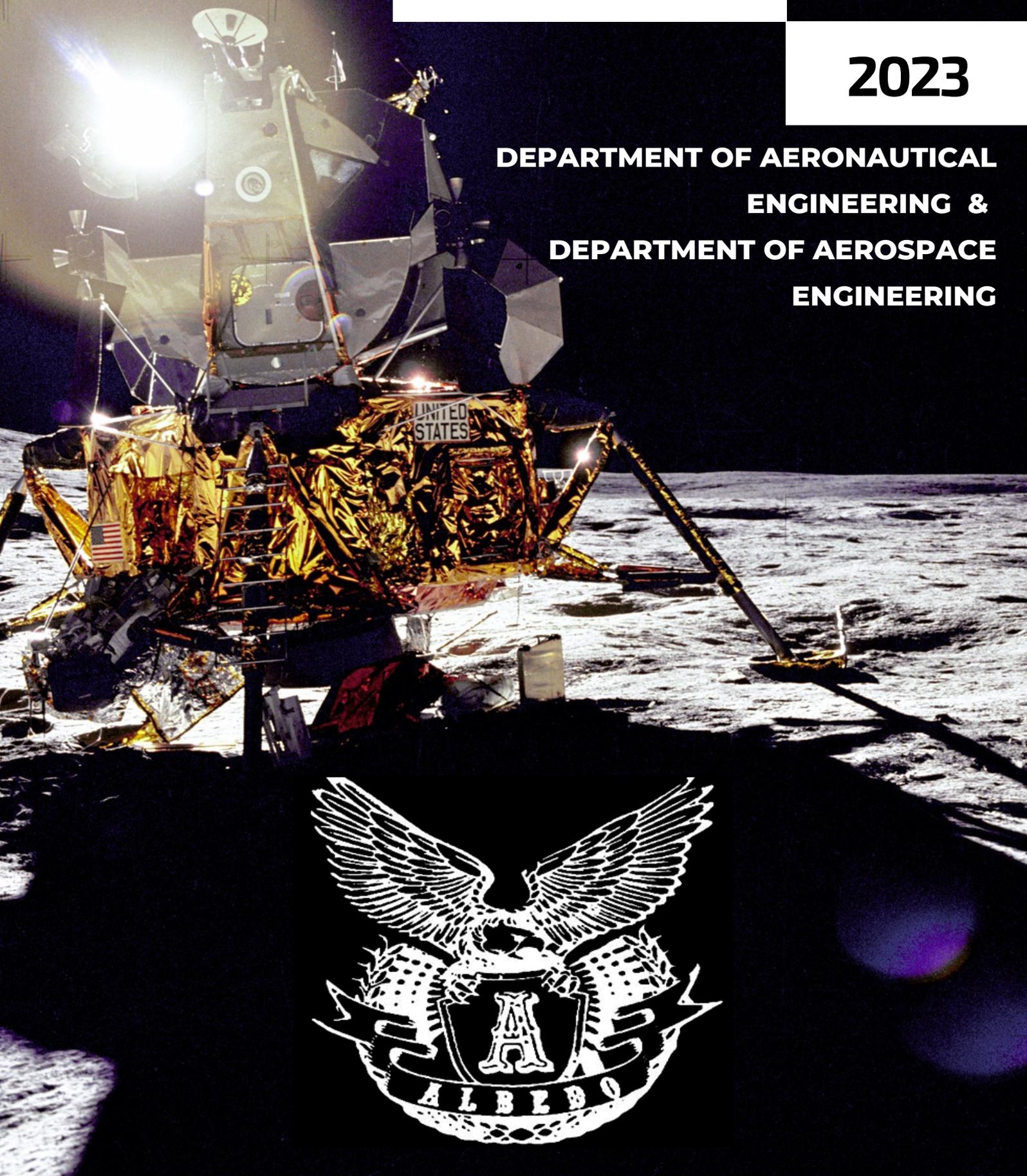


ALBEDO

FEBRUARY 2023

2023

**DEPARTMENT OF AERONAUTICAL
ENGINEERING &
DEPARTMENT OF AEROSPACE
ENGINEERING**



**DEPARTMENT OF AERONAUTICAL ENGINEERING
&
DEPARTMENT OF AEROSPACE ENGINEERING**

Dean's Message



Happy New Year 2023, Greetings!

It gives me immense pleasure and pride that our department is releasing the first issue of its newsletter, "ALBDEO" as a precursor to departmental activities. This newsletter focuses on the activities and accolades of our department students and faculty. It also focuses on the innovation that occurred in the department over the past six months, revealing the major strengths of the department as well as the academic excellence of our students. I would like to thank and congratulate all the students, Heads, faculty members, nonteaching staff, and supporting staff for their limitless support and earnest efforts for the betterment and development of the department. I believe that this newsletter will motivate teachers and students to share their creativity and new ideas with the world and will help in their overall development. I sincerely congratulate all the members of the editorial board and the especially the coordinator, Mr. G. Dinesh Kumar for bringing up this issue in a fullfledged manner.

Dr. R. Asokan
Dean
Department of Aeronautical Engineering &
Department of Aerospace Engineering

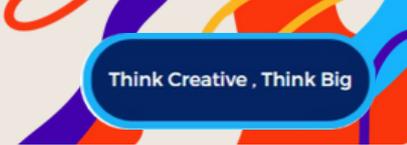
Undergraduate Program

-  **B.Tech Aeronautical Engineering**
-  **B.Tech Aerospace Engineering**

Postgraduate Program

-  **M.Tech Aeronautical Engineering with specialization in Aircraft Maintenance & Avionics**
-  **M.Tech Defence Technology**





EVENTS

OCTOBER 2022



&

ACTIVITIES

Hindustan Institute of Technology and Science in association with Satish Dhawan Space Center (SDSC), SHAR, ISRO organized world space week on 7th – 9th October 2022.

The World space week function was inaugurated by chief guest Thiru. Anbil Mahesh Poyyamazhi, Hon'ble Minister for School Education, Govt. of Tamil Nadu, Dr. R Venkatraman, Associate Director, SDSC, SHAR, ISRO, Dr.S N Sridhara, Vice Chancellor, HITS , Dr. Aby Sam, Director, HITS, Dr A Sivathanu Pillai , Former CEO & MD, Brahmos Aerospace & Professor Emeritus (Research), HITS and Dr. R Asokan, Dean , School of Aeronautical Sciences, HITS.

A Total of 2000+ participants and visitors and around 2000 Students & 1000 Staff from HITS benefitted by this outreach program by ISRO.



GLIMPSES OF WSW CELEBRATION



Drawing Competition



Coloring Competition



Quiz Competition



Extempore Competition



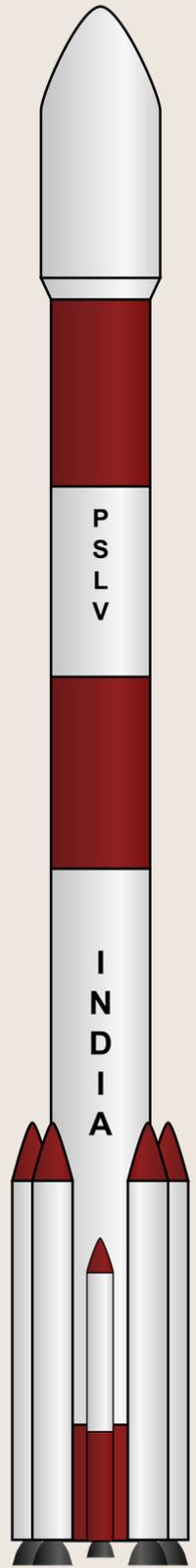
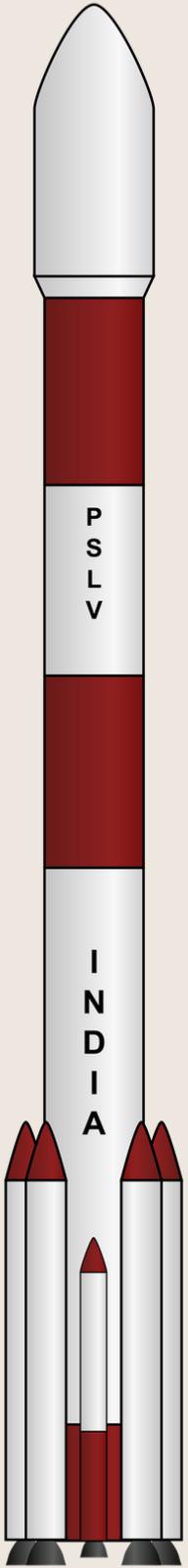
Poster Competition



School Student Interaction



Prize Distribution Ceremony





EVENT DATE: 8-9 DECEMBER 2022

By ASME

The ASME India AM 3D Aero 2022 Conference is a major international conference on advanced additive manufacturing /3D printing technology and its role in building of the aerospace ecosystem. The central theme of this conference is to promote and facilitate deep dive discussions on the engineering for airworthy systems.

Additive Manufacturing is vital to advanced manufacturing and is a transformative technology enabling mass customization of products through self-learning environments. It offers substantial design flexibility and leads to substantial saving of time and cost in the industrial parlance particularly in aerospace and defense sectors.

Inaugural session was followed by the keynote address given by Dr. Melissa Orme, Vice President Boeing on the topic "Advantage of the Additive Manufacturing Technology". This 3D printing technology gives tailored design to the manufacturing. This two day conference was attended by Mr. J. Jensin Joshua, Assistant Professor & Mrs. T. Sivagangai, Assistant Professor.





EVENT DATE: 5-SEPTEMBER 2022

By CII

Confederation of Indian Industry (CII), towards taking the vision of the government of enhancing Indian private sector participation is organising the 7th edition of its Bengaluru Space Expo 2022- an International Conference and Exhibition scheduled from 5-7 September 2022, in association with the Indian Space Research Organization (ISRO), Indian National Space Promotion and Authorisation Centre (IN-SPACE) and NewSpace India Limited (NSIL).

The theme of the conference is "Nurturing the New Space in India".

The inaugural session would be graced by the presence of Shri S. Somanath, Chairman, ISRO, Secretary, Department of Space, Dr. Pawan Goenka, Chairman, Indian National Space Promotion and Authorization Center and Dr. D Radhakrishnan, Chairman and Managing Director, NewSpace India Limited (NSIL).

This three days Expo and conference was attended by
Dr. R. Asokan , Professor
Mr. G.Dinesh Kumar, Assistant Professor
Mr.Jensin Joushua , Assistant Professor



**Dr.S. Somanath, Chairman , ISRO
Visit to HITS Stall**





Dr.J.C Liou
Chief Scientist Orbital Debris, NASA, USA



Dr.Shinichi Nakamura
Head , JAXA, Japan

Workshop on Space Situational Awareness & Space Traffic Management - Growing Concerns on Space Environmen

EVENT DATE: 10 - 13 JANUARY 2023

By ASI , Inspace , NSIL & ISRO

Encouraged by modern reforms, and in its continued endeavour to increase scientific temperament & development of space start-up ecosystem (DeSSEI) in the country; ASI in association with ISRO, INSPACE and NSIL, organised this novel Workshop on “Space Situational Awareness & Space Traffic Management: Growing Concerns on Space Environment” from January 11-13, 2023 at Bengaluru, INDIA, with eminent speakers from around the globe.

Dr. S. Somanath , Chaiman ISRO & Dr. Satheesh Reddy, SA to Raksha Mantri ,GOI were the chief guest for the workshop.

The workshop aimed to synergies efforts in shaping the architecture of the next-generation space sector revolution in India and will provide a networking opportunity.

Inaugural session was followed by the keynote speech given by Dr. Satheesh Reddy, SA to Raksha Mantri, GOI on the topic "Space Situational Awareness: Scenario & Way Forward". This three day workshop had 17 lectures & 4 panel discussion.

This workshop was attended by
Dr. P. Vasanthakumar, Head, Aerospace
Dr.Rohith .I. J , Assitant Professor
Mr.G.Dinesh Kumar, Assitant Professor
Mr.J. Jensin Joshua, Assistant Professor



CENTRE OF EXCELLENCE IN SATELLITE TECHNOLOGY

The Centre of Excellence in Satellite Technology was inaugurated by Dr. S. Somanath, Chairman, Indian Space Research Organisation (ISRO) in the presence of Dr. M Ravichandran, Secretary, Ministry of Earth Sciences, Dr. Mrs. Elizabeth Verghese, Chancellor HITS, Dr. Anand Jacob Verghese, Pro Chancellor, HITS and Dr. Ashok Verghese, Director, HITS on 30th September 2022. This centre is established under the able guidance of Dr. A Sivathanu Pillai, Founder CEO & MD BrahMos Aerospace, Professor Emeritus (Research), HITS and Dr. S N Sridhara, Vice Chancellor, HITS with the active participation of members of faculty and students from the departments of Aerospace, Aeronautical, Mechatronics, ECE, EEE, CSE and IT.

About the Centre

The Centre of excellence in Satellite Technology (CEST) is the advanced research centre created in HITS to nurture and accelerate the growth of Space based technological applications for the benefit of Society and to impart advanced training & research in the field of Satellite Technology and Development.



Salient Features of KCG Verghese SAT

1 U Nano Satellite (1.6 kg)

CubeSat (10*10*10 cm)

Orbiting at 500 km for 2 years

HITS NANO SATELLITE CENTRE



CAREER COMPASS



Satellite Centre

OPEN HOUSE | Event Date: 5th & 6th January 2023

School of Aeronautical Sciences, HITS organised two day "Career Compass" for school students. The event comprised of exhibits from Centre for Autonomous Systems, HITS AERO Club & Nebula Astro club consisting of Rocket Models, Satellite Models, Drones , RC Planes, 3D Printing, Lunar Details, Mars Details, Space & Star Gazing. The event also had student competitions like Space Quiz & Paper glider Competition. A total of 750 school students from Chennai City visited the exhibits and participated in the competitions



Drone Show



SIM Centre



Nebula Astro Club



HITS Aero Club

BEYOND THE DEPARTMENT



NAUTILUS

Team Nautilus achieved Best Innovation Award in Microclass Category in Aero Design Challenge(ADC-2022) conducted by SAEINDIA Southern section ,Chennai and bagged cash prize of Rs 10,000 out of 40 participating teams.

The innovation was a payload release mechanism capable of carrying around 520 grams (around 36% of empty weight of payload and releasing it through servo mechanism from as high as 500 feet . The team was successful in demonstrating it practically during Flying Rounds.

TEAM NAUTILUS BAGS BEST INNOVATION AWARD



TEAM NAUTILUS

STUDENT MEMBERS:

Mr. Akshat Jani - Team Captain

Mr. Rishab - Vice captain

Mr. M. Ashwin - Assembly Team

Mr. Murarisetty Sarath Chandra - Assembly Team

Mr. Ayush Koul - Design Report Team

Mr. Pratik Nandkumar Patil - Design Report Team

Pasupuleti Pavan Kumar - Fabrication Team

Mr. Mufaddal Zulfikar Lokhandwala - Fabrication Team

FACULTY ADVISOR

Mr. G. Dinesh Kumar, Asst. Prof. School of Aeronautical Sciences.

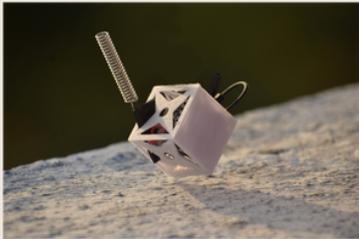
AURA

Team "Aura " from School of Aeronautical Sciences, Hindustan Institute of Technology and Science" participated SAEINDIA AEROTHON 2022 during 19th November 2022 held at SJC college of Engineering, Bengaluru . The team achieved 8th position in phase -I and in finals came 19th position out of 74 participating teams. The team showcased autonomous flying of the drones which was developed inhouse both software and hardware modules with return to home facility.



ACHIEVEMENTS

World's Smallest & Lightest Nano Satellite with Wireless Data Transmission



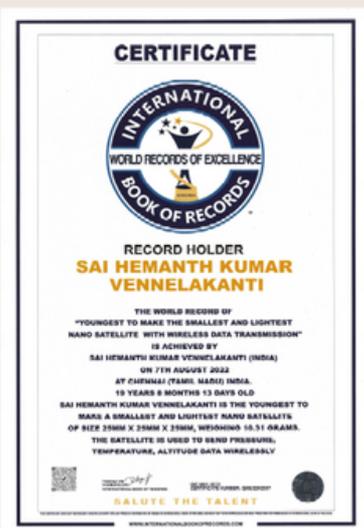
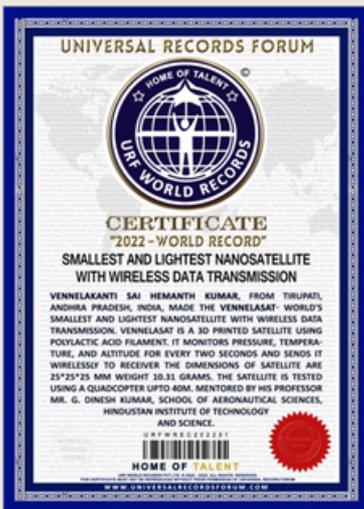
Lightest Nano Satellite

Mr. V Sai Hemanth Kumar (19103008) pursuing final year B.Tech Aerospace Engineering & Mr. G. Dinesh Kumar, Assistant Professor has been awarded by Asia Book of Records, India Book of Records , Universal Records Forum & International Book of Records for inventing world's Smallest & Lightest Nano Satellite with Wireless Data Transmission.

Objectives

The main objective of this satellite is to measure parameters like pressure, temperature, altitude, The data from satellite is sent to telemetry which is received by ground station wirelessly. It weighs only 10.31g & dimensions are 25 x 25 x 25 mm. The experimental satellite is tested up to a height of 40 m.

The satellite is equipped with sensors, microcontroller and wireless data transmission module. The sensors measure the parameters and sent to microcontroller. The microcontroller processes the data and sends it to data transmission module. This data is received by data receiving module wirelessly and recorded for further use.





IET UK, Chennai Local Network (CLN) has organized "Student Achievement Awards 2022". As the part of the ceremony, different award categories were announced one of the award category is the "BEST STARTUP AWARD", the award is to encourage young minds pursuing B.Tech courses towards startups. Final year B.Tech Aero student Mr.N.V.Chidvilas got best start up award for Dream Aerospace pvt Ltd

STAFF ACCOLADES

Congratulations!

Dr. K. Ramajeyathilagam PI	Mrs. T. Sivangai Co.PI
TITLE OF THE PROJECT Experimental and numerical investigations on the failures of metallic and composite structures to hail ice impact	
FUNDED AMOUNT 49.86 Lakhs	
SANCTIONED BY Aeronautics R&D Structures panel, DRDO	

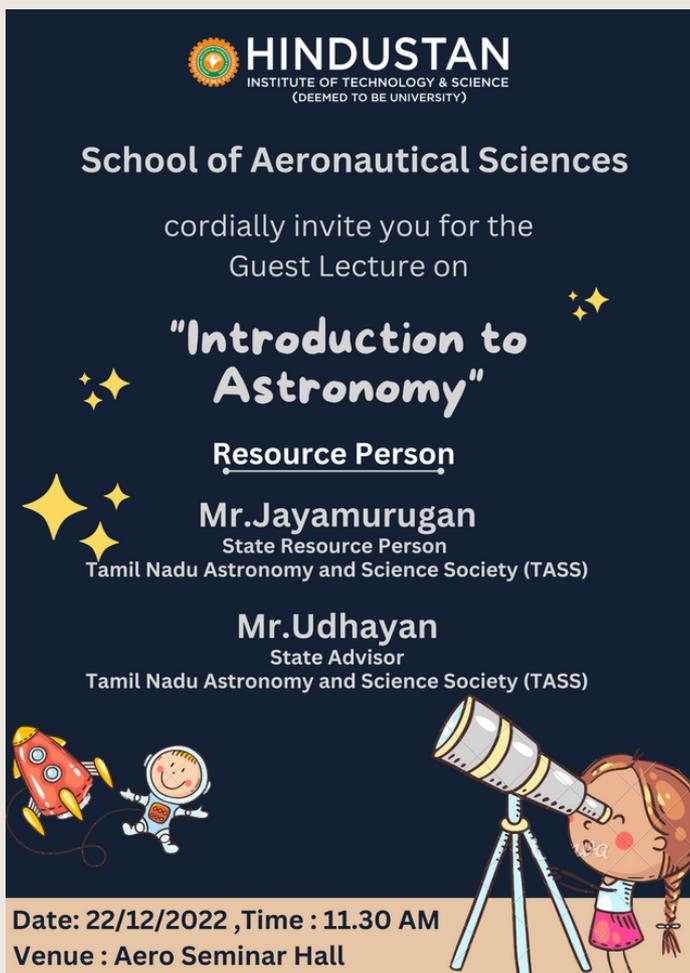
Event Date :

Thursday, 22nd December 2022

Think Creative , Think Big

GUEST LECTURES

Astronomy



HINDUSTAN
INSTITUTE OF TECHNOLOGY & SCIENCE
(DEEMED TO BE UNIVERSITY)

School of Aeronautical Sciences

cordially invite you for the
Guest Lecture on

"Introduction to Astronomy"

Resource Person

Mr. Jayamurugan
State Resource Person
Tamil Nadu Astronomy and Science Society (TASS)

Mr. Udhayan
State Advisor
Tamil Nadu Astronomy and Science Society (TASS)

Date: 22/12/2022 , Time : 11.30 AM
Venue : Aero Seminar Hall

School of Aeronautical Sciences CAS & Nebula Astro Club organised Astronomy guest lecture series where guest Mr. Jayamurugan, State Resource Person, Tamil Nadu Astronomy and Science Society (TASS) & Scientific Officer, Salem Steel Plant Limited (SAIL). gave a talk on "Introduction to Astronomy" and Future Activities of TASS was explained by Mr. Udhayan, State Advisor - TASS & Senior Technical Officer, CSIR, Chennai.



star gazing

Upcoming Events



NEBULA ASTRO CLUB exploring infinity

HINDUSTAN INSTITUTE OF TECHNOLOGY AND SCIENCE & NEBULA ASTRO CLUB PROUDLY PRESENTS

STAR PARTY WITH FUTURE STARS
WITNESS THE GREEN COMET
COMET C/2022 E3

OPEN FOR ALL

DATE : 1 - FEB - 2023
TIME : 6 - 9 PM
VENUE : PG BLOCK, HITS CAMPUS

FOR ANY QUERIES
DHARUVASHISH - +91 82009 15828
STUDENT CO-ORDINATOR NAC
RHYTHM CLIPTA - +91 99148 28042
STUDENT CO-ORDINATOR NAC

SCAN HERE TO REGISTER

EXPLORING INFINITY

*Visiblty subjected to weather conditions

Nebula Astro Club , School of Aeronautical Science organised star gazing for school students using Telescopes

1. Celestron Nexstar 8se
2. GSO 12 inch Dobsonian

The first of its kind public stargazing and comet watching event for the cause of observing the Green Comet C/2022 E3. The club is hosting the show which will witness one of the rare astronomy events that can be witnessed once in 50,000 years on 1st February 2023.



HINDUSTAN INSTITUTE OF TECHNOLOGY & SCIENCE (DEEMED TO BE UNIVERSITY)

NEBULA ASTRO CLUB ORGANIZES ONLINE

COMET QUIZ

OPEN TO ALL

DATES : 26TH JAN TO 31 JAN

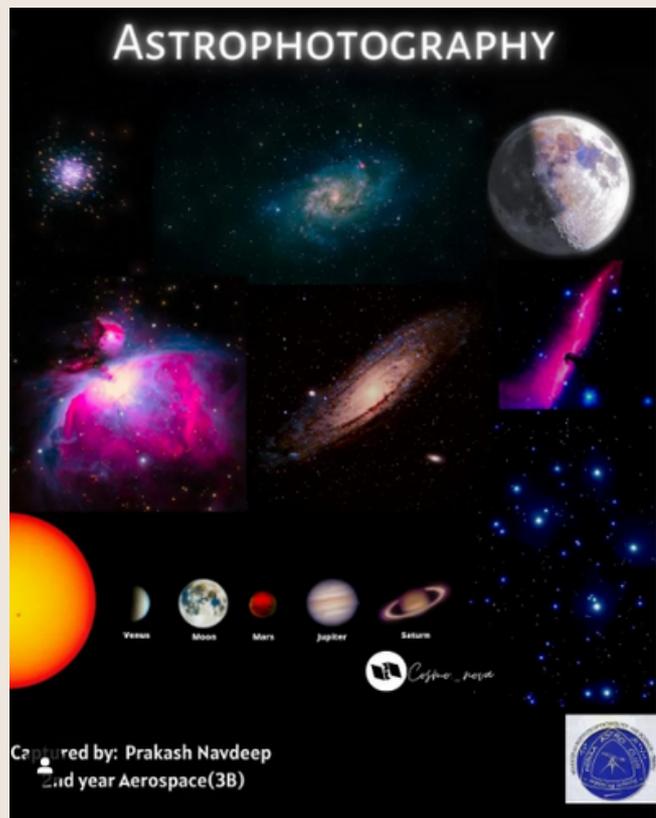
DURATION : 10 MINS
SELF PACED

PARTICIPATE AND GET FREE CERTIFICATE

ALSO JOIN US FOR THE "STAR PARTY" AT HITS CAMPUS ON 01 FEB 2023

Scan QR or Visit www.hindustanuniv.ac.in for quiz link

For More Details Contact:
Mr. Dhruvashish : 8200918828
Mr. Rhythm : 9914828042



ASTROPHOTOGRAPHY

Venus Moon Mars Jupiter Saturn

Captured by: Prakash Navdeep
End year Aerospace(3B)

Monsters of the universe

What is more fascinating than the universe itself? From colorful nebulae to brightest stars the space is full of wonder but the most mysterious and interesting object in space boggling the scientists for centuries is something that is absolutely void of light and any colour. Yes, if you are thinking of the term “Black Holes” that is exactly right. It has got so much attention in the astronomy society for years now still no one fully knows what a black hole is.

If you love the cinemas, you probably would have heard of the movie “Interstellar”, if not you should definitely try watching it. The reason why the movie is pulled in this article out of nowhere, if you are wondering, is because the depiction of the blackhole in the movie is what scientists call close to similar to that of simulations ran with available data.

What makes these objects so amazing? The answer lies in the life cycle of stars. Black Holes are the end stage of a massive star. Like the retirement state of a star that worked for millennia spurting out tons and tons of energy. But unlike a slow paced and relaxed retirement, the star evolves into a bigger monster. A Monster that eats anything that comes up in its way. Be light or mass, it pays no heed but gobble it up for it to be never seen again.

If I were to explain in scientific terms, when a massive star reaches its end stage it collapses under it's own gravity into a very tiny space. All the mass of the star gets concentrated into this small space where the radius of the thus resulting object is much smaller than what the gravitational radius should be. This rips the space-time fabric resulting in the formation of blackholes. The gravitational field in the region is so strong that even light cannot escape. Light either bends around the black hole at the event horizon or falls into the singularity to be never be retrieved again. In our universe, we use light and energy as information storage and data, incase of a black hole, both energy and light cannot be got back from it. There is no way to get back the data that went into a blackhole, it is like the eternal abyss of our universe.

There is another fact that makes these objects interesting, the smallest and the biggest of the blackholes form the driving concepts of the universe. The center of galaxies where young stars are born have a super massive black hole which doubles as a quasar powering the solar nursery of stars. The quantum blackholes also called mini black holes are hypothetical tiny ($<1 M_{\odot}$) black holes, for which quantum mechanical effects play an important role and scientists are trying to engineer one in labs to study in detail about the mechanics of space and time. Monsters of the universe 2 Black Holes have been a object of curiosity for generations gone and about to come, as mysteries lie in places where information is scarce.

Aparajethaa K

B.Tech Aerospace Engineering (3rd year)

17



Photos taken by Dhruvashish Vangala
B.Tech Aeronautical Engg. (3rd Year)



Photo by Aparajethaa K
B.Tech Aerospace Engineering (3rd year)




HINDUSTAN
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 (DEEMED TO BE UNIVERSITY)
 CHENNAI

SCHOOL OF AERONAUTICAL SCIENCES

Congratulations

GATE 2022 All India Rank (AIR) holders

 Aman R AIR 3		 Akilesh G AIR 7			
 Manur Gautam AIR 27	 Bhavani Prasad Mandapati - AIR 38	 Bhavesh Srivastava AIR 59	 Ravi kumar Kolasani AIR 68	 Akshat Hemang Jani AIR 179	 Sai Bhaskara Rama SarmaDurvasula - AIR 235
 Anna Sai Nikhil AIR 321	 Charan Naga Sai Kapa AIR 339	 Janani S AIR 382	 Bala Manikanta Yaswanth Kanagarla - AIR 404	 Anish S AIR 439	 Hari Krishnan K J AIR 486
 NavyaSree K AIR 520	 Yaranagula Krishna Teja AIR 598	 Leelamanideep Pavuluri AIR 626	 Sumanth N AIR 626	 Tharika S AIR 775	 Ajith Gera AIR 1181

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Mr. G. Dinesh Kumar
Assistant Professor (S.G) &
Department Editorial Coordinator
Department of Aeronautical Engineering



Dr. Prem Shankar Pandey
Assistant Professor (S.G) &
Assistant Editor
Department of Languages

Contact us :

Department of Aeronautical Engineering &
Department of Aerospace Engineering,
Hindustan Institute of Technology and Science,
1 , Bay Range Campus , (OMR), Padur,
(Via) Kelambakkam, Chennai - 603103.
Phone: +91-44-2747 4262
Email: info@hindustanuniv.ac.in / aero@hindustanuniv.ac.in

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