



# PRATEEK MAYANK

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## PUBLICATIONS

### SWASTi-SW: Space Weather Adaptive Simulation Framework for Solar Wind and Its Relevance to the Aditya-L1 Mission

**Mayank P.**, Vaidya B. & Chakrabarty D.

Sept. 2022, volume 262, article 23

*The Astrophysical Journal Supplement Series*

doi: [10.3847/1538-4365/ac8551](https://doi.org/10.3847/1538-4365/ac8551)

**Highlights:** [Press Releases](#) and [AAS YouTube coverage](#).

### SWASTi-CME: A physics-based model to study CME evolution and its interaction with Ambient Solar Wind

**Mayank P.**, Vaidya B., Mishra W. & Chakrabarty D.

Dec. 2023, volume 270, article 10

*The Astrophysical Journal Supplement Series*

doi: [doi: 10.3847/1538-4365/ad08c7](https://doi.org/10.3847/1538-4365/ad08c7)

### Solar flare prediction and feature selection using Light Gradient Boosting Machine Algorithm

Vysakh P. A. and **Mayank P.**

Nov. 2023, volume 298, article 137

*Solar Physics*

doi: [10.1007/s11207-023-02223-5](https://doi.org/10.1007/s11207-023-02223-5)

### Using SunRunner3D to interpret the global structure of the heliosphere from in situ measurements

Gonzalez-Aviles J., Riley P., Ben-Nun M., **Mayank P.** and Vaidya B.

(under review)

*JSWSC*

## AWARDS/FELLOWSHIPS

- **Best Oral Presentation Award** Feb. 2024  
*At National Space Science Symposium under Solar and Planetary Sciences category*
- **SCOSTEP Visiting Scholar Award** Sep. 2023 - Nov. 2023  
*3 months visit at South African National Space Agency to work with Dr. Stefan Lotz.*
- **Prime Minister's Research Fellowship** Aug. 2021 - Present  
*This prestigious fellowship has been awarded by the Government of India to develop SWASTi framework.*
- **CSIR Junior Research Fellowship** Aug. 2020 - July 2021  
*Council of Scientific and Industrial Research granted this fellowship for qualifying the CSIR-NET JRF exam.*

## INVITED TALKS

- **ASI2024 Workshop on CME propoagation**  
*IISc Bangalore, India* January 2024
- **Seminar @ South African National Space Agency**  
*SANSA, Hermanus, South Africa* October 2023
- **INDUS Seminar**  
*Online ([YouTube](#))* September 2023
- **Aditya-L1 Support Cell Workshop**  
*ARIES, Nainital, India* July 2023

## SCIENTIFIC PRESENTATIONS

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- **National Space Science Symposium (NSSS2024)**  
*Goa, India* **Oral Presentation**  
*February 2024*
- **42<sup>nd</sup> meeting of Astronomical Society of India (ASI2024)**  
*IISc, Bangalore, India* **Poster Presentation**  
*February 2024*
- **2nd Indian Space Weather Conference (ISWC-2)**  
*Ahmedabad, India (Online)* **Oral Presentation**  
*October 2023*
- **Asia-Pacific Regional IAU Meeting (APRIM2023)**  
*Koriyama, Japan (Online)* **Oral Presentation**  
*August 2023*
- **Asia Oceania Geosciences Society Meeting (AOGS2023)**  
*Singapore* **Oral Presentation**  
*August 2023*
- **Science from In-situ Measurements of Aditya (SIMA-01)**  
*VSSC-ISRO, India* **Oral Presentation**  
*April 2023*
- **41<sup>st</sup> meeting of Astronomical Society of India (ASI2023)**  
*IIT Indore, India* **Poster Presentation**  
*March 2023*
- **Challenges and Innovations in Computational Astrophysics IV**  
*IAU Commission B1: Computational Astrophysics (Online)* **Oral Presentation**  
*November 2022*
- **Young Astronomer's Meet (YAM2022)**  
*ARIES, India* **Oral Presentation**  
*November 2022*
- **14<sup>th</sup> European Space Weather Week (ESWW2022)**  
*Zagreb, Croatia (Online)* **Poster Presentation**  
*October 2022*
- **1<sup>st</sup> VELC/Aditya-L1 Science Workshop**  
*KSO-IIA, India* **Oral Presentation**  
*June 2022*
- **40<sup>th</sup> meeting of Astronomical Society of India (ASI2022)**  
*IIT Roorkee, India* **Oral Presentation**  
*March 2022*
- **Solar-Terrestrial Physics Symposium (STP15)**  
*SCOSTEP and Indian Institute of Geomagnetism (Online)* **Oral Presentation**  
*February 2022*
- **Indian Space Weather Conference (ISWC)**  
*Physical Research Laboratory, India (Online)* **Poster Presentation**  
*January 2022*
- **The predictive power of computational astrophysics as a discovery tool**  
*IAU Symposium 362 (Online)* **Oral Presentation**  
*November 2021*
- **16<sup>th</sup> European Solar Physics Meeting (ESPM-16)**  
*University of Oslo, Norway (Online)* **Oral Presentation**  
*September 2021*
- **Joint Scientific Assembly IAGA-IASPEI 2021**  
*CSIR-National Geophysical Research Institute (Online)* **Oral Presentation**  
*August 2021*

## WORKSHOPS/SCHOOLS

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- **Origin and Evolution of Solar Eruptive Phenomena**  
*41<sup>st</sup> meeting of Astronomical Society of India (ASI2023)* **IIT Indore**  
*March 2023*
- **ISSS-14**  
*The 14th International School for Space Simulations* **Online**  
*September 2022*
- **Connecting the Heliosphere**  
*NASA Heliophysics Summer School 2022* **Online**  
*August 2022*
- **Planetary Space Weather**  
*40<sup>th</sup> meeting of Astronomical Society of India (ASI2022)* **IIT Roorkee**  
*March 2022*

- **Solar-Terrestrial Physics for Students and Young Scientists (STEPSYS)** **Online**  
*Solar-Terrestrial Physics Symposium (STP15)* *February 2022*
- **ADITYA-L1** **Online**  
*39<sup>th</sup> meeting of Astronomical Society of India (ASI2021)* *February 2021*
- **Computational Astrophysics** **Online**  
*39<sup>th</sup> meeting of Astronomical Society of India (ASI2021)* *February 2021*

## KEY SKILLS

<b>Experience</b>	MHD Simulation, 3D Data Visualization & Analysis, In-situ Data
<b>Research Tools</b>	PLUTO code, VisIt, ParaView, GNU Plot
<b>Programming Languages</b>	Python, C, C++
<b>Operating Systems</b>	Linux, Windows

## TEACHING EXPERIENCE

<b>Devi Ahilya Vishwavidyalaya</b> <i>PMRF Guest Lecturer, Department of Physics</i>	<b>Indore (M.P.), India</b> <i>January 2024 - present</i>
<b>Government Holkar Science College</b> <i>PMRF Guest Lecturer, Department of Physics</i>	<b>Indore (M.P.), India</b> <i>Feb. 2022 - Aug. 2023</i>
<b>Indian Institute of Technology Indore</b> <i>Teaching Assistant, Dept. of Astronomy, Astrophysics &amp; Space Engineering</i>	<b>Indore (M.P.), India</b> <i>Aug. 2021 - May 2023</i>

**Courses taught:** Space Weather, Computational Methods in Astronomy and Space Sciences, Electrodynamics and Plasma Physics, Quantum Mechanics.

## SCHOLASTIC ACHIEVEMENTS

<b>GATE: All India Rank (AIR) - 148 (Percentile - 99.13)</b> <i>Graduate Aptitude Test in Engineering</i>	<b>Physics (PH)</b> <i>2020</i>
<b>JEST: AIR - 142 (Percentile - 98.06)</b> <i>Joint Entrance Screening Test for PhD</i>	<b>Physics</b> <i>2020</i>
<b>CSIR-NET JRF: AIR - 122 (Percentile - 99.49)</b> <i>Council of Scientific and Industrial Research - National Eligibility Test</i>	<b>Physical Sciences</b> <i>Dec. 2019</i>
<b>AIEEE: AIR - 27,746 (Percentile - 97.54)</b> <i>All India Engineering Entrance Examination</i>	<i>2012</i>

## EDUCATION

<b>Indian Institute of Technology Indore</b> <i>PhD in Astronomy, Astrophysics &amp; Space Engineering</i>	<b>Indore (M.P.), India</b> <i>August 2020 - Present</i>
<b>University of Delhi</b> <i>MSc in Physics &amp; Astrophysics</i>	<b>New Delhi, India</b> <i>August 2017 - June 2019</i>
<b>Institute of Technology Guru Ghasidas Vishwavidyalaya</b> <i>BTech in Mechanical Engineering</i>	<b>Bilaspur (C.G.), India</b> <i>August 2012 - June 2016</i>

## VOLUNTARY ACTIVITIES

- **Mentoring Others:**
  - Mentored an intern in developing a machine-learning-based solar flare forecasting model, resulting in

a publication in Solar Physics.

- Guided an intern to create a web-based voice-recognition module within the SWASTi framework for easier command input.
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○ **Scientific Committees and Outreach:**

- Part of decision making committee of Indian Network for Dynamical and Unified Solar Physicists ([INDUS](#)). It is a diverse group of Indian PhDs and postdoctoral researchers.
  - Leading the website team of INDUS.
  - Reviewing and writing science articles for [CosmicVarta](#) and INDUS newsletter to promote Indian astronomy to the public.
  - Volunteer in the outreach activities during YAM2022 conference in nearby schools.
  - Part of outreach team of the ASI2021 conference.
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○ **Conference/Workshop Organization:**

- Part of local organizing committee of ASI2023 conference at IIT Indore.
  - Volunteer in the departmental workshops and induction programs on working of telescopes and stargazing sessions.
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○ **Professional Society Membership:**

- Astronomical Society of India (ASI).
  - Asia-Oceanic Geoscience Society (AOGS).
  - European Geosciences Union (EGU).
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