

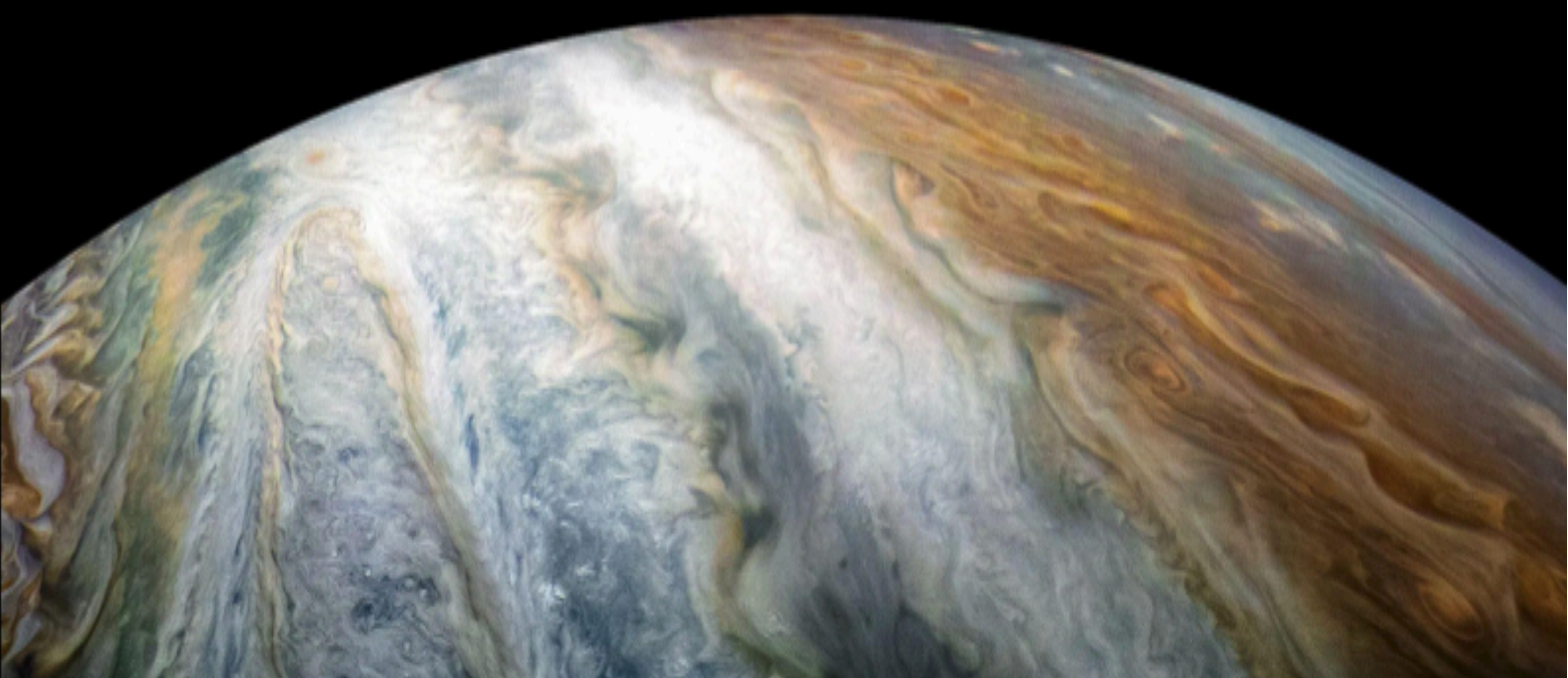


भारतीय प्रौद्योगिकी संस्थान कानपुर  
Indian Institute of Technology Kanpur

# **Space, Planetary & Astronomical Sciences & Engineering (SPASE)**

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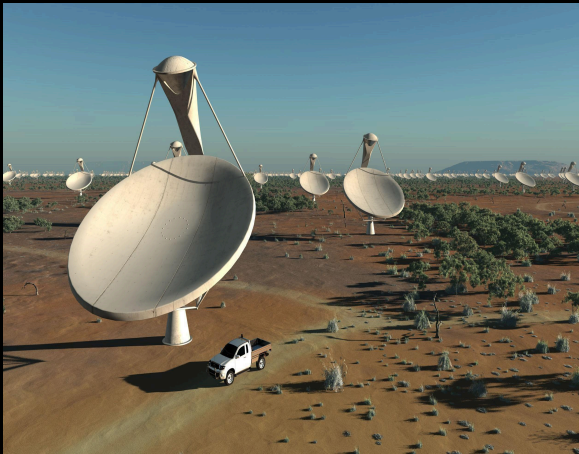
**POST GRADUATE PROGRAM**



# Space, Planetary & Astronomical Sciences & Engineering (SPASE)

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The department pursues excellence in research and teaching in all branches of Space Science and Engineering. It nurtures expertise in observations, instrumentation, data analysis and theoretical modelling. The department aims to have a strong participation in major national and international projects in this field that include:



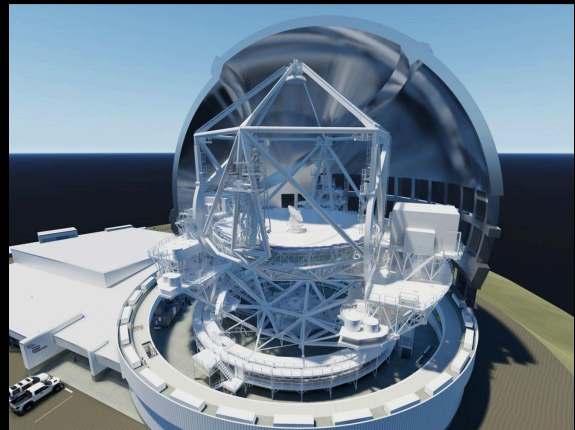
SQUARE KILOMETER ARRAY



ASTROSAT



CHANDRAYAAN



TMT

The department is continuously looking for students, researchers and faculty who are passionate about learning and contributing to this cutting edge of human endeavours: Space Exploration!



# POST- GRADUATE PROGRAMMES OFFERED

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The department currently offers M.Tech and Ph.D . In the near future, it plans to also offer a B. Tech. degree in Space Science & Engineering and an M.Sc. Degree in Astronomy and Astrophysics. All programmes will train students in various aspects of observations, instrumentation and theoretical and computational modelling.

## LABS/ FACILITIES

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The following four laboratories are being currently developed:

1. Space Instrumentation laboratory
2. 2. Optical Instrumentation laboratory
3. 3. Planetary Science laboratory
4. 4. Radio Astronomy laboratory
5. 5. Data Analysis laboratory



# FACULTY

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**Amitesh Omar, HOD** (Ph.D. RRI Bangalore; JNU) : Galaxy astrophysics, instrumentation, optical and radio astronomy.

**Pankaj Jain** (Ph. D. Syracuse; Emeritus) : Astrophysics and Cosmology, Radio Astronomy, Cosmic Rays, X-ray Astronomy.

**Soumyabrata Chakrabarty** (Ph.D., Indian Institute of Technology Kharagpur) : Space Weather interaction of Spacecrafts, Computational Electromagnetics, Design and development of Antennas for Radio Telescopes and Microwave Sensors.

**Ishan Sharma** (Ph. D. Cornell University) : Planetary Science, Granular Minor Planets, Spacecraft mechanics; Applied Mathematics, Mechanics

**Sharvari Nadkarni-Ghosh** (Ph.D. Cornell University) Theoretical Cosmology, planetary science, non-linear dynamics.

**Kunal P. Mooley** (Ph.D., Caltech, NRAO) : Transients ,Jets, Compact objects, Galactic center, Life in the Universe, Space Instrumentation.

**Prashant Pathak** (Ph.D. SOKENDAI Univ.) : Exoplanet characterization: direct imaging, transmission spectroscopy. Adaptive optics and wavefront control techniques. Ground and space-based optical and IR instrumentation.

**Rohit Sharma** (Ph.D., NCRA/TIFR) : Solar Physics, Space Weather, Radio Astronomy, Plasma Physics, Radio Wave Propagation, Data Science, Imaging Algorithms.

**Mugundhan V.** (Ph.D., Indian Institute of Astrophysics) : Radio Astronomy, Interferometry, Astronomical Instrumentation and Space Weather.

**Mohit Bhardwaj** (PhD, McGill University) : multi-messenger astronomy, RF electronics and communication, and applied statistics.

**Chhavi Jain** (Ph. D. Yale University, Joining soon) : Planetary geophysics, Geodynamics, Mantle rheology, Onset of convection, Planetary interiors, Mercury, Venus, Mars.

# FACULTY (DISTINGUISHED/VISITING)

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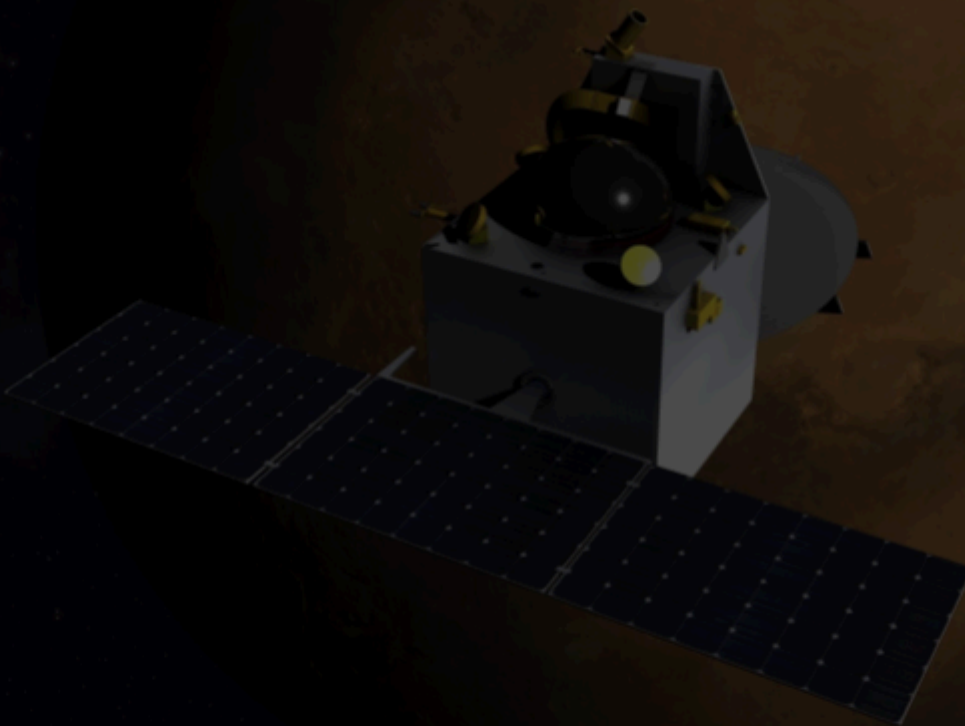
**J. S. Yadav** (Ph. D. Kurukshetra University) : X-Ray Astronomy, Space Detectors and Instrumentation, Cosmic Rays.

**Arun Mishra** (Prof. McGill University, Canada) : Spacecraft mechanics, Satellite dynamics and control, space robotics, and dynamics of aerospace structures.

**Renu Malhotra** (Prof. University of Arizona, U.S.A) : Planetary Science, Orbital Dynamics.

**Hiroaki Katsuragi** ( Prof. Osaka university, Japan) : Granular Matter, Soft Impact Dynamics, Planetary Cratering.

**Yamini Jangir** (Ph.D., University of Southern California) : Astrobiology, Space Instrumentation, Life in Extreme Environments, Microbe-Mineral Interaction, Microbial Ecology, Planetary Atmospheres.





# BROAD RESEARCH AREAS

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Space Instrumentation, Space Technology & Space Manufacturing

Planetary Science

Astronomy, Astrophysics & Cosmology

Instrumentation for Astronomy

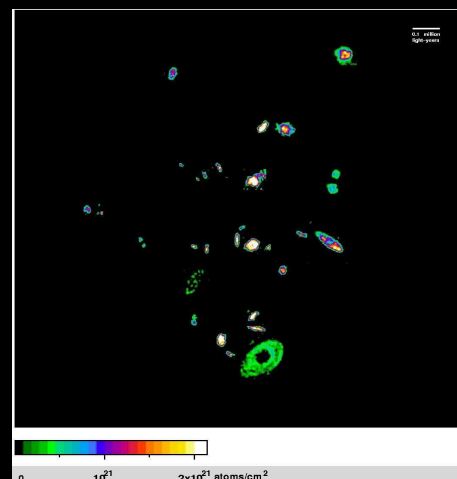
Solar Physics

Spacecraft Mechanics

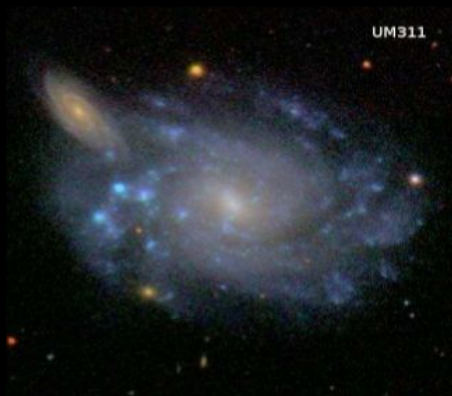
Astrobiology



Crab Nebula imaged Using the 3.6 m Devasthal Optical Telescope (DOT)



Neutral Hydrogen map of a galaxy group made using the GMRT



Nearby Galaxy imaged by the Sloan Digital Sky Survey (SDSS)



Rubber-pile asteroid Bennu 's shape can be explained using granular physics.



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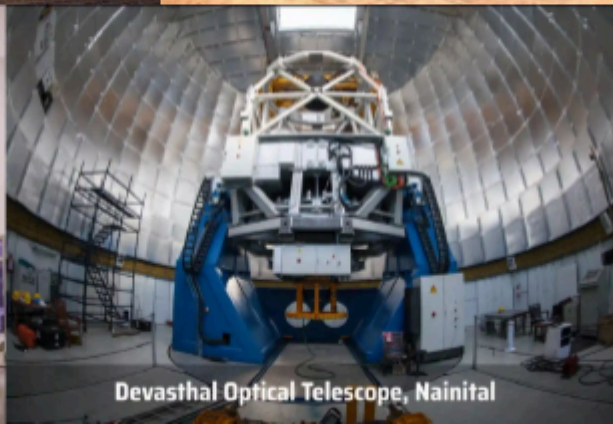
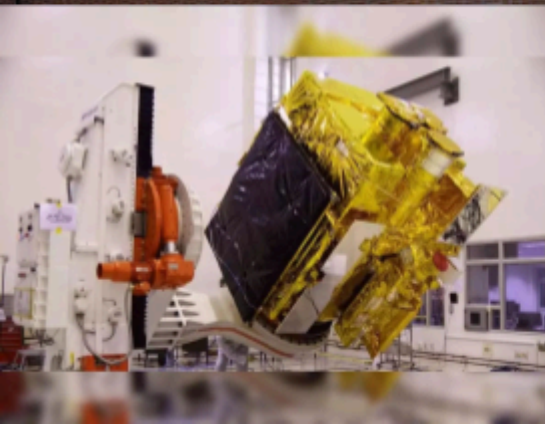
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## CONTACT

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Webpage: [www.iitk.ac.in/space](http://www.iitk.ac.in/space)



Devasthal Optical Telescope, Nainital

