



## Contact

Dipartimento di Fisica 'G. Occhialini',  
U2, Università degli Studi di Milano-Bicocca,  
Piazza della Scienza, 3, 20126 Milano MI

Email: [golam.shaifullah@unimib.it](mailto:golam.shaifullah@unimib.it)  
Email: [golam.shaifullah@gmail.com](mailto:golam.shaifullah@gmail.com)

## Personal Details

Born: December 21, 1985—Kolkata, India  
Nationality: Indian

## Current position

*Post-doctoral Researcher*, Dipartimento di Fisica 'G. Occhialini', Università degli Studi di Milano-Bicocca.  
Supervisor: Prof. Alberto SESANA  
Start date: 10/10/2020

My post-doctoral research is mainly linked to the creation and analysis of the highest precision datasets for pulsar timing arrays, which are experiments that use a large number of pulsars spread across our own galaxy to detect very low frequency gravitational waves from the inspiral of supermassive black hole binaries. I spend the majority of my time combining data from the various telescopes and instrument utilised by the European and International pulsar timing arrays. I also use these datasets for studying the deleterious effects of the inter-stellar medium on pulsar signals and improving existing methods of modelling these effects to increase the possibility of detecting gravitational waves.

Besides this, I also study the properties of pulsars across a wide range of radio frequencies, using some of the largest radio telescopes in the world such as the 300-m dish of the Arecibo Radio Observatory, the Effelsberg 100-m radio telescope, the Giant Metrewave Radio Telescope, the Parkes 64-m radio telescope and the LOFAR radio telescope. I am also involved in pulsar observations with the exciting, new NenuFAR low frequency telescope and the MeerKAT array in South Africa.

I am an active member of the European Pulsar Timing Array collaboration, and the International Pulsar Timing Array collaboration.

Beyond my research, I am deeply interested in science education and community development in academia. I serve as the Secretary General of the Gravitational Wave Early Career Scientists group which is working to establish an inclusive and friendly platform for gravitational wave researcher across theoretical and experimental groups. I also founded the International Pulsar Timing Array Early Career Scientists working group.

## Appointments held

- **2017-2020:** Postdoctoral Researcher, ASTRON, the Netherlands.
- **2012-2013:** Senior Research Fellow, University of Pune, India.
- **2010-2012:** Junior Research Fellow, University of Pune, India.

## Education

- **2013-2017:** Dr. rer. Nat. (PhD), Universität Bielefeld, Bielefeld, Germany
- **2008-2010:** MSc (Physics), FIRST CLASS, Fergusson College, University of Pune, Pune, India
- **2005-2008:** BSc (Physics, Electronics, Mathematics), FIRST CLASS, St Joseph's College, Bangalore University, Bangalore, India

## Thesis

- **May, 2017:** *Timing and properties of recycled pulsars*, Universität Bielefeld

## Teaching

- 2010-2013** Responsible for guiding and assisting lab interns and students from the department and other colleges on various projects for BE/BTech, MSc and MTech.
- 2010-2011** Designed and conducted a bridge course for first semester students of MSc (electronics) in collaboration with faculty members at the department.
- 2010-2013** Designed and conducted practical laboratory courses for the second, third and fourth semester students of the MSc (Electronics) course at the Department of Electronic Science, University of Pune.

## Curriculum Vitae

- 2010–2011** Taught an Applied Electrodynamics Lab. for the fourth year students of the integrated MSc program at the Centre for Excellence in Basic Sciences (CBS), an autonomous institute based on the Kalina campus of the Mumbai University.

### Supervision

- 2023** Co-supervising master thesis on the “Joint analysis of deterministic and stochastic signals on Pulsar Timing Data” by Irene Ferranti (Università degli Studi di Milano–Bicocca).
- 2023** Co-supervising master thesis on the “Searching for eccentric binaries in PTA datasets” by Sara Manzini (Università degli Studi di Milano–Bicocca).
- 2023** Co-supervised master thesis on the “Searching for high frequency continuous gravitational waves with MeerTime” by Beatrice Moreschi (Università degli Studi di Milano–Bicocca).
- 2022** Co-supervised master thesis on the “Establishing a threshold on the Bayes factor for a robust detection of the GWB in PTA datasets” by Serena Valtolina (Università degli Studi di Milano–Bicocca).
- 2021–2022** Co-supervised master thesis on the “The effects of outliers on gravitational wave searches in pulsar timing arrays” by Giulia Fumagalli (Università degli Studi di Milano–Bicocca).
- 2019–2021** Co-supervised PhD projects on the “Optimizing Analysis Standards for Pulsar Timing Arrays and Gravitational Wave Detection” led by Jun Wang (Bielefeld Universität).
- 2019** Supervised Caroline el Khoury for “Scintillation studies of pulsars in binaries”, as part of the ASTRON/JIVE Summer Programme 2019.
- 2018–2020** Co-supervising PhD project “Precision timing for pulsar timing arrays” led by Emma van Wateren (Nijmegen University/ASTRON).
- 2018** Co-supervised PhD project “A study of timing stability of Black Widow pulsars” led by Ann-Sofie Bak Nielsen (Leiden University/ASTRON).
- 2017** Co-supervised bachelor thesis on the “Spectral Indices of Millisecond Pulsars” by Philip Bergjann at the Bielefeld University.
- 2015** Co-supervised bachelor thesis on the “A Statistical Study of Pulsar Proper Motions” by Timo Kaja at the Bielefeld University.
- 2014** Co-supervised bachelor thesis on the “Dispersion measure variations for 80 pulsars on short time scales observed with LOFAR” by Julian Donner at the Bielefeld University.

### Tutorials

- Apr, 2022** **Pulsar analysis with Enterprise**, special sessions for the Astronomical Observatory of Cagliari, Cagliari, Italy
- Jun, 2019** **Introduction to PSRCHIVE**, International Pulsar Timing Array student week, Pune, India
- Jun, 2019** **Python bindings for PSRCHIVE**, International Pulsar Timing Array student week, Pune, India
- Jun, 2019** **Pulsar timing with Tempo2**, International Pulsar Timing Array student week, Pune, India
- Nov, 2016** **Regression analysis with python**, Universität Bielefeld

### Diversity & inclusiveness

- 2020 – present** Conceived and continue to organise the EPTA *beverage of choice chat* sessions, where collaboration members meet bi-annually to discuss a wide range of topics affecting academic life, from the impacts of online/smart working to neurodivergence.

### Grants, honors & awards

- 2013–2017** MPG Stipendiat, Max Planck Society, Munich, Germany
- 2009** Summer Research Fellowship, Indian Academy of Science, India

### Observing grants

Since 2016 I have won hundreds of hours of telescope observing time at the largest radio telescopes in the world. I am a principal investigator or co-PI on successful proposals with the Effelsberg 100-m radio telescope in Germany, the Arecibo radio telescope in Puerto Rico, the pan-European Low Frequency Array (LOFAR) radio telescope, the Giant Metrewave radio telescope in India and the Parkes 64-m radio telescope in Australia. Besides this I am also a members of key science programs at the MeerKAT observatory in South Africa and the NENUFAR observatory in France.

## Service

- 2022-present* Executive Committee member, the European Pulsar Timing Array
- 2022-present* General secretary, the Gravitational Wave Early Career Scientists group
- 2022-present* Co-chair – Data Combination Working Group, the International Pulsar Timing Array
- 2021-present* Founder chair – PTA Early Career Scientists Working Group, the International Pulsar Timing Array
- 2017-present* Chair – Timing Working Group, the European Pulsar Timing Array
- 2017-present* Chair – IISM Working Group, the European Pulsar Timing Array

## Workshops organised

- 2021* IPTA 2021 student week: LOC, Training workshop for IPTA students
- 2021* Workshop on Gravitational-Wave Astrophysics for Early Career Scientists: Lorentz center, planning & chair of the PTA session
- 2019* Coordinator – ASTRON/JIVE summer programme 2019
- 2019* IPTA 2019 student week: SOC, Training workshop for IPTA students
- 2016* Student-speak : Student Organiser, Mini-workshop for talks by PhD students of MPIfR-Bonn & Universität Bielefeld
- 2011* LOC (Lead Organiser), The Solar Radio Workshop at NCRA, Pune, India
- 2010* Student Coordinator, Frontiers in Physics at Fergusson College, State level workshops for teachers and student, Pune, India
- 2009* Student Coordinator, Frontiers in Astronomy at Fergusson College, National level workshops for teachers and student, Pune, India

## Refereeing

The Astrophysical Journal • The Monthly Notices of the Royal Astronomical Society • Science China Physics, Mechanics & Astronomy. • Proposal reviewer for the Time Allocation Committee of the Giant Metrewave Radio Telescope, India.

## Publications

I have published 37 refereed articles, which have been cited 2378 times as of 29 September, 2023. My h-index as reported by the SAO/NASA Astrophysics Data System is 21.

Apart from this, I have also published 1 software package, and published 9 other articles, including 1 Nature Astronomy report and 2 conference proceedings.

## Talks

- Sep, 2023* Evidence for the GWB – On the cusp of Nanohertz GW astronomy, LISA AstroWG meeting, University of Milano-Bicocca, Milano, Italy
- Sep, 2023* The European Pulsar Timing Array DR2.0, XXV SIGRAV, Trieste, Italy
- Aug, 2023* Pulsar Timing Arrays Evidence for a nanohertz background and its astrophysical implications, colloquium, Indian Institute of Astrophysics, Bangalore, India
- Aug, 2023* Pulsar Timing Arrays Evidence for a nanohertz background and its astrophysical implications, colloquium, Inter University Centre for Astronomy and Astrophysics, Pune, India
- Aug, 2023* Pulsar Timing Arrays Evidence for a nanohertz background and its astrophysical implications, colloquium, National Centre for Radio Astrophysics, Pune, India
- Aug, 2023* Precision pulsar timing, flash talk at GWPoNext, University of Milano-Bicocca, Milano, Italy
- Jul, 2023* Building a pulsar timing array, and the IPTA, plenary talk at Amaldi15, online
- Jun, 2023* Pulsar Timing Arrays, Gravitational Wave Advanced Detector Workshop, Isola d'Elba, Italy
- May, 2023* The magnetic-ionic Galaxy: a pulsar view, Gravitational Radiation and Science with Pulsars, online talk for pulsar scientists in South Africa, India, China and other African countries
- May, 2023* Pulsar Timing Arrays: The view from the bridge @ PONT 2023, plenary talk at Progress on Old and New Themes in cosmology – PONT 2023, Avignon, France
- Mar, 2023* The future of searches for very low frequency gravitational wave searches with the EPTA and IPTA, Rencontres de Moriond 2023, Val d'Aosta, Italy
- Feb, 2023* Future proof Precision Pulsar Timing and the role of low (radio) frequencies, Neutron Stars: The celestial clocks that probe extreme physics, Chennai, India
- Nov, 2022* European Pulsar Timing Array – Data Release 2.0, SPINS UK 2022, Manchester, The United Kingdom
- Sep, 2022* European Pulsar Timing Array – Data Release 2.0, 31<sup>st</sup> Texas Symposium on Relativistic Astrophysics, Prague, Czech Republic

## Curriculum Vitae

- Jul, 2022* Dynamics from the large to the small scales with pulsars, Towards real-time Galactic dynamics, Lorentz Centre, Leiden, The Netherlands
- Mar, 2022* Validation of heliospheric modeling algorithms using low-frequency pulsar observations, European Pulsar Timing Array meeting, Ringberg, Germany
- Mar, 2022* TOA creation methods and their impacts on GWB searches, European Pulsar Timing Array meeting, Ringberg, Germany
- Dec, 2021* IPTA data combination update, European Pulsar Timing Array meeting, Online
- Dec, 2021* EPTA Work Module 5 update, European Pulsar Timing Array meeting, Online
- Dec, 2020* NUPPI+DR1 Quick combination, European Pulsar Timing Array meeting, Online
- Dec, 2020* Testing timing model improvements and dataset verification, European Pulsar Timing Array meeting, Online; Como Edition
- Dec, 2020* WSRT/ASTRON update, European Pulsar Timing Array meeting, Online; Como Edition
- Dec, 2019* Detecting CME crossings of pulsar lines of sight, at IPS Workshop, Arecibo, Puerto Rico,, given remotely
- Oct, 2019* WSRT Telescope Updates, European Pulsar Timing Array meeting, Marcoux, France
- Nov, 2019* Pulsar Astrometry, the Dutch VLBI meeting, Zwolle, the Netherlands
- Jun, 2019* EPTA update talk, International Pulsar Timing Array meeting, Pune, India
- May, 2019* Updates on PumaII timing, 24<sup>th</sup> European Pulsar Timing Array meeting, Cagliari, Italy
- Nov, 2018* Eight years of DM and RM from PumaII, European Pulsar Timing Array meeting, Bielefeld, Germany
- Mar, 2018* Updates on the Solar Wind with GLOW, LOFAR, and WSRT, European Pulsar Timing Array meeting, Norwich, U.K.
- Jun, 2018* Improving solar wind models for precision timing experiments, International Pulsar Timing Array meeting, Albuquerque, United States of America
- Jun, 2017* Spectral Indices of Milliseconds Pulsars, International Pulsar Timing Array meeting, Sèvres, France
- Apr, 2017* MSP spectral indices, European Pulsar Timing Array meeting, Amsterdam, The Netherlands
- Oct, 2016* MSP spectral index, European Pulsar Timing Array meeting, Cagliari, Italy
- Sep, 2016* Timing and Properties of Millisecond Pulsars, Student-speak, Bielefeld, Germany
- May, 2016* MSP spectral indices AND long-term timing of the black-widow pulsar PSR J2051-0827, European Pulsar Timing Array meeting, Bielefeld, Germany
- Nov, 2015* 21 year timing of PSR J2051-0827, Different Flavors of MSPs and their Connections - 8<sup>th</sup> BONN workshop, Bonn, Germany
- Nov, 2015* 21 year timing of PSR J2051-0827, European Pulsar Timing Array meeting, Orléans, France
- May, 2014* BW pulsars, European Pulsar Timing Array meeting, ASTRON, Dwingeloo, The Netherlands

## Outreach

- May, 2020* "Pulsars", online lecture for students of the Woodside High School, London, UK.
- Summer, 2019* Coordinator and Guide, ASTRON/JIVE, University of Amsterdam and University of Leiden Summer Programmes coordinated tour of the Westerbork Synthesis Radio Telescope and LOFAR
- Summer, 2018* Volunteer, ASTRON Open Day, SKA activities for children and 'Ask an Astronomer'
- 2013* Student Coordinator, "Dabholkar Memorial Lecture" by Prof. J. V. Narlikar, Pune, India
- 2011-2013* Volunteer, Public stargazing events with small telescopes, Pune, India

## Languages Known

<i>English</i>	First Language
<i>Hindi</i>	Advanced
<i>Bengali</i>	Advanced
<i>Marathi</i>	Intermediate
<i>German</i>	Basic
<i>Dutch</i>	Basic
<i>Italian</i>	Basic