

Space Beacon



This AI generated image presents a modern interpretation of the APPLE (Ariane Passenger Payload Experiment) satellite, a mission led by the esteemed Prof. R. M. Vasagam. It stands as a tribute to his invaluable contributions to space research and satellite technology, honoring his pioneering efforts in advancing India's space capabilities.

Orbital

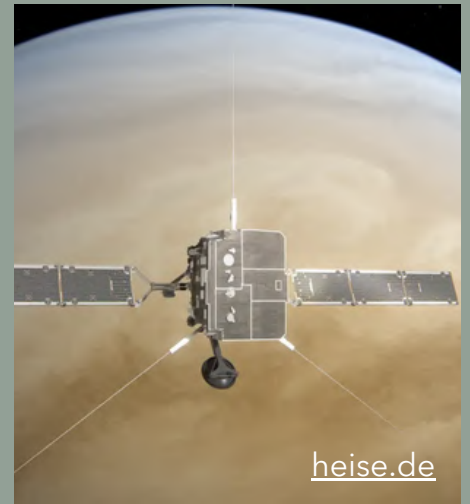


Did you Know
The Solar Orbiter, after a successful Venus flyby, is on track to be the first probe to observe the sun's poles, revolutionizing our understanding of solar dynamics.

Lead with the most significant celestial events and discoveries

Solar Orbiter's Historic Venus Flyby Success

After a close flyby of Venus, ESA's Solar Orbiter has begun to leave the orbital plane of the solar system. The probe, deflected by Venus's gravity, is now tilted by 17° and will soon be the first to observe the sun's poles. This maneuver, a significant challenge due to the probe's proximity to Venus, marks a milestone in solar observation, allowing unprecedented views of our star. The data collected will enhance our understanding of the sun's behavior and its impact on the solar system. These insights will guide future space missions and deepen our understanding of stars.



[heise.de](https://www.heise.de)

NASA Lowers Asteroid Impact Risk

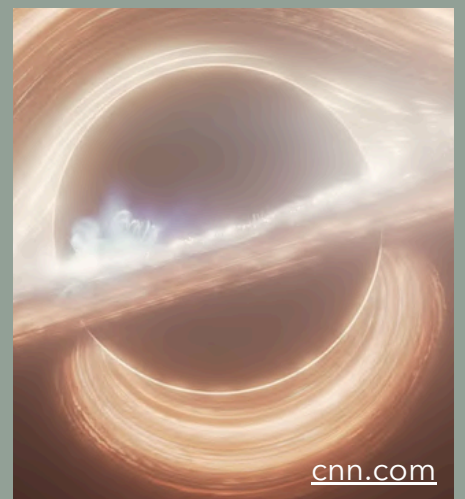
NASA has significantly reduced the impact risk of asteroid 2024 YR4. Initially, the asteroid had a 3.1% chance of hitting Earth in 2032, but new observations have lowered this to just 0.28%. The asteroid, approximately 55 meters wide, was once considered a significant threat. However, refined data has now placed it at a much lower risk level. NASA continues to monitor near-Earth objects to ensure planetary safety and improve our understanding of potential space hazards. Future missions will further refine these observations and provide additional insights.



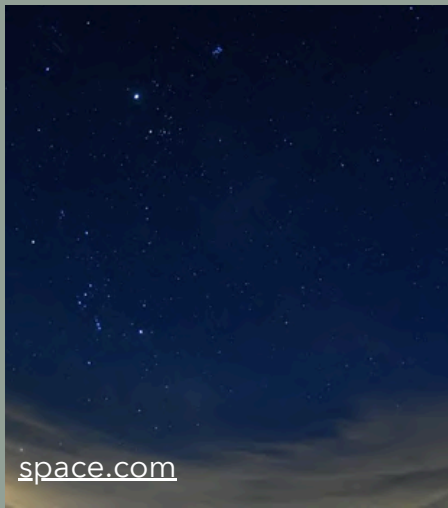
[gadget360.com](https://www.gadget360.com)

Webb Telescope Observes Milky Way's Black Hole

The James Webb Space Telescope has captured unprecedented activity around the Milky Way's central black hole, Sagittarius A*. The telescope observed continuous flickering and occasional bright flares from the accretion disk surrounding the black hole. These observations, spanning 48 hours over a year, reveal the chaotic and dynamic nature of the region. The findings provide new insights into black hole behavior and their interaction with surrounding environments, enhancing our understanding of these cosmic phenomena.



[cnn.com](https://www.cnn.com)



Alignment of Planets: A Celestial Spectacle

A remarkable planetary alignment, involving Venus, Mars, Jupiter, Saturn, Uranus, Neptune, and Mercury, is captivating stargazers during January and February 2025. Known as a planetary parade, this alignment presents a striking visual display but holds minimal scientific significance. Occurring when planets align on the same side of the sun along the ecliptic plane, these events provide excellent opportunities for observing multiple planets simultaneously. While not groundbreaking, such alignments boost public interest in astronomy.



Lunar Mission to Map Moon's Water

The Lunar Trailblazer mission, launching from Kennedy Space Center, aims to map water on the moon's surface. Equipped with advanced instruments, the spacecraft will measure surface temperature and identify water sources, including ice in permanently shadowed craters. This data will enhance our understanding of the lunar water cycle and support future human and robotic missions. The mission, part of NASA's SIMPLEX program, will offer key insights into the moon's water distribution and exploration potential. These findings will also help plan sustainable lunar habitats.



Alpha Centauri Objects in Our Solar System

Scientists suggest that objects from Alpha Centauri may already be in our solar system. Research indicates that interstellar material, including meteors, could be entering Earth's atmosphere annually. Alpha Centauri, our closest stellar neighbor, is moving towards us and will reach its closest point in 28,000 years. This movement is expected to increase the number of interstellar objects entering our solar system, providing insights into material exchange between star systems and the potential spread of organic molecules or life-building compounds.

Space probes explore distant worlds, sending back breathtaking images



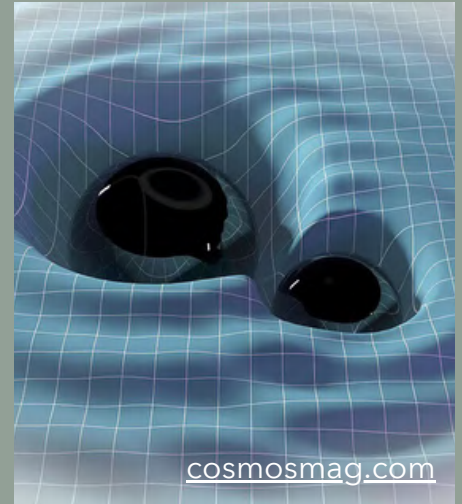


Cover broader space news not fitting into other categories

Did you Know
Gravitational waves might exhibit quantum properties, bridging the gap between quantum mechanics and general relativity.

Quantum Properties of Gravitational Waves

Gravitational waves, ripples in spacetime caused by massive objects, might exhibit quantum properties. Theoretical physicists Partha Nandi and Bibhas Ranjan Majhi suggest that these waves could behave like quantum particles, displaying superposition and entanglement. This groundbreaking research could bridge the gap between quantum mechanics and general relativity, offering new insights into the fundamental nature of the universe. Such findings could lead to revolutionary advancements in both theoretical and experimental physics.



SPHEREx Mission to Map Universe's Early History

The mission will create a 3D map of hundreds of millions of galaxies, providing new clues about the universe's inflationary phase. The mission aims to explore the origins of water and organic molecules, the history of galaxy formation, and the mechanisms behind cosmic inflation. Managed by Caltech's Jet Propulsion Laboratory, SPHEREx will launch aboard a SpaceX Falcon 9 rocket, offering unprecedented insights into the universe's early moments and the forces that shaped it. This mission will transform our understanding of cosmic evolution and universal processes.



Space Investments to Thrive Despite Defense Cuts

Despite anticipated defense budget cuts, analysts see a promising future for space investments. The commercial space sector is expected to thrive, driven by advancements in satellite technology, space exploration, and defense applications. Companies are poised to benefit from increased demand for satellite services, space tourism, and lunar missions. This optimistic outlook highlights the resilience and potential of the space industry, even in the face of financial constraints. Investors are urged to consider long-term growth in this sector.





AI Powers China's Solar System Mission

China is leveraging AI for its ambitious mission to explore the solar system's edges. Researchers from institutions like the Beijing Institute of Technology and the Shanghai Academy of Spaceflight Technology highlight AI's role in addressing deep space challenges, such as unpredictable environments and extended communication delays. The mission aims to reach 100 astronomical units by 2049 and 1,000 AU by the century's end, studying interstellar phenomena and enhancing our understanding of the solar system's boundaries.



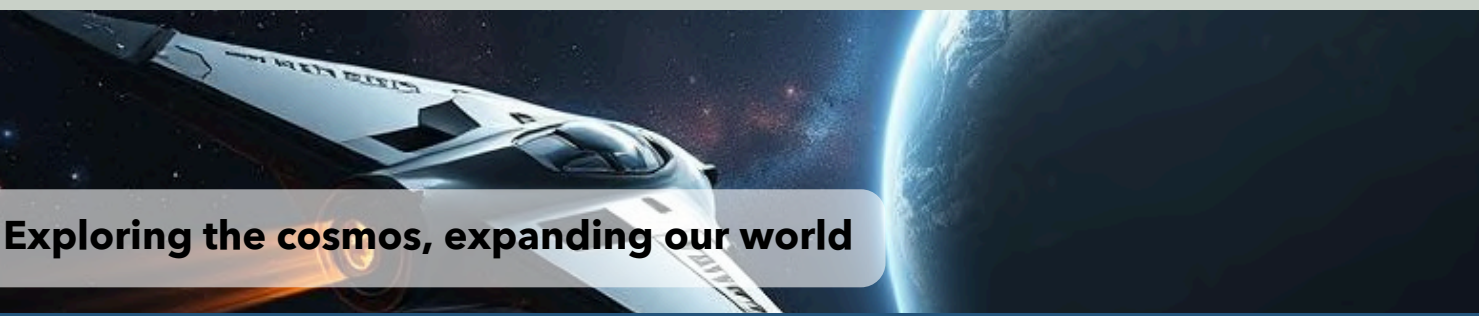
New Mission to Detect Potentially Hazardous Asteroids

The Near-Earth Object (NEO) Surveyor mission is aimed at detecting and observing asteroids and comets that could pose a threat to Earth. Scheduled for launch no earlier than September 2027, the mission will use a 20-inch infrared telescope to identify both bright and dark asteroids. This initiative will advance planetary defense efforts, providing crucial data on potentially hazardous near-Earth objects and enhancing our understanding of their characteristics and orbits. By mapping these objects, the mission will also inform future space exploration and mitigation strategies.



New Space and Earth Science Research Opportunities

The Science Mission Directorate (SMD) has released the 2025 Research Opportunities in Space and Earth Science (ROSES) solicitation. This annual omnibus solicitation covers a wide range of basic and applied research and supporting technology in space and Earth sciences. Proposals are invited from various organizations, including governmental, private, for-profit, and non-profit entities. Awards range from under \$100K to over \$1M per year, with periods of performance typically spanning three years.



Exploring the cosmos, expanding our world

Satellogy

Focus on recent and upcoming satellites and launches

Did you Know
The Extremely Low Resource Optical Identifier (ELROI) developed by Los Alamos National Laboratory can uniquely identify satellites in low Earth orbit and help prevent collisions in space!

Next-Gen Satellites to Transform Weather Forecasts

The Meteosat Third Generation (MTG) satellite, a collaboration between ESA and EUMETSAT, will host two atmospheric missions: the Imaging (MTG-I) and Sounding (MTG-S) satellites. Launched on 2022, MTG-I will enhance weather forecasting with advanced imaging and real-time lightning detection. MTG-S will provide new infrared sounding capabilities. This dual mission approach aims to improve weather prediction and climate monitoring, ensuring data continuity for the next two decades. These advancements will provide more accurate weather data.



Revolutionizing Global Internet Connectivity

Scientists at Heriot-Watt University are developing a next-generation satellite user terminal to deliver cost-effective global internet connectivity. The Mobility and Autonomy Market User Terminal (MAMUT) project, funded by the UK Space Agency, aims to create a compact, lightweight, and energy-efficient terminal. This innovative terminal will connect with multi-orbit satellites, providing high-speed internet access to remote areas on land and sea. The project will revolutionize industries lacking reliable internet, like offshore operations and autonomous transport.



Airbus Ships Biomass Satellite for Launch

The Airbus-built Biomass satellite, part of ESA's Earth Explorer mission, has been shipped to Kourou, French Guiana, for its April 2025 launch. This satellite will measure forest biomass using the first space-borne P-band synthetic aperture radar, providing accurate global maps of tropical, temperate, and boreal forests. The data will help assess carbon stocks and fluxes, enhancing our understanding of forests' role in climate regulation. The mission involves over 50 companies from 20 countries. This satellite will be key in monitoring and preserving forests.



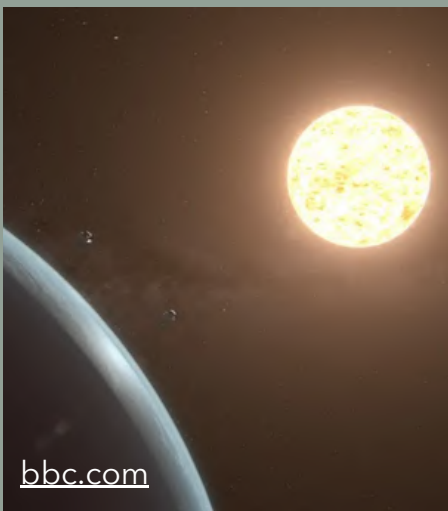
AI-Enabled Satellites to Evade Cyber Attacks

The Pentagon is developing AI-enabled satellite technology to counter potential cyber-attacks from China. These autonomous satellites can navigate independently, process vast amounts of data, and make decisions without human input. This technology aims to enhance the resilience of US space assets, ensuring they remain operational even during cyber warfare. Analysts believe AI will provide additional capabilities for surveillance, espionage, and interference with adversarial space assets, maintaining the US's strategic advantage in space.



Innovative Design for Solar Satellite Cameras

A company, RAL Space, has developed advanced cameras for an upcoming solar satellite mission. These cameras will capture detailed 3D maps of the Sun's outer atmosphere, the corona, to improve our understanding of solar wind dynamics. The mission aims to enhance predictions of space weather phenomena that can impact Earth. Four suitcase-sized satellites will be deployed to achieve this groundbreaking exploration, showcasing significant contributions to space technology.



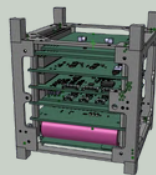
ELROI Tackles Satellite Congestion

Los Alamos National Laboratory has developed the Extremely Low Resource Optical Identifier (ELROI), a small, low-power light that uniquely identifies satellites in low Earth orbit. ELROI emits a "license plate number" code detectable from a thousand kilometers away, helping track and prevent collisions. This technology is crucial as space becomes increasingly crowded with over 11,000 active satellites and nearly 40,000 pieces of debris. ELROI's precision and efficiency make it a game-changer for space traffic management.

A photograph of a satellite in orbit over Earth, with the planet's horizon and atmosphere visible. The satellite has solar panels and a complex structure. The text 'Connecting, observing, exploring the power of satellites' is overlaid in a white box on the right side of the image.

**Connecting, observing, exploring
the power of satellites**

CubeTech



Did you Know
The University of Michigan's STARI mission, led by Professor James Cutler and funded by NASA, will use CubeSats to demonstrate interferometry, advancing space exploration and the search for life on exoplanets.

Showcase innovative CubeSat missions and unique payloads

U-M's First Astronomy Satellite Mission

Professor James Cutler and his team at the University of Michigan are set to launch the STArlight Acquisition and Reflection toward Interferometry (STARI) mission, supported by a \$10 million NASA grant. This mission will use CubeSats to demonstrate interferometry technology, which involves multiple satellites transmitting light with pinpoint accuracy. The goal is to prove that larger, future missions can use this approach to search for signs of life on exoplanets. This pioneering mission could pave the way for groundbreaking discoveries in space exploration.



aero.engin.umich.edu

Solar Storm Forms Unprecedented Radiation Belts

A powerful solar storm disrupted GPS systems and created two temporary radiation belts around Earth. These belts, similar to the Van Allen radiation belts, pose risks to satellites and astronauts. While such belts have appeared after past storms, the intensity and formation of two belts in this event are unprecedented. Researchers are closely monitoring these developments to understand their impact on space weather and Earth's magnetosphere. The findings could have significant implications for future space missions and satellite technology.



scitechdaily.com

CubeSat Hack Highlights Cybersecurity Risks

A hypothetical scenario explores the potential risks of CubeSat hacks. These miniaturized satellites, often used for research and communication, are vulnerable due to limited cybersecurity measures. In the scenario, a hacked CubeSat with thrusters collides with a state-owned surveillance satellite, raising concerns about deliberate attacks. The incident highlights the need for improved cybersecurity in space to prevent such threats and protect critical infrastructure. Cybersecurity advancements are crucial to protect space operations.



satellitetoday.com



thebatt.com

Student-Built Satellite Set for Upcoming Launch

Texas A&M's AggieSat6, a 6U CubeSat, is nearing completion and set for launch by fall. Built by passionate student teams, it will enhance space domain awareness by processing satellite signal data on board instead of relying on ground stations. The satellite is part of a larger series of space projects at the university, showcasing hands-on student engagement in space exploration. After five years of development, AggieSat6 will soon join orbit as the third satellite in the AggieSat series.



siliconrepublic.com

ATU's Wisar Lab Joins ESA CubeSat Project

Atlantic Technological University's Wisar Lab has joined an ESA-funded project to enhance CubeSat communication.

Led by Dr. Nick Timmons, the lab will integrate a hybrid beam-steering system to improve satellite communication.

This project aims to overcome power constraints and miniaturization challenges, revolutionizing small-satellite communications. The collaboration with Silicon Austria Labs and ESA underscores the importance of innovation in satellite technology. The project's success could lead to better satellite communication networks.



aumanufacturing.com

New Robotics Testbed to Boost Space Operations

Space Machines Company (SMC), alongside the University of Adelaide and other partners, is developing a ground-based proximity operations robotics testbed to improve space-borne perception and intelligence for space domain awareness. The project, funded by the Defence Trailblazer's Accelerating Sovereign Industrial Capabilities program, aims to enhance satellite servicing, space debris management, and space control. The testbed will fill Australia's orbital robotics gap and support SMC's SPACE MAITRI mission for debris management.



Beyond boundaries, within reach

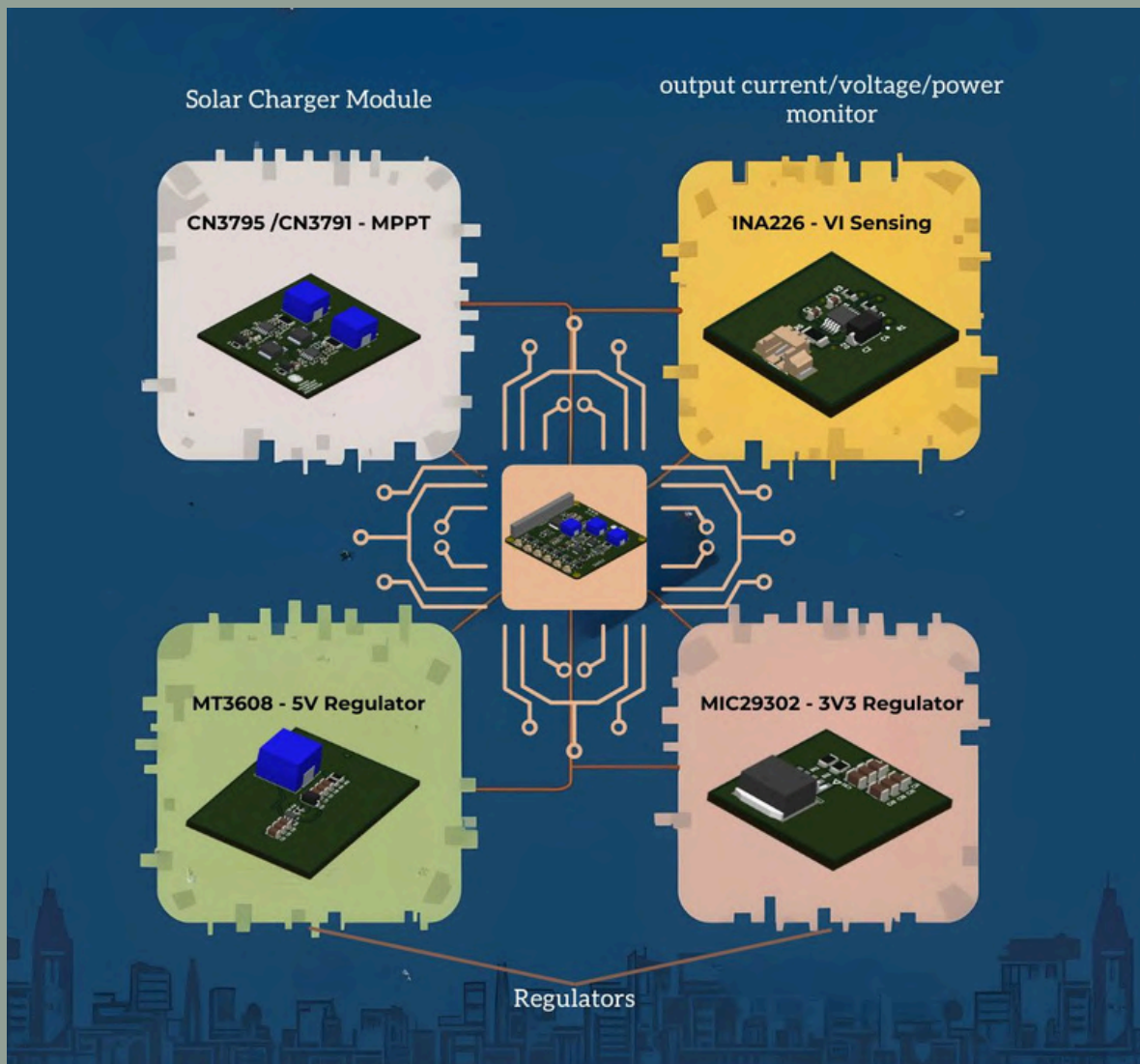
The 75SSM

SSM: Students' Satellites Mission

Update readers on our ITCA internal space-based innovations

CRSat's Smart Heart: Efficient Energy Management

CRSat rely on the EPS board for power generation, storage, and regulation, ensuring stable and safe power distribution. MPPT optimizes solar panel efficiency, adapting to varying conditions. The INA226 monitors current and power in real time, enhancing system reliability. MT3608 boosts low voltage inputs to 5V, while MIC29302 provides a clean 3.3V output for sensitive electronics. Together, these components form an effective EPS design flow: Solar panel input → MT3608 → MIC29302 → MPPT, ensuring optimal power management and satellite performance.



75 satellites, infinite possibilities

Space@India

Glimpses into India's space chronicle, every week

Unveiling Space Docking Technology for India's Gaganyaan Mission

[Read more at: theweek.in](https://theweek.in)



IN-SPACe Unveils Technology Adoption Fund to Boost India's Space Tech Innovations

[Read more at: financialexpress.com](https://financialexpress.com)

Economic Survey 2025: ISRO's Geospatial Innovations Boosting Governmental Efficiency Across Sectors

[Read more at: ndtv.com](https://ndtv.com)



NISAR Space Plan with the US Showcases India's Cost-Effectiveness: Dr. S Somanath, Ex ISRO chief

[Read more at: businessstandard.com](https://businessstandard.com)

India-Australia Space Partnership Expands with PRISM 2.0 Initiative

[Read more at: express.com](https://express.com)



India Poised to Dominate Small Satellite Market, Emerge as Niche Player Like SpaceX: IN-SPACe Chairman Dr. Pawan Goenka

[Read more at: economictimes.com](https://economictimes.com)

IN-SPACe Grants 6-Month Extension for Foreign Satellites, Enhancing International Collaboration and Innovation in Space Technology

[Read more at: newsminimalist.com](https://newsminimalist.com)



Mahendragiri's New Semi-Cryogenic Test Facility to Accelerate ISRO's Engine Development in India

[Read more at: thehindu.com](https://thehindu.com)

Innovating India's tech for 21 years, we pioneered the '75 Students' Satellites Mission' and made a global impact in space tech, precision agriculture, and Industry 4.0.

Events

IEEE Aerospace Conference

01-08 March 2025
YCC, Montana
aeroconf.org

ISRSE 40

17-21 March 2025
FIECC, Farnborough, UK
isrse40.com

Farnborough International Space Show

19-20 March 2025
FIECC, Farnborough, UK
farnboroughspaceshow.com

Launches

SpaceX | Starship-Super Heavy Block 1/2 | Starship Flight 8

01 Mar 2025 05:00 IST
Orbital Launch Pad A, Starbase, Texas, USA

Galactic Energy | Ceres 1 | Unknown Payload

02 Mar 2025 13:40 IST
Site 95A, Jiuquan Satellite Launch Center, China

VKS RF | Soyuz 2.1b/Fregat-M Glonass-K2 n°14L

03 Mar 2025 03:30 IST
Plesetsk Cosmodrome, Russia

Upcoming.....



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