

Physics and Astronomy Undergraduate

Aayush Gautam

College: Birendra Multiple Campus, Tribhuvan University, Kathmandu, Nepal

Current Address: Bharatpur-9, Sharadpur, Chitwan 44200

Language proficiency: Nepali (Fluent), English (Fluent)

Phone: +9779860974731

email | [github](#) | [linkedin](#)

Research Interests

- Worked on Numerical studies of orbital stabilities of exomoons and exoplanets during Undergraduate Research
- Future research interests in Multi-messenger astrophysics and Numerical relativity

Education

2013. School Leaving Certificate (SLC). GON SLC Board. Distinction. 90.00%

2015. Intermediate Level Certificate. HSEB Board. Distinction. 82.7%

2017-Present. Bachelor in science, Birendra Multiple Campus, Tribhuvan University, Fourth year

Subjects: Physics, Statistics and Mathematics combination. Physics major.

Technical Skills

- **Operating Systems:** Windows, Linux
- **Programming Languages:** C, Python, R, Julia
- **Version control:** git
- Interested in applications of computational methods in Physics and Astrophysics. Not intimidated by coding. Focused on higher mathematics and statistical methods with applications to Physics.
- Interested in applications of python codebase to physical scenarios, both for research and for physics communication through visualizations.

Projects and Achievements

- N-body simulations of exoplanets in binary systems using rebound python package for orbital mechanics. (BSc project work: Currently)
- Abstract titled "Orbital dynamics of hypothetical exomoons around a Jupiter-type exoplanet, Laligurans" accepted and presented at ANPA 2020 Conference. Abstract number: ANPA2020_0009. Refer: <https://conference.anpaglobal.org/2020/06/2020-7-18abstracts.html> .
- Research poster on orbital stability of exomoons selected for Virtual Poster Session of 2020 Sagan Exoplanet Summer Virtual Workshop on Extreme Precision Radial Velocity hosted by NASA Exoplanet Science Institute and Caltech. Refer: https://nexsci.caltech.edu/workshop/2020/posters/Gautam_Aayush.pdf

- International Astronomy and Astrophysics Competition (IAAC) 2020 Finalist.
- IAAC National Award for Nepal for securing highest nationwide score in the IAAC. Refer: <https://iaac.space/en/announcement2020>
- Research work on orbital stability of exomoons accepted and presented at the Poster Sessions and Live Posters Spotlight Plenary Talks of IWARA2020 From Quarks to Cosmos Video Conference
- Awarded Third Place of Marcos Moshinsky Award for Best Student Posters among Masters, Ph.D., and Postdoctoral researchers at the IWARA2020 Video Conference
- Open source contributions to Einsteinpy library for implementing General relativity in python. Refer Einsteinpy paper: <https://arxiv.org/abs/2005.11288> . Accepted May 21,2020. Community Python project. Astropy Affiliated Package.
- GitHub profile: <https://github.com/gravitas21>

Conferences Attended

- ANPA Conference 2020. Association of Nepalese Physicists in America (ANPA). July 17-19, 2020.
- IWARA2020 From Quarks to Cosmos Video Conference – 9th International Workshop on Astronomy and Relativistic Astrophysics in Mexico City, Mexico. September 6-12, 2020.

Academic Experience

- Model Provincial Assembly Workshop. US Youth Council. April 2019.
- Workshop on Space Weather and Upper Atmospheric Physics. ICTP. September 23-28,2019.
- Workshop on Quantum Computing. Central department of Physics, Tribhuvan University. December 2019.
- Workshop on Quantum-Espresso and Data Visualizations. Central Dept of Physics, Tribhuvan University (TU), Dept. of Physics & Supercomputer Center, Kathmandu University (KU), and Condensed Matter Physics Research Center (CMPRC–Butwal). May 1-2, 2020.
- National Level Virtual Workshop on Advanced Materials Characterization Tools. SRM Research Institute, SRM Institute of Science and Technology, Chennai, India. May 20- 21, 2020.
- Harley Wood School of Astronomy. International Centre for Radio Astronomy Research (ICRAR). Online. July 6, 2020.
- 2020 Sagan Exoplanet Summer Virtual Workshop on “Extreme Precision Radial Velocity”. NASA Exoplanet Science Institute and California Institute of Technology, Pasadena, CA. July 20-24, 2020.
- International Astronomy and Astrophysics Competition (IAAC). Edition 2020. Finalist. July 27, 2020.
- The Physics of Life Summer School. Center for the Physics of Biological Function. The Graduate Center at CUNY and Princeton University. June 15 – August 3, 2020.
- Online School on Space and Atmospheric Physics. Department of Physics, St. Xavier’s College, Kathmandu, Nepal in collaboration with Universidad do Vale do Paraíba, Brazil. August 5-7, 2020.
- MEEvirtual2020 Conference. Microbial Ecology and Evolution with relations to Mathematics and Physics. August 12-14, 2020.
- Neutrons and Complementary Techniques for Quantum Materials Virtual Workshop. Quantum Materials Initiative (QMI), Neutron Scattering Division at Oak Ridge National Laboratory. August 18-21, 2020.
- GROWTH Astronomy School 2020. Global Relay of Observatories Watching Transients Happen (GROWTH) Collaboration. August 17-21, 2020.

- STFC Introductory Solar System Plasmas Summer School. Hosted by Solar and Stellar Physics Group, School of Physics and Astronomy at University of Birmingham. August 24-27, 2020.
- 15th Heidelberg Summer School 2020 on Planet formation in protoplanetary disks. Hosted by the International Max Planck Research School for Astronomy and Cosmic Physics at the University of Heidelberg (IMPRS-HD). August 31- September 4, 2020.
- Exoplanets in Southern California 2020 Conference (ExSoCal). Hosted by the College of Natural and Agricultural Sciences & Department of Earth and Planetary Sciences at UC Riverside, CA. September 14-15, 2020.
- Solar-Stellar Connection STFC Summer School. Hosted by the Center for Fusion, Space and Astrophysics, Department of Physics at the University of Warwick. September 14-18, 2020.
- Deciphering Dark Matter: From Galaxies to the Universe - Summer School on Galaxies and Cosmology. Hosted by the Astronomy Research Division, ITB. September 14-25, 2020.
- Reclaiming STEM 2020 Workshop. Workshop on Science Communication and Science Policy. Hosted by UCLA Center for Education Innovation and & Learning in the Sciences with American Geophysical Union and National Science Policy Network. Online. Every Saturday from September 12 – October 3, 2020.

Professional Development

- Basics of Special Theory of Relativity. Lecturer: Prof. H.C. Verma. Centre for Continuing Education, Indian Institute of Technology Kanpur. December 2018 – March 2019.
- Basics of Quantum Mechanics. Lecturer: Prof. H.C. Verma. Centre for Continuing Education, Indian Institute of Technology Kanpur. August 2019 – November 2019.
- Advanced Course on Special Theory of Relativity. Lecturer: Prof. H.C. Verma. Centre for Continuing Education, Indian Institute of Technology Kanpur. January 2020 – May 2020.
- Solid State Physics in Quarantine. Lecturer: Sandro Scandolo. ICTP. April 2020 – May 2020.
- General Relativity and Einsteinpy. Naxxatra Sciences and Collaborative Research, Bangalore, Karnataka, India. March 2020 – August 2020.
- Advanced Astrophysics and Data-driven Astronomy. Naxxatra Sciences and Collaborative Research, Bangalore, Karnataka, India. March 2020 – August 2020.
- Advances in Computational Relativity Semester Program and Associated Semester Workshops. Hosted by The Institute for Computational and Experimental Research in Mathematics (ICERM) at Brown University, Providence, Rhode Island. September 9 – December 11, 2020. Currently.
- Advances and Challenges in Computational Relativity. Semester Workshop associated with Advances in Computational Relativity at ICERM. September 14-18, 2020.

Other Interests

Science Outreach, Environmental Issues, Literature. Ethics in Science and Technology