



# Bari Maqbool

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## EDUCATION

### **Doctor of Philosophy (Ph D) in Physics**

**April 2013 — April 2017**

Department of Physics, University Of Kashmir

Thesis Title: Study of Correlated X-ray and UV Emission from X-ray Binaries

Thesis Supervisors: Prof. Naseer Iqbal, University of Kashmir, Srinagar

Prof. Ranjeev Misra, IUCAA Pune

### **Master of Philosophy (M.Phil) in Physics**

**Jan 2011 — Dec 2012**

Department of Physics, University Of Kashmir

Dissertation Title: The Effect of X-ray irradiation in Astrophysical Systems.

Supervisor: Prof. Naseer Iqbal, University of Kashmir, Srinagar

### **Master of Science (M.Sc) in Physics**

**April 2008 — June 2010**

Department of Physics, University Of Kashmir

Project Title: Radiation Dosimetry in Medical Physics

## WORK EXPERIENCE

### **Department of Physics, University of Kashmir**

**July 2017 — Dec 2017**

Contractual Lecturer

### **Indian Institute of Astrophysics, Bangalore**

**Feb 2018 — June, 2018**

Post Doctoral Fellow

### **Inter University Centre for Astronomy and Astrophysics, Pune**

**Oct 2018 — Nov 2020**

Post Doctoral Fellow

### **Islamic University of Science and Technology (IUST), Awantipora Kashmir**

**Nov 2020 — Till Date**

Assistant Professor, Physics

## RESEARCH INTERESTS

My research interests include study of the X-ray Irradiated Accretion Discs in X-ray binaries through theoretical modelling and numerical calculations. This includes studying the effects of X-ray irradiation on the outer regions of the accretion disc in low mass X-ray binaries and understanding the long term variability observed on X-ray binaries. My research interest also includes the study of the timing properties of X-ray binaries. Presently, I am involved in studying the energy dependent rapid temporal behaviour of black hole systems using AstroSat and NICER data.

## SKILLS

**Operating Systems:** Mac, Linux, Windows

**Languages:** Fortran, Python (Basic Knowledge)

**Softwares/Tools:** HEASOFT (ftools, Xspec), GHATS, Latex, Gnuplot, SMplot

**Mission pipelines:**

AstroSat- LAXPC, SXT, UVIT

SWIFT - XRT, UVOT

NICER - NICERDAS

NUSTAR -NUSTARDAS

## RESEARCH FELLOWSHIPS

Received Junior Research Fellowship (JRF) and Senior Research Fellowship (SRF) from ISRO-RESPOND Project, ISRO India.

## MEMBERSHIP

1. Associate Member of International Science Council Committee on Space Research: Paris, FR (2012 - present).
2. Visiting Associate of Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune from August 1, 2021.
3. Life Member of Astronomical Society of India (ASI).

## PUBLICATIONS

### Refereed:

1. N. Iqbal, T. Masood, M. Hamid, N. Ahmad, **Bari Maqbool**, "*Peculiar motions of galaxy clusters: correlation function approach*," (2014) Ap&SS, 353, 621. **Impact factor: 1.885**
2. **Bari Maqbool**, R. Misra, N. Iqbal, N. Ahmad, "*The effect of X-ray irradiation on the time-dependent behaviour of accretion discs with stochastic perturbations*," (2015) MNRAS, 448, 3242, arXiv:1502.01101v1 [astro-ph.HE]. **Impact factor: 5.356**
3. N. Ahmad, R. Misra, N. Iqbal, **Bari Maqbool**, "*Global Time Dependent Solutions of Stochastically Driven Standard Accretion Disks*," (2018) New Astronomy, 58, 84-89. **Impact factor: 0.926**
4. **Bari Maqbool**, M. Sneha, R. Misra et. al. "*A Stochastic Propagation Model to the Energy Dependent rapid temporal behaviour of Cygnus X-1 as observed by ASTROSAT in the hard state*" (2019), MNRAS, 486, 2964-2975, arXiv:1904.01598 [astro-ph.HE]. **Impact factor: 5.356**
5. V. Jithesh, **Bari Maqbool**, Ranjeev Misra, et. al. "*AstroSat view of the Galactic X-ray Transient Swift J1658.2-4242*" (2019), APJ, 887, 101; arXiv:1910.07804 [astro-ph.HE]. **Impact factor: 5.745**.
6. M. Sneha, **Bari Maqbool**, et. al. "*Unveiling the temporal properties of MAXI J1820+070 using ASTROSAT*" (2020), APJL, 889, L1. arXiv:2001.00755 [astro-ph.HE]. **Impact factor: 8.198**.
7. V. Jithesh, Ranjeev Misra, **Bari Maqbool**, Gitika Mall, "*Broadband Timing and*

spectral properties of MAXI J1348-630 using AstroSat and NICER observations" (2021), MNRAS, 505, 713; arXiv:2105.03066[astro-ph.HE] **Impact factor: 5.356.**

8. **Bari Maqbool**, R. Misra, N. Iqbal, N. Ahmad, "Time dependent Spectrum of an X-ray irradiated accretion disc with stochastic perturbations," submitted to MNRAS. **Impact factor: 5.356**

### Fast Communications:

1. V. Jithesh, **Bari Maqbool**, Gulab C. Dewangan and Ranjeev Misra, "Large Flares from GRS 1915+105 in its Unusual Low State as Observed by Astrosat" (2019), Atel#12805.
2. J.A. Paice, P. Gandhi, T. Belloni, A. Rao, M. Pahari, **Bari Maqbool**, A. Beri, D. Bhattacharya, D. Buckley et. al., "Swift and AstroSat monitoring of GX 339-4 during its 2019 activity." (2019), Atel#3264.
3. Nazma H., Sneha P. M., Akash G., R. Misra, Somasri S., **Bari Maqbool**, "Follow up observations of GX 339-4 with AstroSat" (2021), Atel#14400.

### TELESCOPE TIME AWARDED

1. **AstroSat**, 20 ks, T03\_116, PI: **Bari Maqbool**, Astrosat View of **GRS 1915+105** during its unusual very low flux state. [Observed]
2. **AstroSat**, 30 ks, T03\_120, PI: Jithesh V, Co. PI: **Bari Maqbool**, Observing the X-ray re-brightening of **MAXI J1348-630** using AstroSat [Observed]
3. **AstroSat**, 30 ks, A09\_044, PI: Jithesh V, Co. PI: **Bari Maqbool**, Investigating the spectral and fast X-ray timing properties of NS-LMXBs using simultaneous AstroSat and NICER observations [Observed]
4. **AstroSat**, 400 ks, A09\_079, PI: Gulab C. D. , Co. PI: **Bari Maqbool**, Accretion, Nuclear-burning and Mass-loss Properties of Luminous Supersoft Sources (P-I) [Observed]
5. **AstroSat**, 400 ks, A09\_083, PI: Gulab C. D. , Co. PI: **Bari Maqbool**, Accretion, Nuclear-burning and Mass-loss Properties of Luminous Supersoft Sources (P-II) [Observed]
6. **AstroSat**, 388 ks, A10\_042, PI: Misra R., Co. PI: **Bari Maqbool**, Black Holes in Transition: A Legacy ASTROSAT Project -1 [Accepted]
7. **AstroSat**, 388 ks, A10\_051, PI: Buckley D. A., Co. PI: **Bari Maqbool**, Black Holes in Transition: A Legacy ASTROSAT Project -2 [Accepted]
8. **AstroSat**, 388 ks, A10\_096, PI: Sivakoff, G.R., Co. PI: **Bari Maqbool**, Black Holes in Transition: A Legacy ASTROSAT Project -3 [Accepted]
9. **AstroSat**, 30 ks, A10\_059, PI: Jithesh V, Co. PI: **Bari Maqbool**, Simultaneous AstroSat and NICER observations of NS-LMXBs 4U 1735-44 and GX 340+0 [Accepted]

### RESEARCH CONFERENCES/ WORKSHOPS/ SCHOOLS ATTENDED

1. Workshop on Telescope Making between 7-8 Oct. 2009 held in Kashmir University, Srinagar.
2. National Workshop on "Advances in Astronomy and Astrophysics" 03-06 Nov. 2009 jointly organized by Deptt. of Physics University of Kashmir and Inter-University Centre for Astronomy and Astrophysics.
3. National workshop on "Advanced Statistical Techniques for Astronomy" organised by the Inter-university Centre for Astronomy and Astrophysics (IUCAA), Pune held between 04-08 October, 2010 at IUCAA, Pune.
4. International Conference on "Wideband X-Ray Astronomy: Frontiers in Timing and Spectroscopy" organised by the Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune held between January 13-16, 2011 at IUCAA Pune.
5. **JSPS-DST Asia Academic Seminar and CPS 8th International School of**

**Planetary Sciences:** Participated in International Seminar on “**Challenges In Astronomy- Observational Advances**” held in Hyogo Japan, from 26 Sept - 01 October, 2011 and presented a Poster entitled: “Structure and Stability of X-ray Irradiated Accretion Disk”

6. Workshop on **Stellar Astrophysics**, held in the Department of Physics, University Of Kashmir, Srinagar, India held from Oct 24 –Oct 26, 2011.
7. **Winter School on High Energy Astrophysics (HEAP-12)**, 2012, held in Harish-Chandra Research Institute (HRI) Allahabad, India from Feb 06 – Feb 18th , 2012.
8. **International Conference on Astrophysics and Cosmology (ICAC-12)**, 2012, held in Kathmandu, Nepal from March 19-March 21st 2012.
9. Attended **8th JK Science Congress**, held in the University of Kashmir, Srinagar from September 17th - September 19th, 2012.
10. Participated in **IPM International School and workshop on Particle Physics (IPP12): Neutrino Physics and Astrophysics**, held in Tehran, Iran from September 26 – 1st October, 2012.
11. **2nd IUCAA X-Ray Astronomy School** held in IUCAA, Pune from 03 February – 02 March, 2013
12. **International Meeting on Transients and Timing- A Multiwavelength Approach**” held in IUCAA, Pune India from 04 March – 08 March, 2013
13. Workshop on “**Astronomical Techniques and Science with Virtual Observatories**” held in University of Kashmir, Srinagar from 21 September – 24 September, 2013.
14. Conference on “**High Energy Emission from Active Galactic Nuclei**” held in University Of Kashmir, Srinagar from 07 October – 09 October, 2013.
15. MIT-IUCAA workshop on “**X-ray Studies of Transient Astronomical Sources**” organised Jointly by MIT, USA and IUCAA, Pune and held in Pune from 13 January – 24 January, 2014.
16. Workshop on “**Python Programming in Astronomy**” held in IUCAA, Pune from 17 February – 21 February, 2014.
17. **32nd Meeting of Astronomical Society of India** held in Mohali, India from 22nd March, - 24th March, 2014.
18. **The 40th COSPAR Scientific Assembly**, held in Moscow Russia from 2nd August – 10th August, 2014.
19. **33rd Meeting of Astronomical Society of India** held in NCRA, Pune India from 17th Feb, - 20th Feb, 2015.
20. Workshop on “**CLOUDY**” held in IUCAA, Pune India from 21-26 September, 2015.
21. Workshop on “**Accreting Binaries and Novae - A Multiwavelength Study**” held in CBS Mumbai, India from 2-6 Dec, 2015.
22. **34th Meeting of Astronomical Society of India** held in University of Kashmir from 10th May, - 13th May, 2016.
23. **ASTROSAT Data Analysis** workshop held in IUCAA from 13th - 26th November, 2017.
24. **4th RETCO Meeting** held at IUCAA Pune, from 17th April - 20 April, 2019.
25. **14th APPC Meeting** held in Sarawak Malaysia, from 17th Nov - 21 Nov, 2019.
26. **Invited Talk** in a Two Day Introductory Workshop on “**Astronomy and Astrophysics**” held at Department of Physics, University of Kashmir, Srinagar from 18th - 19th December, 2021.
27. Attended one day online Conference on “Emerging Trends in High Energy Astrophysics” organised by Department of Applied Sciences, Tezpur University on 16th March, 2022.

**REFRESHER/  
ORIENTATION/  
FACULTY**

1. Attended a 4- Week Induction/Orientation Programme entitled “Faculty in Universities/Colleges/Institutes of Higher Education” organised by Teaching

**DEVELOPMENT  
PROGRAMME  
ATTENDED**

- Learning Centre, Ramanujan College, University of Delhi from 11 January 2021 - 09 February, 2022.
2. Attended a Refresher Course on Astronomy and Astrophysics organised by Teaching Learning Centre (TLC) of Inter-University Centre for Astronomy and Astrophysics (IUCAA) Pune, from 16th May 2022 - 17th June, 2022.