

# JASHANPREET SINGH DINGRA

☎ +91 8847242013 ✉ [astrodingra@gmail.com](mailto:astrodingra@gmail.com) 🌐 [github.com/jsdingra11](https://github.com/jsdingra11) 🌐 [dingra.galamo.org](http://dingra.galamo.org)

Amritsar, Punjab, India

## Education

Guru Nanak Dev University - MSc. FYIP Physics - CGPA 8.60	2024 – Present
Amritsar, Punjab, India	
The Millennium School - Non Medical - 82.4%	2022 – 2024
Patiala, Punjab, India	
The Kaintal School - Secondary Education - 94.4%	2010 – 2022
Patiala, Punjab, India	

## Achievements

### Academic Awards

- ICNPA (International Conference on Nuclear Physics and Application) **Best Contribution Award.** (2024)
- JEE Mains (Joint Entrance Examination) **AIR 231.** (2024)
- NSEA (National Standard Examination For Astronomy) **Scholar.** (2023)
- IAAC (International Astronomy and Astrophysics Competition) **Bronze Honours.** (2021)

### Other Awards and Honours

- IAAC (International Astronomy and Astrophysics Competition) **Ambassador.** (2024 - Present)
- ISRO (Indian Space and Research Organisation) **Space Tutor.** (2023 - Present)
- APY (Astronomy Photographer of the Year) **Shortlisted.** (2021)
- SDNP (South Down National Park Astrophotography Competition) **Runner Up.** (2021)

### Hackathons

- HACKOWASP7.0 (North India's Biggest Hackathon, TIET) **Runner Up.** - 150000 INR (2025)
- Ad Astra (Natioanl Astronomy Ideathon, NIT, Jalandhar, Punjab) **Second Runner Up.** - 5000 INR (2025)
- Technovista 2.0 (Ideathon, Guru Nanak Dev University ) **Frist Prize.** - 1100 INR (2025)
- Zinnovatio 2.0 (Hackathon, Chandigarh University) **Top 10 of 1500 Teams.** (2025)

## Publications

Investigating the relationship between black hole mass and galaxy dynamics  
in Seyfert Type II and LINER galaxies (2024)

- \* Presented, for the first time, the correlation between  $M_{\text{BH}}$  and  $\sigma$  specifically for Seyfert Type II and LINER galaxies—an analysis made challenging due to obscuration by nuclear dust and the presence of a torus.
- \* *Authors: Jashanpreet Singh Dingra and Harjeet Kaur*
- \* *Submitted in the Monthly Notices of Royal Astronomical Society (Reviewing Phase)*

## Other International Publications

Shortlisted in International Astronomy Photographer of the Year Award (2021)  
Published in : *The Forbes, The BBC, The Royal Museums Greenwich.*

South Down National Park International Release (2021)

## Recent Research Projects

Deep Learning Model for Alzheimer Detection and MRI Brain Segmentation (2025)  
\* *Authors: Jashanpreet Singh Dingra and Hardeep Kaur*

Deep Learning Model for Galaxy Morphology Prediction (2025)  
• *Authors: Jashanpreet Singh Dingra and Virkarmjeet Singh (Guru Nanak Dev University)*

Galamo – A Python Package for Astronomy Researchers for Comprehensive Galaxy Analysis (2025 – Present)  
• *Authors: Jashanpreet Singh Dingra, Vikramjeet Singh (Guru Nanak Dev University)*

Study of Stellar Dynamics of Open Star Clusters Using the Runge-Kutta Method (2025)  
• *Authors: Jashanpreet Singh Dingra and Suprit Singh (IIT Delhi)*

Crab Pulsar Spin Down Rate Over 5 Years (2015–2023) (2024)  
• *Authors: Jashanpreet Singh Dingra, Pratham Jain (IIIT Raichur), Uttakarshika (IIIT Raichur) and Manam Tiwari (BNM Institute of Technology)*

## Major Computational Astronomy Contributions

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**Astropy - Astrophysics and astronomy python package** (2025 - Present)

· Contributed in *astropy.coordinates* and many more

**Galamo<sup>1</sup> – A Python package for astronomy researchers for comprehensive galaxy analysis.** (2025 – Present)

· Founder: Jashanpreet Singh Dingra (Guru Nanak Dev University)

## Conferences, Schools & Talks

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**AdventureX, China's Biggest Hackathon, Final Round, Hangzhou, China** (2025)

**Conference on Advances in Cosmology, Christ University, Bangalore** (2025)

**Summer School on Analysis and Statistical Modelling of Space Science Data, MCNS, Karnataka** (2025)

**ZTF Summer School 2025, University of Minnesota, USA** (2025)

**13th IIST Astronomy and Astrophysics School (IAAS), Kerala** (2025)

**Summer School on Gravitational-Wave Astronomy, ICTS-TIFR, Bangalore** (2025)

**National Conference on Active Galactic Nuclei, CUHP, India** (2025)

**Invited Speaker @ Star Party, The Millennium School, Patiala, Punjab** (2025)

**International Conference on Nuclear Physics and Its Applications, New Delhi** (2024)

**68th Symposium on Nuclear Physics, IIT Roorkee** (2024)

**Speaker at Astronomy Webinar, Astronomy Club, Kosovo** (2023)

**Pulsar Data Analysis, HEASARC (NASA), India** (2022)

## Investigations

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**SFR Correlation with the Mass and Metallicity of Galaxies from SDSS DR7** (2023)

Conducted an analysis revealing a positive correlation between the star formation rate (SFR) and the stellar mass of galaxies, indicating that more massive galaxies tend to have higher star formation rates. Also observed a positive correlation between galaxy mass and metallicity, suggesting that massive galaxies are typically more metal-rich.

**Correlation Between the Recessional Velocity and Distance of Type Ia Supernovae** (2022)

Identified a strong positive correlation between the distance of a Type Ia supernova and its recessional velocity, consistent with Hubble's Law. Notably discovered a supernova with a recessional velocity of  $0.8c$ , located approximately 1000–1500 Mpc away.

**Simulation that Predicts Mars Oppositions** (2020)

Developed a Python-based simulation to predict Mars oppositions over the next 100 years, aiding in observational planning and planetary alignment studies.

**24-Hour Sun Analysis from SDO Data** (2020)

Analyzed solar activity using 24-hour observational data from the Solar Dynamics Observatory (SDO) on December 26, 2020, focusing on sunspot activity and solar flares.

## Extra Projects

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**Web Development: International Music Academy - Gurmat Sangeet Taksal** (2024)

**Web Development: Religious Place - Gurdwara Saheedgarh Sahib, Hamilton, Ontario, Canada** (2024)

**Rocket Flight Computer** (2023)

Capable of telemetry up to 7 km, equipped with an accelerometer, gyroscope, temperature sensors for the abort system, GPS modules, barometric sensors, servos, and biological slides for microbial collection from the toposphere.

## Leadership / Social Work

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**Recognized by the Municipal Commissioner for heroically saving a child during a bus accident.**

**Founder of Dingraastro Club, a global astronomy community with over 200 members.**

**Active Member of Over 7 Astronomy Clubs Worldwide**

## Technical Skills

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**Languages:** Julia, Matlab, Python, R, HTML, CSS, JavaScript, PHP, C++ and SQL

**Skills:** Astronomy Data Analysis (Aladin, TopCat, DS9, VIREO, IRAC, etc), Scientific Educator, Web Development and Cooking

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<sup>1</sup>Preparing a manuscript for peer-reviewed publication. The project has received over 100 stars on <https://github.com/galamo-org/galamo>