

PERSONAL INFORMATION

Rafia Sarwar

Department of Space Science, Institute of Space Technology, 44000 Islamabad (Pakistan)

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Sex Female | Date of birth 30 Nov 1993 | Nationality Pakistani

PERSONAL STATEMENT

As an early-career astronomer, I am seeking a PhD position in the field of Gravitational-Wave Astrophysics and Multi-Messenger Astronomy.

EDUCATION AND TRAINING

Sep 2016–Aug 2019

Master of Science in ASTRONOMY and ASTROPHYSICS

Institute of Space Technology (IST), Islamabad (Pakistan)

THESIS:

Event Rates of extreme mass-ratio inspirals (EMRIs) and intermediate mass-ratio inspirals (IMRIs) in Milky Way galaxy (A grade)

RESEARCH INTERESTS:

- Blackhole Physics
- Gravitational Waves: Inspirals and Primordial Sources
- Methods of Data Synthesis: Bayesian Data Analysis using Advanced Markov chain Monte Carlo methods
- Astrophysical Dynamics: Galactic Centers and Globular Clusters
- Detector: Laser Interferometer Space Antenna (LISA)
- Testifying General Relativity, Probing Astrodynamics and Cosmography

Sep 2011–Mar 2016

Bachelor of Science in Physics

COMSATS Institute of Information Technology (CIIT), Islamabad (Pakistan)

THESIS:

Dark Matter, its Detection and Possible Candidates (A grade)

RESEARCH INTERESTS:

- Dark Matter: Weakly Interacting Massive Particles (WIMPs)
- Galactic Rotation Curves and Gravitational Lensing
- Candidates of Dark Matter: Weakly Interacting Massive Particles, Massive Compact Halo Objects, Sterile Neutrinos and Axions
- WIMP Scattering Processes and Detection Principles
- WIMP Trajectory in Solar System Near the Sun
- Detector: DRIFT

PERSONAL SKILLS

Mother tongue(s)

Urdu

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	B2	B2	C1	B2

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages

Communication skills

- As an early career astronomer, I encourage young people and graduate students to develop important scientific skills through enrichment and engage with the wider community in a practical, enjoyable and meaningful ways.
- I presented my research work in two regional conferences in the fields of Physics and Astronomy that helped me to develop demonstration and presentation skills.

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem-solving
Independent user	Independent user	Basic user	Basic user	Proficient user

Digital skills - Self-assessment grid

C/C++, ROOT, CORSIKA, R, Python, MATLAB, Mathematica, Scientific Workplace, LaTeX, Windows, Linux

ADDITIONAL INFORMATION

Publications

Rafia Sarwar, Asad Ali and Saeeda Sajjad. "Event Rates of Extreme Mass Ratio Inspirals (EMRIs) and Intermediate Mass Ratio Inspirals (IMRIs) in Milky Way Galaxy", submitted to be published in the proceedings of International Conference on Aerospace Science & Engineering (ICASE) IEEE Publications, 2019.

Presentations

- Oral Presentation at Sixth International Conference on Aerospace Science and Engineering (ICASE 2019) organized by the Institute of Space Technology, Islamabad, Pakistan (November 2019).
- Speaker at 14th Regional Conference on Mathematical Physics organized by Quaid-i-Azam University (QAU), Islamabad, Pakistan (November 2015).

Conferences

- Participation in Two Days Seminar on Pakistan's Collaborations with CERN and SESAME, Pakistan Institute of Nuclear Science and Technology, Islamabad, Pakistan (November 2016).
- Participation in 5th School on LHC Physics, National Center for Physics (NCP), Islamabad, Pakistan (August 2016).
- Participation in International Scientific Spring (ISS), National Center for Physics (NCP), Islamabad, Pakistan (March 2016).
- Participation in International Symposium on Physics Beyond the Standard Model (ISPBSM), National Center for Physics (NCP), Islamabad, Pakistan (October 2015).

References

- **Dr. Asad Ali**
Associate Professor,
Department of Applied Mathematics & Statistics,
Institute of Space Technology, Islamabad, Pakistan.
Email: asad.ali@ist.edu.pk
- **Dr. Saeeda Sajjad**
Assistant Professor,
Department of Space Science,
Institute of Space Technology, Islamabad, Pakistan.
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