxies " sponsored by the Department of Science and Technology govt. of India. Host Institution: ARIES Nainital, India.

PhD and project students guidance

- i) One PhD student is working under T. M A. Pai fellowship, MAHE, Manipal ([ongoing](#)).
- ii) One research associate (RA) is working under SERB project SUR/2022/003864 ([ongoing](#)).
- iii) Supervised one intern student from Department of Atomic and Molecular Physics, MAHE.
- iv) Supervised a student for MSc thesis. The thesis title is "Imaging of Active Galactic Nucleus (AGN) using interferometric summary data from Giant Metre Wave Telescope (GMRT)". Thesis was submitted by 16th June 2023.
- v) Supervised one student under Summer research internship (SRI) 2023 program.
- vi) Supervised one student under SRI 2022 program.
- vii) Guide of a master student at Ghent University, Belgium for his master thesis in the academic year 2014-2015. Master thesis title -"Periodic activity in radio galaxies".

Teaching

- 1) Introduction to Astrophysics, MCNS, Integrated PhD Programme, academic 2024
- 2) Numerical Techniques, MCNS MAHE, Integrated PhD Programme, 2023
- 3) Introduction to Astrophysics, MCNS, Integrated PhD Programme, academic 2023
- 4) Introduction to Astrophysics, MCNS, Integrated PhD Programme, academic 2022
- 5) Galaxies and AGN for Bachelor Programmes at KTH Sweden, academic year 2016

Involvement in MCNS official activities

- 1) Integrated MSc, PhD admission coordinator 2024.
- 2) Worked as a MCNS research coordinator for the year 2023.
- 3) Took lead role to prepare MOU agreement between MAHE and Square Kilometer Array - India Consortium.
- 4) Member library committee.

Invited Talks, Workshops, Conferences (2022-2025)

- 1) Invited speaker at Department of Astrophysics and High Energy Physics, S. N. Bose National Centre for Basic Sciences (1st August 2025). Talk title: Investigation of the central system of the Black Hole Binary Candidates.
- 2) Invited speaker at Christ University, Bangalore (04 July 2025): talk title: Study of radio loud active galactic nuclei (AGN) using interferometry.
- 3) Organised SKA workshop in 43rd Annual Meeting of Astronomical Society of India NIT Rourkela (16/2/2025), Chaired a session and presented poster title “A new population of DDRG: several episodes of jet activity in multiple Directions”
- 4) Contributed speaker for NSSS 2024-National Space Science Symposium (28 th February); Organized by ISRO and Goa University. talk title: Finding the evolutionary link in between ULIRGs and radio galaxies.
- 5) Poster presented for 42nd Annual Meeting of the Astronomical Society of India (ASI), IISc Bangalore: Porter title “Investigation of the central system of the Black Hole Binary Candidate J1328+2752”.
- 6) Participated “9th Regional Astronomy Meeting (RAM) 2024 – Manipal”, Chaired a session on “AGN” during this meeting.
- 7) Delivered online invited colloquium talk on “Evolutionary sequence of radio loud AGNs” at department of Astronomy, University Sao Paulo, Brazil (27 th March 2023).
- 8) Contributed speaker in one innational conference RETCO-V 2023, IIA , Talk title: “Tracing the evolution of ultraluminous infrared galaxies into powerful radioloud galaxies ”
- 9) Presented recent research work as a contributed speaker in MRC 2023, MAHE
- 10) Speaker for international conference “Growing Black Holes: Accretion and mergers”; Nepal 15-20 May 2022 Talk title; “A potential binary black hole candidate”

Experience with national and international Telescopes

A frequent user of Giant Metrewave Radio Telescope (GMRT), maintained by National Centre for Radio Astrophysics, Tata Institute of Fundamental Research. Familiar with low frequency radio observation with Low-Frequency Array (LOFAR), maintained by ASTRON Netherlands Institute for Radio Astronomy. LOFAR antennas are arranged in clusters that are spread out over an area of 100 km in diameter within the Netherlands and over 1500 km throughout Europe. Familiar with radio telescopes Very Large Array (VLA) maintained by National Radio Astronomy Observatory (NRAO) Socorro, New Mexico and Very-long-baseline interferometry (VLBI). Familiar with optical observations with Himalayan Chandra Telescope (HCT), Hanle and Devasthal Optical Telescope (DOT). In academic year 2023, 4 observing proposals have been accepted in GMRT, DOT and AstroSat.

Technical Experience

Experience in analysis of radio interferometric data as well as spectroscopic and photometric data. Software used: Astronomical Image Processing System (AIPS), CASA, IRAF. Familiar with programming in C and Python.

Science Popularization

Participated science day activities organized by the MCNS, MAHE.

I participated in the Science Day activities organized by the National Centre for Radio Astrophysics (NCRA), TIFR at the GMRT campus. Actively participated outreach programme of Astronomical society of India and Indian institute of Astrophysics (IIA). IIA nominated representative for the event “India International Science Festival (IISF)” 2018.

Accepted proposals in national and international telescopes (VLBI, VLA , LOFAR , GMRT, HCT, DOT, Astrosat)

1. A high resolution study of seven ULIRGS

VLBA Proposal code: VLBA/25A-182, PI Ayisha Fida(MAHE, PhD Student) Co-PI **Sumana Nandi** (MAHE). (**Student achievements**)

2. Search for misaligned restarted radio-loud AGNs in galaxy clusters and mergers

GMRT Proposal Code: 47_080 , PI: Barenya Kumar Dev (MAHE, project RA), Co-PI **Sumana Nandi** (**Student achievements**)

3. Study of AGN feedback in the 2nd set of ULIRGS with signature of radio outflow Astrosat proposal code: A13_062, PI **Sumana Nandi**.

4. Astrosat proposal code: A14_107, PI **Sumana Nandi** (MAHE)

5. Study of radio galaxy 0844+31 (IC 2402) with a peculiar jet morphology
uGMRT proposal ID 46_097 Principal Investigator: **S. Nandi**

6. Low-frequency study of a XRG with a central interacting host
uGMRT proposal ID 44_069 Principal Investigator: **S. Nandi**

7. Spectroscopic study of the host of a XRG
proposal code DOT-2022-C2-P44; Principal Investigator: **S. Nandi**

8. DOT-2023-C1-P58, Principal Investigator: **S. Nandi**

9. Confirmation of a Dual AGN using Radio Spectral Indices
VLBI, EVN proposal ID: EN008 Principal Investigator: **S. Nandi**

10. High frequency observations of recently identified double-double radio galaxies
VLA proposal ID: VLA/2019-07-030, Principal Investigator: **S. Nandi**

11. A giant episodic radio galaxy with a signature of transmute jet axis

VLA proposal ID: VLA/2019-06-157, Principal Investigator: **S. Nandi**

12. uGMRT observations of recently identified double-double radio galaxies
GMRT Proposal ID: 37_113, Principal Investigator: **S. Nandi**

13. Investigation of the multiple jet triggering mechanism for large radio galaxies
HCT Proposal ID: P37 Cycle 2019 (Cycle1), Principal Investigator: **S. Nandi**

14. A study of two misaligned DDRGs
GMRT Proposal ID: 34_029, Principal Investigator: **S. Nandi**

15. Optical Spectroscopy of Nuclear Activity in Ultraluminous Infrared Galaxies
HCT Proposal ID: P36 2018 Cycle 1, Co-Principal Investigator: **S. Nandi**
Unveiling the jet of NGC6217
LOFAR Proposal ID: LC9_008, Co-Principal Investigator: **S. Nandi.**

16. A misaligned DDRG with double peak emission lines
LOFAR Proposal ID: LC8_011, Principal Investigator: **S. Nandi.**

17. A misaligned DDRG with double peak emission lines
VLA Proposal ID: VLA/17A-087, Principal Investigator: **S. Nandi.**

18. 325 MHz observation of a recently discovered red quasar with multiple jet activity
GMRT cycle 30, Proposal code 30_059, Principal Investigator: **S. Nandi.**

19. A low frequency study of a new sample of double-double radio galaxies
LOFAR, cycle 5, Proposal code LC5_016, Principal Investigator: **S. Nandi.**

20. A lowfrequency observations of a misalinged DDRG
GMRT, cycle 28, Proposal code 28-044, Principal Investigator: **S. Nandi.**

21. A multifrequency study of a new sample of double-double radio galaxies (DDRGs),
GMRT, cycle 26, Proposal code 26-030, Principal Investigator: **S. Nandi.**

22. A multifrequency study of a new sample of double-double radio galaxies (DDRGs),
GMRT, cycle 23, Proposal code 23-056, Principal Investigator: **S. Nandi.**

22. Low-frequency observations of the double-double radio galaxy 3C236, cycle 20,
GMRT, Proposal code 20-085, Principal Investigator: **S. Nandi.**

Student achivements:

1. PhD student, Ms. Ayisha Fida has been selected for the Radio Astronomy School 2024 (RAS-2024) at NCRA-TIFR, Pune.

2. Research associate, Mr. Barenya Kumar Dev has been selected for Radio Astronomy Winter School for College and University Students (RAWS-2024), at IUCAA, Pune.

List of publications Publications in refereed journals (h-index 13) :

1. "A Relook at the Black Hole Binary Candidate J1328+2752 with VLBI"; **Sumana Nandi**, Preeti Kharb, Anderson Caproni, Rupak Roy, and Biny Sebastian; 2024, The Astrophysical Journal, Volume 965, Issue 1, id.9, 8 pp. [*Impact factor 4.9, Q1*]
2. "A large jet narrow-line Seyfert 1 galaxy: observations from pc to 100 kpc scales" ; Sina Chen, Preeti Kharb, Silpa Sasikumar, **Sumana Nandi**, Marco Berton, Emilia J'arvel'a, Ari Laor, Ehud Behar, Luigi Foschini, Amelia Vietri, Minfeng Gu, Giovanni La Mura, Luca Crepaldi, and Minhua Zhou; 2024, The Astrophysical Journal, Volume 963, Issue 1, id.32, 12 pp. [*Impact factor 4.9, Q1*]
3. "A VLBA-uGMRT search for candidate binary black holes: Study of six X-shaped radio galaxies with double-peaked emission lines"; Biny Sebastian, Anderson Caproni, Preeti Kharb, Nayana A.J., Arshi Ali, K., Rubinur, Christopher P. O'Dea, Stefi Baum, **Sumana Nandi**; 2024 Monthly Notices of the Royal Astronomical Society, Volume 530, Issue 4, pp.4902-4919. [*Impact factor 4.9, Q1*]
4. "AT2020ohl: Its nature and probable implications"; Rupak Roy, Samir Mandal, D. K. Sahu, G. C. Anupama, **Sumana Nandi** and Brijesh Kumar; 2024, Monthly Notices of the Royal Astronomical Society, Volume 528, Issue 4, pp.6176-6192. [*Impact factor 4.8, Q1*]
5. "Double-peaked Lines, Dual VLBI Components, and Precessing Jets in J1328+2751" **S. Nandi**, A. Caproni, P. Kharb, B. Sebastian, R. Roy 2021, The Astrophysical Journal 908,178, (10pp). [*Impact factor 4.8, Q1*]
6. "Tracing the Evolution of Ultraluminous Infrared Galaxies into Radio Galaxies with Low Frequency Radio Observations " **S. Nandi**, M. Das, K.S.Dwarakanath 2021, Monthly Notices of the Royal Astronomical Society, 503, 5746. [*Impact factor 5.356, Q1*]
7. "The Peculiar WAT NGC 2329 with Seyfert/FRI-like Radio Lobes" S. Das , P. Kharb , R. Morganti, **S. Nandi** 2021 , Monthly Notices of the Royal Astronomical Society Volume 504, July 2021, Pages 4416-4427 . [*Impact factor 5.356, Q1*]
8. "The central core of NGC 1052. Accretion and jets in a low luminosity AGN" S. Falocco , J. Larsson, **S. Nandi** 2020, Astronomy & Astrophysics 638, 67. [*Impact factor 5.636, Q1*]
9. "A low-frequency study of recently identified double-double radio galaxies" **S. Nandi** , D.J. Saikia, R. Roy , P. Dabhade , Y. Wadadekar , J. Larsson , M. Baes, H.C. Chandola and Singh. 2019, Monthly Notices of the Royal Astronomical Society, Volume 486, Issue 4, p.5158-5170 [*Impact factor 5.356, Q1*]
10. "A (likely) X-ray jet from NGC6217 observed by XMM-Newton" S. Falocco , J. Larsson, **S. Nandi** 2017, Accepted in Monthly Notices of the Royal Astronomical Society, Volume 472, P 2280-2288 [*Impact factor 5.356, Q1*]
11. "Tale of J1328+2752: a misaligned double-double radio galaxy hosted by a binary black-hole?" **S. Nandi**, M. Jamrozy, R. Roy, J. Larsson, D.J. Saikia, M. Baes and M. Singh, 2017, Monthly Notices of the Royal Astronomical Society: Letters, Volume 467,p.L56-L60 [*Impact factor 5.356, Q1*]

12. "Discovery of a Red Quasar with Recurrent Activity" - **Nandi S.**, Roy R., Saikia D. J., Singh M., Chandola H. C., Baes M., Joshi R., Gentile G., Patgiri M., 2014, The Astrophysical Journal, 789, 16-20 [*Impact factor 5.874, Q1*]
13. "Double-double radio galaxies from the FIRST survey"
Nandi S., Saikia D. J., 2012, Bulletin of the Astronomical Society of India, 40, 121-137 [*Impact factor 1.354*]
14. "Rejuvenated radio galaxies J0041+3224 and J1835+6204: how long can the quiescent phase of nuclear activity last?"
Konar C., Hardcastle M. J., Jamrozy M., Croston J. H., **Nandi S.**, 2012, Monthly Notices of the Royal Astronomical Society, 424, 1061-107611. [*Impact factor 5.356, Q1*]
15. "A low-frequency study of two asymmetric large radio galaxies"
A. Pirya, **S. Nandi**, D. J. Saikia, M. Singh, 2011, Bulletin of the Astronomical Society of India, 39, 547-562 [*Impact factor 1.354*]
16. "A study of giant radio galaxies at RATAN-600"
M.Khabibullina, O.V. Verkhodanov, M. Singh, A. Pirya, **S. Nandi**, N.V. Verkhodanova., 2011 Astrophysical Bulletin, 66, 717-182 [*Impact factor 1.191*]
17. "A second set of RATAN-600 observations of giant radio galaxies"
Khabibullina M. L., Verkhodanov O. V., Singh M., Pirya A., **Nandi S.**, Verkhodanova N. V., 2011, Astronomy Reports, 55, 392-399 [*Impact factor 1.33*]
18. "A radio study of the double-double radio galaxy 3C293"
S. A. Joshi, **S. Nandi**, D. J. Saikia, C. H. Ishwara-Chandra, C. Konar, 2011, Monthly Notices of the Royal Astronomical Society, 414, 1397-1404 [*Impact factor 5.356, Q1*]
19. "Radio spectra of giant radio galaxies from RATAN-600 data"
Khabibullina M. L., Verkhodanov O. V., Singh M., Pirya A., **Nandi S.**, Verkhodanova N. V., 2010, Astronomy Reports, 54, 571-577 [*Impact factor 1.33*]
- 20 "A multifrequency study of the large radio galaxies 3C46 and 3C452"
S. Nandi, A. Pirya, S.Pal, C. Konar, D. J. Saikia, M. Singh, 2010, Monthly Notices of the Royal Astronomical Society, 404, 433-441 [*Impact factor 5.356, Q1*]
21. "SN 2007uy - metamorphosis of an aspheric Type Ib explosion"
R. Roy, B. Kumar, J. R. Maund, P. Schady, E. F. Olivares, D. Malesani, G. Leloudas, **S. Nandi**, N. Tanvir, D. Milisavljevic, J. Hjorth, K. Misra, B. Kumar, S. B. Pandey, R. Sagar and H. C. Chandola, 2013, Monthly Notices of the Royal Astronomical Society, 434, 2032-2050 [*Impact factor 5.356, Q1*]

Publications in conference proceedings

1. A study of double-double radio sources from the FIRST survey
Nandi S., Saikia D. J, 2013, Astronomical Society of India Conference Series, Vol. 8, p.139-142
2. Double-double radio galaxies from the FIRST survey
Nandi S., Saikia D. J, 31st ASI Meeting, ASI Conference Series, 2013, Vol. 9, pp 93

3. The Dynamics of Radio Galaxies and Double-Double Radio Galaxies

Konar C., Jamrozy M., Hardcastle M. J., Croston J. H., **Nandi S.**, Saikia D. J., Machalski J., 2012
Journal of Astrophysics and Astronomy, 32, 477-486

4. A Multifrequency Study of Five Large Radio Galaxies

Pirya A., **Nandi S.**, Saikia D. J., Konar C., Singh, M., 2011, Journal of Astrophysics and
Astronomy,
32, 471

5. The double-double radio galaxy 3C293

S. A. Joshi, **S. Nandi**, D. J. Saikia, C. H. Ishwara-Chandra, C. Konar, 2011, Journal of Astrophysics
and Astronomy, 32, 487

6. Episodic Activity in Active Galactic Nuclei

J. Saikia , M. Jamrozy, C. Konar, **S. Nandi**, 2010, Proceedings of the 25th Texas Symposium on
Relativistic Astrophysics., 14

7. Giant radio galaxies: problems of understanding and problems for CMB ?

Verkhodanov O.V., Khabibullina M.L., Singh M., Pirya A., Verkhodanova N.V., **Nandi S.**, 2008,
"Practical Cosmology, Proceedings of the International Conference "Problems of Practical
Cosmology", 247

Article under review:

“Study of a giant radio galaxy, J1520–0546, with three epochs of misaligned restarted jet activity”
S. Nandi et al. MNRAS; Submitted 2nd reviewed version and received minor comments.

Paper in preparation:

1. A study of radio galaxy 0844+31 (IC 2402) with a peculiar jet morphology

Barenja Kumar Dev, **S. Nandi** et al.

2. ULIRG and young radio source connection

Fida A., **S. Nandi** et al.