

CONTACT INFORMATION

University of Kansas (KU)
Department of Physics and Astronomy
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Lawrence, KS 66045

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PROFESSIONAL EXPERIENCE

Graduate Research Assistant

University of Kansas
Supervisor: Dr. Ian J. M. Crossfield,
Associate Professor, KU

January 2025- Present

Graduate Teaching Assistant

University of Kansas
Demonstrated Labs and Grading
Supervisor: Dr. Jennifer A. Delgado,
Associate Teaching Professor, KU

August 2024 – December 2024

Senior Lecturer in Physics

Northern University Bangladesh (NUB)

August 2023 – to June 2024

Lecturer in Physics

Northern University Bangladesh (NUB)

September 2019 – June 2023

EDUCATION

M. S. in Physics

Position: 5th (Out of 75)

Thesis Title: Study of SMES device and SMES-PCC computer program development for the analysis of superconducting coil design

Supervisor: Dr. Md. Rafiqul Islam, Professor, University of Chittagong

January 2018 - May 2019

B. Sc. in Physics

Department of Physics , University of Chittagong, Bangladesh

Position: 4th (Out of 92)

January 2013 - January 2018

RESEARCH INTERESTS

- Astronomical Data Analysis
- Exoplanet Detection
- Planetary Atmosphere
- Biosignatures, life in Space
- Space Mission design
- Space Radiation
- Radiation Shielding

PUBLICATIONS

Citations : 135 (h-index: 6) *Source: Researchgate

PEER REVIEWED JOURNAL PAPERS

1. **Al Zaman, MD. A., & Kunja, L. A.** (2023). Effectiveness of radiation shields constructed from Martian regolith and different polymers for human habitat on Mars using MULASSIS/GEANT4 and OLTARIS. *AIP Advances*, 13(8).
2. **Al Zaman, MD. A., & Monira, N. J.** (2023). Shielding effectiveness of different polymers and low-density hydrides in a combined radiation shield for crewed interplanetary space missions. *Radiation Physics and Chemistry*, 205, 110706.
3. **Al Zaman, MD. A., Roy, S., Sarker, S., Azad, M. M. U., Akib, A. A., & Haque, M. M.** (2023). Comparative Analysis of the Effectiveness of Natural Polymers and Conventional Space Radiation Shielding Polymers in Spacecraft for Prolonged Space Expeditions. *Materials Research Express*.
4. **Al Zaman, MD. A., Islam, M. R., Maruf, H. M. A. R., & Nizam, Q. M. R.** (2022). Effectiveness of Kevlar and water-soaked hygienic wipes in a combined radiation

shield for manned long termed space missions. Radiation Physics and Chemistry, 110483.

5. **Al Zaman, MD. A.,** Nizam, Q.M.R. (2022) Study on Shielding Effectiveness of a Combined Radiation Shield for Manned Long Termed Interplanetary Expeditions. Journal of Space Safety Engineering <https://doi.org/10.1016/j.jsse.2021.12.003>
6. **Al Zaman, MD. A.,** Maruf, H. M. A. R., Islam, M. R. (2021). Study on superconducting magnetic shield for the manned long termed space voyages. The Egyptian Journal of Remote Sensing and Space Science, 24(2), 203-210
7. **Al Zaman, MD. A.,** Islam, M., & Maruf, H. (2020). Study on Conceptual Designs of Superconducting Coil for Energy Storage in SMES. East European Journal of Physics, (1), 111-120.
8. Islam, M. R., **Al Zaman, MD. A.** (2020) SMES-PCC computer program development for studying and designing the superconducting magnets for energy storage purpose. Solid State Science and Technology, v. 27, n. 1 & 2, 40 – 50.

CONFERENCE PRESENTATIONS

1. **Al Zaman, MD. A.,** Gupta, Sanchita Das, Maruf, H. M. A. R, Gupta, Somoy Das (2025) Estimating Low-Density Hydride Effectiveness in Spacesuit Radiation Shielding: A Comparative Computational Approach, KU Physics & Astronomy Locally OrganiZed Assembly (PALOOZA'25) (<https://indico.ku.edu/event/480/timetable/>)
2. **Al Zaman, MD. A.,** Kunja, L. A. (2024) Radiation Shielding Strategies for Human Habitats on Mars: Exploring the Effectiveness of Shields Constructed with Martian Regolith and Hydrogenous Polymers Using Geant4 and OLTARIS. 'Mid-American Regional Astrophysics Conference (MARAC), December 5-6, 2024
3. **Al Zaman, MD. A.,** Islam, M. R., Maruf, H. M. A. R.(2023) Star Formation Rate Profiles in Spiral Galaxies at $z < 0.03$. *5th International Conference on "Physics for Sustainable Development and Technology (ICPSDT-2023), September 7-8, 2023*
4. Kunja, L. A., **Al Zaman, MD. A.** (2023) Effectiveness of radiation shields constructed from Martian regolith and different polymers for human habitat on Mars using MULASSIS/GEANT4 and OLTARIS. *Fall 2023 Academic Conference and 41st Annual General Meeting, Korean Space Science Society (25 - 27th October 2023)*
5. **Al Zaman, MD. A.,** Islam, M. R., Maruf, H. M. A. R., Nizam, QMR (2022) Study on Effectiveness of Polyimide and Polyester Polymer for Radiation Shielding in a Spacecraft for Long Termed Space Mission. *International Conference on Physics 2022, May 19-21, 2022, Organized by Bangladesh Physical Society at Atomic Energy Center Dhaka.*
6. **Al Zaman, MD. A,** Maruf, H. M. A. R., Islam, M. R. (2020) 'Study on Superconducting Magnetic Shield for the Manned Space Expeditions.' *Int. conference on Physics (2020) at Atomic energy Center, Dhaka, Bangladesh (5-7th March '20), Bangladesh Physical Society.*
7. **Al Zaman, MD. A.,** Islam, M. R.(2019) 'Study of Design Optimization of Superconducting Solenoid and Toroid Coil for the Energy Storage in SMES'. *National conference on Physics '19 (7-8th February 2019), Bangladesh Physical Society*

CONFERENCE POSTERS

1. **Al Zaman, MD. A.,** Crossfield, Ian J. M., Brande, Jonathan (2025) A New Eye in Space: Exploring the Potential of a Next-Generation Space Telescope for Exoplanet Science Cases. KU Physics & Astronomy LOcally OrganiZed Assembly (PALOOZA'25, 26th April) (<https://indico.ku.edu/event/480/sessions/613/#20250426>)
2. **Al Zaman, MD. A.,** Islam, M. R., Maruf, H. M. A. R., Nizam, QMR (2022) Study on the effectiveness of Kevlar and Polyethylene for radiation shielding in a spacecraft for long term space missions. *4th International Conference on "Physics*

for Sustainable Development and Technology (ICPSDT-2022), Jan 22-23, 2022

3. **Al Zaman, MD. A.**, Maruf, H. M. A. R., Islam, M. R. (2021) ‘Study on Shielding Effectiveness of a Conceptual Active Radiation Shield Constructed with Multi-Wall Carbon Nanotube Added YBCO-123 Superconducting Material’ *National Conference on Physics (6-7 August’21), Bangladesh Physical Society.*
4. **Al Zaman, MD. A.** et.al. (2019) Space applications of High Tc Superconductivity and Superconducting Magnetic shield for manned space missions. *3rd International Conference on "Physics for Sustainable Development & Technology (ICPSDT-2019) (18 -19th December’19).*
5. **Al Zaman, MD. A.**, Ahmed, S., Monira, N. J. (2018) An overview of Superconducting Magnetic Energy Storage (SMES) and Its Applications. *International Conference on Nanotechnology and Condensed Matter Physics 2018 (ICNCMP 2018)*

AWARDS & HONORS

Best Faculty Member for Contribution to the Development and Growth December 12, 2023

Department of Textile Engineering,
Northern University Bangladesh
On the Occasion of National Textile Day’23

Best presenter (Oral Presentation) September 8, 2023

- 5th International Conference on “Physics for Sustainable Development and Technology(ICPSDT-2023)

2 Best Poster Awards

- 4th International Conference on “Physics for Sustainable Development and Technology(ICPSDT-2022) January 22 - 23, 2022
- National Conference on Physics 2021 August 6 - 7, 2021

National Finalist

EATL-Prothom Alo Apps Challenge 2016
Lead Sponsor: World Bank
For: Emergency Bangladesh (an Android Utility Application)

11th February 2017

TEACHING (Undergraduate)

PHSX 216: General Physics I Laboratory LAB at KU Fall 2024

PHY 1305 & PHY 1306
(Physics II & Physics Lab: Electricity and Magnetism, Heat & Thermodynamics)
(40 Students Per Section) Fall 2019 – Spring 2024

EEE 3105 & EEE 3106
(Basic Electrical and Electronics Engineering & Lab)
(40 Students Per Section) Spring’21, Summer’21

PHY 1109 & PHY 1110
(Physics I & Physics Lab: Properties of Matter and Optics) Fall 2019 – Fall 2023

COMPUTER SKILLS

Programming Languages

C, C++, Python

Softwares

TOPCAT, DS9

MATLAB, SPENVIS (GEANT4), OLTARIS

Operating Systems

Linux (Ubuntu), Windows

RESPONSIBILITIES

1. **Judge (Poster)**, Undergrad Research Symposium, University of Kansas, 25th April, 2025
2. **REU Application Reviewer Panel** (Summer 2025), Department of Physics and Astronomy, University of Kansas
3. **Convener**, Seminar on Impact of Artificial Intelligence on Education and Industries, 31st July 2023
4. **Co-Convener**, Celebration of National Textile Day, 12th December 2023
5. **Convener**, Seminar on Contemporary Research in Department of Textile Engineering, NUB, 12th November, 2022
6. **Convener**, Workshop on MATLAB, 31st July 2022
7. **Convener**: Promotion, Digital Activities and Publications, Department of Textile Engineering, NUB (From September 2023 to June 2024)
8. **Co - Convener**, Celebration of National Textile Day, 4th December 2022
9. **Technical Member**, Journal of Natural Science and Textile Technologies (JNSTT), an online journal published by Department of Textile Engineering, Northern University Bangladesh <https://jnstt-nubtex.com/>
10. **Technical Member**, Textile Newsletter, a Semester wise online Newsletter, published by Department of textile Engineering, Northern University Bangladesh <https://textile.nub.ac.bd/page/54/Newsletter>
11. **Advisor**, NUB Textile Research and Publications Club (From July 2021 – January 2023)
12. **Member**, Outcome Based Education Curriculum Formulation Committee, Department of Textile Engineering
13. **Member** (Documentation), Central Admission Committee, Northern University Bangladesh (January 2022- February 2024)
14. **Co-Convener** (January 2021- August 2022), Documentation Committee, Department of Textile Engineering, NUB
15. **Former Member**, Chittagong University Physics Society

OUTREACH

- Worked as a **GRE and TOEFL Instructor** (Around 10 months) in a Higher Study Consultancy Center Called Nextop-USA (<https://nextopusa.com/>)
- **Feature writer** (The Business Standard, Roar media, Bigganjatra)
Wrote around 30 articles covering many topics on Physics, Astronomy, Education, Technology, Book review.
The Business Standard Article: <https://www.tbsnews.net/thoughts/judging-quantity-how-well-bangladesh-faring-research-505990>

Roar Media Writer Profile: <https://archive.roar.media/author/alzaman>
BigganJatra (Science-Sailing) **Writer** **Profile:** <https://bigganjatra.org/writer/proyash-zaman/>
- Write about research tools, literature review, predatory journals/practices and others in personal blog.
Link: <https://cuprw18.wixsite.com/home/research-blog>
- Volunteered at Jamal Nazrul Islam Science Fair (2016) (Demonstrated some basic

Physics Experiments to the students in elementary level)

- Volunteered at Bangladesh Physics Olympiad-Chittagong Chapter (2016) (As an examiner. Evaluated answers scripts)