

DEVESH GIRI

Gravitational-Wave Physics & Astrophysics

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EDUCATION

Bachelor's and Master's in Science (BS-MS dual-degree)

2021 – 2026

Indian Institute of Science Education and Research (IISER), Pune, India

RESEARCH EXPERIENCE

Research Intern

Jul 2026 – present

SISSA, Trieste, Italy – Advisor: Prof. [Enrico Barausse](#)

Investigating gravitational-wave mode-mixing and developing a catalog-wide inference framework for quasinormal modes that accounts for sky-localization effects.

Visiting Master's Thesis Student

Jun 2025 – Mar 2026

Tata Institute of Fundamental Research (TIFR), Mumbai, India – Advisor: Dr. [Suvodip Mukherjee](#)

Modeled three-body perturbations of compact-binary gravitational waveforms using Newtonian dynamics with 2.5PN radiation reaction, and searched GWTC-4 events (GW170817, GW190814, GW230627_015337) for the resulting dephasing/amplitude signatures, placing the first constraints on nearby intermediate-mass black holes ([arXiv:2604.22441](#); under review, *Phys. Rev. D*).

Research Intern

Jun 2025 – Aug 2026

IUCAA, Pune & BITS-Pilani, India – Advisors: Dr. [Sajal Mukherjee](#), Dr. [Apratim Ganguly](#)

Used FASTEMRIWAVEFORMS to test the circular-template assumption underlying decihertz IMRI searches; found eccentricities as small as $e_0 \sim 2 \times 10^{-2}$ break the template match and bias recovered parameters, traced to excitation of radial Teukolsky harmonics.

Research Intern

Feb 2025 – May 2025

Universitat Politècnica de València (UPV), Valencia, Spain – Advisor: Prof. [Pau Amaro-Seoane](#)

Derived (semi-)analytic estimates of first-merger timescales for IMBH-hosting stellar clusters in bound cluster-complexes and validated them against N -body simulations of dynamical encounters.

Research Intern

Oct 2023 – Dec 2024

Nikhef, Amsterdam, Netherlands – Advisor: Dr. [Bhooshan Gadre](#)

Quantified detectability and waveform systematics of sub-solar-mass IMRIs via fitting-factor and Bayesian PE studies ([arXiv:2511.13324](#); under review, *Phys. Rev. D*).

Krittika Summer Project Student (KSP 5.0)

May 2024 – Jul 2024

Indian Institute of Technology, Bombay, India – Mentors: Krittika Eclipsing Binaries Group

Co-authored a collaborative [report](#) on eclipsing/spectroscopic binary modeling and PHOEBE-based parameter estimation.

Summer Research Intern

May 2023 – Jul 2023

Vanderbilt University, Nashville, USA – Advisor: Dr. [Karan Jani](#)

Ran PyCBC/Bilby Bayesian parameter estimation showing 30–90% improved parameter recovery for GW190521-like sources with LIGO-India included in the detector network.

PUBLICATIONS (INSPIREHEP/ARXIV/GOOGLE SCHOLAR)

Giri, Devesh and Suvodip Mukherjee (2026). “How lonely are the Binary Compact Objects Detected by the LIGO-Virgo-KAGRA Collaboration?” In: *arXiv:2604.22441*.

Giri, Devesh and Bhooshan Gadre (2025). “Sub-Solar Mass Intermediate Mass Ratio Inspirals: Waveform Systematics and Detection Prospects with Gravitational Waves”. In: *arXiv:2511.13324*. under review, Phys. Rev. D.

Giri, Devesh, Sajal Mukherjee, and Apratim Ganguly (2026). “The effects of eccentricity on GWs from IMRIs in the deci-hertz band”. In: *in preparation*.

Giri, Devesh, Lalit Pathak, Abhishek Sharma, and Apratim Ganguly (2026). “Testing general relativity with eccentric IMBBHs in DeciHz band”. In: *in preparation*.

Pathak, Lalit, Abhishek Sharma, **Giri, Devesh**, and Apratim Ganguly (2026). “Statistical bias in IMBBHs reconstruction due to eccentricity in the DeciHz band”. In: *in preparation*.

Sharma, Abhishek, **Giri, Devesh**, Lalit Pathak, and Apratim Ganguly (2026). “Systematic bias for eccentric IMBBHs in the DeciHz band”. In: *in preparation*.

INVITED TALKS

Institute for Gravitational and Subatomic Physics (GRASP), Utrecht University *Jul 2026*
Hosts: Prof. Chris Van Den Broeck, Prof. Maria Haney (in-person)

Leuven Gravity Institute (LGI), KU Leuven *Jul 2026*
Hosts: Prof. Tjonnje Li, Dr. Isaac C. F. Wong (in-person)

Scuola Internazionale Superiore di Studi Avanzati (SISSA) *Jun 2026*
Host: Prof. Enrico Barausse (in-person)

University of Massachusetts (UMass) Dartmouth (Online) *May, Nov 2024*
Host: Prof. Sarah Caudill, Prof. Scott Field (online)

SOFTWARE & CODE

playgtc

Open-source Python package – Docs · PyPI

Pip-installable command-line tool for fetching, processing and visualizing GWOSC event data, including strain Q -transforms and theoretical waveform overlays.

SKILLS

Languages & software Python, Bash, Git, $\text{\LaTeX}$, MATLAB, PyCBC, Bilby, PyRING, FASTEMRI-WAVEFORMS, QNMfits, GWCOSMO, ICAROGW, GADGET-4

Operating systems macOS, Linux, Windows

Cluster computing HTCondor

SCHOOLS, WORKSHOPS & CONFERENCES

Leuven GW Workshop: From Perturbation Theory to Future Detections, KU Leuven *Jul 2026*

The School on Gravity: From Motion to Commotion, Niels Bohr Institute, Copenhagen *Jun 2026*

School & Workshop on 21-cm Cosmology, TIFR, Mumbai *Mar 2026*

National Science Day, TIFR, Mumbai	<i>Feb 2026</i>
DAIM-DAA, TIFR, Mumbai	<i>Jan 2026</i>
Science Fest, TIFR, Mumbai	<i>Dec 2025</i>
The Future of Gravitational-Wave Astronomy, ICTS-TIFR, Bengaluru	<i>Oct 2025</i>
Pune-Mumbai Cosmology & Astro-Particle (PMCAP) Meeting	<i>Sep 2025</i>
<i>Code/Astro 2025</i> , CIERA, Northwestern University (Online)	<i>Aug 2025</i>
GW Summer School, ICTS-TIFR, Bengaluru	<i>Jul 2025</i>
<i>Foundations of Gravitational Waves: Theory, Sources & Detection</i> , IUCAA, Pune	<i>May – Jun 2025</i>
33 rd IAGRG Conference, BITS-Pilani	<i>Jan 2025</i>
Workshop on Gravitational Waves and LIGO-India, BITS-Pilani	<i>Oct 2024</i>
Gravitational Wave Open Data Workshop, GWOSC & IUCAA	<i>Apr 2024</i>
Workshop on Data Science in Astronomy, IUCAA	<i>Dec 2023</i>
CCS Lectures, NCRA-TIFR, Pune	<i>May – Aug 2022</i>
<i>Data-Driven Astronomy</i> , University of Sydney (Coursera)	

OUTREACH & TEACHING

Presenter, Frontiers of Science 2025 *Nov 2025*
TIFR, Mumbai, India

Presented gravitational-wave astrophysics research on behalf of the $\langle \text{data}|\text{theory} \rangle$ Universe Lab at TIFR's annual public outreach day.

Core Member & Tutor, Mindspark (DISHA) *Aug 2022 – Apr 2023*
IISER Pune, India

Designed the mathematics curriculum and taught weekly classes for underprivileged highschool students.

REFEREES

Dr. Suvodip Mukherjee

Assistant Professor (Reader)

Dept. of Astronomy & Astrophysics, TIFR, Mumbai, India

suvodip@tifr.res.in

[Website](#)

Dr. Sajal Mukherjee

Assistant Professor

Dept. of Physics, BITS-Pilani, Pilani, India

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Dr. Apratim Ganguly

Research Faculty

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Dr. Bhooshan Gadre

Assistant Professor (Scientist E)

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