Reshma Anna-Thomas

Curriculum vitae

Department of Physics and Astronomy,
West Virginia University,
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⌗ ReshmaAnnaThomas

Research interests	Fast radio transients; time and imaging domain searches; polarization properties; fourier and time domain periodicity searches; deep imaging of interferometric data

Education

2019 – 2024	**Ph.D. in Physics**, *West Virginia University, United States of America*
Supervisor	Dr. Sarah Burke-Spolaor
Thesis	*Searching and characterizing fast radio transients*
2014 – 2019	**Integrated Masters in Physics**, *Pondicherry University, India, CGPA: 9.4/10*
Supervisor	Dr. K.V.P. Latha
Thesis	*Polarimetry using Carbon Nanotube based radiation detector*

Awards/Scholarships

2019	**Dr. V. Devarajan Memorial Gold medal**, *Pondicherry University*
2017 – 2019	**Postgraduate Merit Scholarship**, *Pondicherry University*
2014 – 2017	**Merit Scholarship**, *Pondicherry University*

Research Experiences

2018	**Summer intern**, *Indian Institute of Astrophysics, Bangalore*
Supervisor	Prof. S. P. Rajaguru
Title	Spectral line synthesis for 3D Magneto-Hydro Dynamic simulation and effect of magnetic field on line width and asymmetries.
2016	**Summer intern**, *Indian Academy of Sciences Summer Research Fellow*
Supervisor	Prof. V. Murugeshan, *Indian Institute of Science, Bangalore*
Title	Introduction to Numerical Solutions of Partial Differential Equations.

Workshops & Training

2023	ALMA Data Reduction Workshop, *West Virginia University*

2023   NRAO Synthesis imaging workshop, *Charlottesville*

2021   Summer School in Statistics for Astronomers, *Pennsylvania State University*

2020   Arecibo Single Dish Workshop, *Arecibo Observatory*

2020   The Green Bank Telescope observer's training, *Green Bank Observatory*

2018   Summer school on astronomy and astrophysics, *Kodaikanal Solar Observatory*

Professional Experience

2022-now   **Orgaziner**, *Weekly FRB journal club*, West Virginia University

2023   **Co-Supervisor**, *Summer Undergraduate Research Experience program; ,* Project Title: "Searching for Fast Radio Transients Using The Petabyte Project".

2023   **Co-Supervisor**, *Summer Undergraduate Research Experience program; ,* Project Title: "Imaging and Localization of FRBs Using the Realfast Database.

Selected Talks & Posters

Online participations are marked with a †

2023   **Invited Talk**[†], *Magnetic field reversals in a turbulent environment around a repeating fast radio burst*, Green Bank Observatories Community Webinar

2023   **Invited Talk**[†], *Magnetic field switching in a turbulent fast radio burst environment*, Carnegie Observatories

2022   **Invited Talk**, *Magnetic field switching in a turbulent fast radio burst environment*, NASA Goddard Space Flight Center

2022   **Invited Talk**, *Magnetic field switching in a turbulent fast radio burst environment*, George Washington University

2022   **Invited Talk**, *Magnetic field switching in a turbulent fast radio burst environment*, US Naval Research Laboratory

2022   **Contributed Talk**[†], *A highly variable magnetized environment in an FRB Source*, IAUGA FRB2022

2022   **Invited Talk**, *A highly variable magnetized environment in an FRB Source*, Caltech, DSA lunch talk

2022   **Contributed Talk**, *A highly variable magnetized environment in an FRB Source*, American Astronomical Society 240 meeting

2022   **Invited Talk**[†], *A highly variable magnetized environment in an FRB Source*, ASIAA weekly meeting, Taiwan

2021   **Contributed Talk**[†], *Polarization studies of FRB 190520;*, FRB2021 conference

2021   **Contributed Talk**[†], *On the nature of an unidentified Fermi source*, American Astronomical Society 237 meeting

2021   **Contributed Talk**[†], *On the nature of an unidentified Fermi source*, North American Nanohertz Observatory for Gravitational Waves (NANOGrav) Fall meeting

Teaching

2022	**Guest Lecture**, *ASTR 700: Radio Astronomy*, West Virginia University
2020	**Teaching Assistant**, *PHYS111*, General Physics Lab, West Virginia University
2019	**Teaching Assistant**, *PHYS101*, General Physics Lab, West Virginia University

Outreach activities

Keynote Speaker at Young Innovators Programme, *Government of Kerala* , India

Volunteer for hands-on science demonstration on Science Day at Spark Science Center, *Morgantown*, WV

Volunteer for hands-on science demonstration on SciTech Day at Carnegie Science Center, *Pittsburgh*, PA

Observing proposals

GBT 23A-365	**Regular monitoring of FRB 20190520B RM variations**, *43 hours*, PI
GBT 22B-309	**Follow-up observation of a novel repeating FRB detected by CHIME**, *6 hours*, PI
GBT 21B-347	**Polarimetry of Bursts from A Bright, Repeating FRB**, *7 hours*, PI
GBT 20B-407	**Realfast RRAT or MSP? — 4FGL J1818.6-1533**, *12 hours*, PI
VLA 22A-313	**Characterizing and Quantifying Persistent Radio Sources Around FRBs** , *8.6 hours*, Co-PI
GBT 21A-417	**Polarimetry of Bursts from A Bright, Repeating FRB**, *5 hours*, Co-PI
GBT 20A-420	**Realfast RRAT or MSP? — 4FGL J1818.6-1533**, *4.5 hours*, Co-PI

Technical Strengths

- ■□□□□ basic knowledge
- ■■□□□ intermediate knowledge with some project experience
- ■■■□□ extensive project experience
- ■■■■□ deepened expert knowledge
- ■■■■■ expert / specialist

	Level	Skill	Years	Comment
Language:	■■■■■	Python		*Extensive data analysis and visualisation experience*
	■■□□□	C++, Fortran		*Basic understanding*
	■■■■■	LaTeX		*Expert*

OS:	▪▪▪▪▫	Unix	*Extensive experience*
Methods	▪▪▪▪▫	SLURM, Git, Bash	*Extensive*

Publications

[10]   Xian Zhang et al. "Temporal and Spectral Properties of the Persistent Radio Source Associated with FRB 20190520B with the VLA". In: *arXiv e-prints*, arXiv:2307.16355 (July 2023), arXiv:2307.16355. DOI: 10.48550/arXiv.2307.16355. arXiv: 2307.16355 [astro-ph.HE].

[9]   Reshma Anna-Thomas et al. "Magnetic field reversal in the turbulent environment around a repeating fast radio burst". In: *Science* 380.6645 (May 2023), pp. 599–603. DOI: 10.1126/science.abo6526. arXiv: 2202.11112 [astro-ph.HE].

[8]   Stella Koch Ocker, James M. Cordes, Shami Chatterjee, Di Li, Chen-Hui Niu, James W. McKee, Casey J. Law, and Reshma Anna-Thomas. "Scattering variability detected from the circumsource medium of FRB 20190520B". In: *Monthly Notices of the Royal Astronomical Society* 519.1 (Feb. 2023), pp. 821–830. DOI: 10.1093/mnras/stac3547. arXiv: 2210.01975 [astro-ph.HE].

[7]   C. -H. Niu et al. "A repeating fast radio burst associated with a persistent radio source". In: 606.7916 (June 2022), pp. 873–877. DOI: 10.1038/s41586-022-04755-5. arXiv: 2110.07418 [astro-ph.HE].

[6]   Stella Koch Ocker et al. "The Large Dispersion and Scattering of FRB 20190520B Are Dominated by the Host Galaxy". In: 931.2, 87 (June 2022), p. 87. DOI: 10.3847/1538-4357/ac6504. arXiv: 2202.13458 [astro-ph.HE].

[5]   S. Dai et al. "Magnetic Field Reversal around an Active Fast Radio Burst". In: *arXiv e-prints*, arXiv:2203.08151 (Mar. 2022), arXiv:2203.08151. DOI: 10.48550/arXiv.2203.08151. arXiv: 2203.08151 [astro-ph.HE].

[4]   F. Kirsten et al. "A repeating fast radio burst source in a globular cluster". In: 602.7898 (Feb. 2022), pp. 585–589. DOI: 10.1038/s41586-021-04354-w. arXiv: 2105.11445 [astro-ph.HE].

[3]   Kshitij Aggarwal, Devansh Agarwal, Evan F. Lewis, Reshma Anna-Thomas, Jacob Cardinal Tremblay, Sarah Burke-Spolaor, Maura A. McLaughlin, and Duncan R. Lorimer. "Comprehensive Analysis of a Dense Sample of FRB 121102 Bursts". In: 922.2, 115 (Dec. 2021), p. 115. DOI: 10.3847/1538-4357/ac2577. arXiv: 2107.05658 [astro-ph.HE].

[2]   Kshitij Aggarwal, Sarah Burke-Spolaor, Casey J. Law, Geoffrey C. Bower, Bryan J. Butler, Paul B. Demorest, T. Joseph W. Lazio, Justin Linford, Jessica Sydnor, and Reshma Anna-Thomas. "Robust Assessment of Clustering Methods for Fast Radio Transient Candidates". In: 914.1, 53 (June 2021), p. 53. DOI: 10.3847/1538-4357/abf92b. arXiv: 2104.07046 [astro-ph.IM].

[1]   Kshitij Aggarwal et al. "Your: Your Unified Reader". In: *The Journal of Open Source Software* 5.55, 2750 (Nov. 2020), p. 2750. DOI: 10.21105/joss.02750. arXiv: 2011.07627 [astro-ph.IM].

Languages

- Malayalam   Native
- English, Tamil & Hindi   Fluent