

Mudit Garg

Nationality : Indian

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EDUCATION

08/2021 – 07/2025	PhD in Gravitational Waves Astrophysics University of Zurich	Advisor: Prof. Dr. Lucio Mayer
09/2018 – 12/2020	Master of Science in Physics with distinction ETH Zurich	GPA: 5.87/6 Thesis: Relativistic, ghost-free, and covariant hybrid model for MOND: $f(Q)$ under Prof. Dr. Lavinia Heisenberg
07/2014 – 06/2018	Bachelor of Technology in Engineering Physics Indian Institute of Technology Delhi	GPA: 8.15/10 Thesis: Geodesics near a charged black hole in $(R \pm \mu^A/R)$ gravity under Prof. Dr. Ajit Kumar

SELECTED TALKS/PRESENTATIONS

02/2024	Seminar: DAMTP General Relativity University of Cambridge <i>Astrophysical signatures on the LISA data stream from MBHBs</i>	Cambridge
09/2023	Meeting: LISA Astrophysics Working Group University of Milano-Bicocca <i>The minimum measurable eccentricity from GWs of LISA MBHBs</i>	Milan
09/2023	Meeting: the Swiss-Austrian joint Physical Society meeting University of Basel <i>The minimum measurable eccentricity from GWs of LISA MBHBs</i>	Basel
07/2023	Conference: Gravitational-wave populations: what's next? University of Milano-Bicocca <i>The measurability of gas and eccentricity from GWs of LISA MBHBs</i>	Milan
07/2023	Call: LISA data challenge working group <i>Measuring eccentricity from GWs of LISA MBHBs</i>	Online
11/2022	Conference: LISA data analysis: from classical methods to machine learning CNRS, L2IT, APC, CEA, and CNES <i>The imprint of Gas on GWs from LISA IMBH Binaries</i>	Toulouse
09/2022	Conference: Origin, growth and feedback of black holes in dwarf galaxies Donostia International Physics Center <i>The imprint of Gas on GWs from LISA IMBH Binaries</i>	San Sebastian
05/2022	Conference: Intermediate-Mass Black Holes: New Science from Stellar Evolution to Cosmology CIERA, Northwestern University <i>Gas impact on GWs from LISA IMBH Binaries</i>	San Juan

† Will participate

PUBLICATIONS

2024	Measuring eccentricity and gas-induced perturbation from gravitational waves of LISA massive black hole binaries <i>Mudit Garg, Andrea Derdzinski, Shubhanshu Tiwari, Jonathan Gair, Lucio Mayer</i>	Submitted to MNRAS
2023	The minimum measurable eccentricity from gravitational waves of LISA massive black hole binaries <i>Mudit Garg, Shubhanshu Tiwari, Andrea Derdzinski, John G. Baker, Sylvain Marsat, Lucio Mayer</i>	MNRAS
2022	The imprint of gas on gravitational waves from LISA intermediate-mass black hole binaries <i>Mudit Garg, Andrea Derdzinski, Lorenz Zwick, Pedro R. Capelo, Lucio Mayer</i>	MNRAS
2022	Dirty waveforms: multiband harmonic content of gas-embedded gravitational wave sources <i>Lorenz Zwick, Andrea Derdzinski, Mudit Garg, Pedro R. Capelo, Lucio Mayer</i>	MNRAS
2020	Non-linear extension of non-metricity scalar for MOND <i>Fabio D'Ambrosio, Mudit Garg, Lavinia Heisenberg[†]</i>	PLB
2020	ADM formulation and Hamiltonian analysis of Coincident General Relativity <i>Fabio D'Ambrosio, Mudit Garg, Lavinia Heisenberg, Stefan Zentarra[‡]</i>	arXiv

‡ Alphabetical order

RESEARCH VISITS

02/2024	Institute of Gravitational Wave Astronomy <i>Host: Prof. Dr. Alberto Vecchio</i>	Birmingham
02/2024	Institute of Cosmology and Gravitation <i>Host: Prof. Dr. Ian Harry</i>	Portsmouth
11/2023	Max Planck institute for Gravitational Physics (Albert Einstein Institute) <i>Host: Dr. Jonathan Gair</i>	Potsdam

† Will participate

PROGRAMS/SCHOOLS

09/2023	Kavli-Villum School: Gravitational Waves <i>Corfu Summer Institute</i>	Corfu
11/2022	Workshop: LISA data analysis: from classical methods to machine learning <i>CNRS, L2IT, APC, CEA, and CNES</i>	Toulouse
07/2022	Workshop: LISA Data Challenge Workshop <i>LISA Data Challenge Working Group</i>	Online
07/2022	Workshop: From Scattering Amplitudes to Gravitational-Wave Predictions for Compact Binaries <i>ETH Zurich & University of Zurich</i>	Zurich
06/2022	Meeting: LISA Astrophysics Working Group <i>Institute for Gravitational Wave Astronomy, University of Birmingham</i>	Online
01/2022	Saas-Fee School: Compact-Object Astrophysics in the Era of Multi-Messenger Astronomy <i>Swiss Society for Astrophysics and Astronomy</i>	Saas-Fee
08/2021	NBIA School: Gravitational wave astrophysics <i>Niels Bohr Institute, University of Copenhagen</i>	Copenhagen
06/2021	Meeting: LISA Astrophysics Working Group <i>Department of Astrophysics, University of Zurich</i>	Online

† Will participate

PROFESSIONAL RESPONSIBILITIES AND MEMBERSHIPS

2023 –	Organizer of the ‘Gravitational Waves, Black Holes, and Compact Binaries’ seminar <i>Department of Astrophysics, University of Zurich</i>
2023 –	Contributor to the TianQin white paper about massive black hole binaries and environmental effects
2022 –	Contributor to the DiscLMRI code comparison project by the LISA astrophysics working group
2021 –	Member of the LISA consortium and its astrophysics, waveforms, and data challenge working groups

SKILLS

Programming Languages: Python LaTeX	Languages: English German (A1.1) Hindi
Software: Mathematica lisabeta	Others: PyTorch Terminal Git

SELECTED INTERNAL TALKS/PRESENTATIONS

03/2023	Annual PhD seminar Bayesed Gravitational Waves: an MCMC story	Department of Astrophysics, University of Zurich
02/2022	The Future of Gravitational Waves	
11/2022	Annual PhD Jamboree Eccentric Binaries in the LISA band	Department of Astrophysics, University of Zurich
11/2021	IMBH Binaries detectable by LISA	

ASSISTANCE

Spring 2024	Teaching Assistant for “Computational methods for Radiative Transfer” <i>Instructor: Prof. Dr. Lucio Mayer</i>	University of Zurich
Fall 2023	Teaching Assistant for “Introduction to Astrophysics” <i>Instructor: Prof. Dr. Prasenjit Saha</i>	University of Zurich
Spring 2023	Teaching Assistant for “Introduction to Astronomy” <i>Instructor: Prof. Dr. Aurel Schneider</i>	University of Zurich
Fall 2022	Teaching Assistant for “Proseminar in Astrophysics” <i>Instructor: Prof. Dr. Ravit Helled</i>	University of Zurich
Spring 2023	Teaching Assistant for “Universe: Contents, Origin, Evolution and Future” <i>Instructor: Prof. Dr. Lucio Mayer & Dr. Pedro R. Capelo</i>	University of Zurich
Fall 2021	Teaching Assistant for “Theoretical Astrophysics” <i>Instructor: Prof. Dr. Robert Feldmann</i>	University of Zurich
Spring 2021	Research Assistant at the Department of Astrophysics <i>Supervisor: Prof. Dr. Lucio Mayer</i>	University of Zurich
2019 – 2020	Research Assistant at the Chair of Strategic Management and Innovation <i>Supervisor: Dr. Yash Raj Shrestha & Zoe Jonassen</i>	ETH Zurich
Spring 2019	Course Assistant for “Quantum Field Theory II” <i>Instructor: Prof. Dr. Massimiliano Grazzini</i>	University of Zurich

PRE-DOCTORATE RELEVANT PROJECTS

04/2020 – 11/2020	GW Data Project: Distinguishing deviations from GR and eccentricity effects in GWs data <i>Supervisor: Dr. Maria Haney</i>	University of Zurich
02/2020 – 06/2020	Machine Learning Course Project: Mini projects related to regression, feature selection, data imputation, neural networks, and CNN using PyTorch framework	ETH Zurich
10/2018 – 01/2019	GW Theory Project: Gravitational waves and their propagation in the Λ CDM Universe <i>Supervisor: Prof. Dr. Philippe Jetzer</i>	University of Zurich

OTHER ACTIVITIES

- **Hobbies and Interests:** Sports, Cooking, Board games, and hiking

Last update: February 27, 2024