VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

VIT STELLAR

PRESENTS

OFFICIAL-NEWSLETTER

ANTARIKSHVANI

EDITION - I

JULY

ABOUT VIT-STELLAR

VIT's Official Astronomy Club It is the destination for all those passionate about space, rockets, and everything beyond Earth. From stargazing nights to hands-on rocketry workshops, we bring the wonders of the universe closer to you through a range of exciting events and interactive experiences. But it's not just about science—it's also about fun and creativity! Whether you're into designing eye-catching posters, writing engaging newsletters, shooting dynamic reels, managing sponsorships, or organizing unforgettable space-themed events, there's always something thrilling to be a part of. Join us as space meets adventure in the most inspiring ways!

FACULTY-COORDINATOR

On behalf of VIT-STELLAR BOARD ‘25, I extend a warm welcome to the readers of our Astronomy Club’s Newsletter, where we embark on a journey through the cosmos, exploring celestial phenomena, unraveling mysteries, and sharing our passion for the stars. Whether you're a seasoned stargazer or just beginning your cosmic voyage, there's something for everyone in these pages. Let’s ignite our curiosity, expand our horizons, journey into the infinite wonders of the cosmos and shine like the stars!

- Dr. Selva Rani B, Faculty Coordinator

EXECUTIVE-BOARD

Subhra Dey (Chairperson):

My journey with VIT Stellar began in 2023 as a Junior Core Member, and since then, it has been a truly beautiful experience. From learning and growing as a Senior Core Member to now taking on the role of Chairperson, every step has shaped me in ways I'll always cherish. This club has always felt like a family. I've shared meaningful bonds with my seniors, worked hand-in-hand with my teammates, and now feel proud to guide and support our juniors. Taking the responsibility from Aniket, our former Chairperson, I feel honoured and will do my best to achieve more for this club during my tenure.

Sarvesh Baskaran (Secretary):

In my experience with VIT Stellar as a Core Committee member for the last 1.5 years, it has been the most exhilarating and exciting time to be a part of a family. I remember the then Executive Board when I joined the Club as a junior, I worked with them for graVITas'23 and then the current Advisory Board, where we made 2024 filled with progress every month. And with the Current Executive Board where Vishwajith, my predecessor, left shoes to fill, I hope to fill that completely and maybe increase the size of that shoe.

Working with the Advisory Board as a Senior Core member was fun and memorable. And with the current set of skillful people whom I call my fellow Board members and work with, we hope to make this year filled with Progress and Innovation for VIT Stellar.

EXECUTIVE-BOARD

Arya Diwakar (Vice Chairperson):

As Spiderman once said, 'With great power comes great power comes great responsibility.' As the Vice-Chairperson of the Astronomy Club of VIT - VIT Stellar, I'm deeply aware of the significance of this role. My journey with VIT Stellar has been short but impactful, and I've had the privilege of being part of numerous events since August. My inspiration for taking on this leadership position was our former Vice-Chairperson, Devangi Arora, who embodied the passion and dedication that I strive to emulate.

As someone who's always been fascinated by the wonders of the universe, I believe that loving astronomy is not just about knowledge, but also about maintaining a sense of curiosity and awe. Together, we hope to continue to push the boundaries of what's possible and make VIT Stellar the best club at VIT. We'll strive to create an inclusive and engaging community that inspires a love of astronomy in all our members. Let's reach for the stars and make this year unforgettable!

Anushka Arora (Co Secretary):

Becoming the Co-Secretary of VIT Stellar has been one of the most exciting milestones in my journey. It all started with the Zero Gravity dance party, an unforgettable event that set the tone for everything ahead. Since then, this club has become more than just a place for astronomy—it's been a space filled with late-night discussions, incredible people, and learning ofcourse.

Being Co-Secretary means mastering the art of looking calm while everything is on fire-, ensuring everything runs smoothly.
Taking on a position once held by Ayush Nagpal is no easy task, but I'm ready to give it my all. I'm grateful for the amazing board members by my side, and together, we're working to make this year one of the best yet for everyone in the club.

EXECUTIVE-BOARD

Abishek Ranganathan (Technical Head):

As someone who loves the cosmos as much as he loves himself, being nominated as the Technical Head of the Astronomy Club of VIT - "Stellar" was a moment that would forever be etched in my heart. I have officially started my journey in the Stellar family during the 2024 Yantra where I gave a talk on the JWST. The yearlong travel until now in Stellar was one fun ride. The nightslips were crazy and memorable. The board I worked with knew their way and I learnt a lot from their way of making Stellar the place where it is now. So, it's my chance to enhance it further. Being the Technical head, I strive to inculcate my knowledge and wisdom on Astronomy through all means possible and take the club to the next stage. It wouldn't be fair if I didn't mention my advisory Technical head Muskaan. She was the person I looked up to and the person whose expectation I want to live up to. I'm also deeply grateful to have a beautiful set of my beloved board members supporting me in every nook and corner. Together, we strive to make this year incredibly fun and fulfilling for all the people who have joined the club and take forward VIT Stellar along with them.

Aaditya Sharma (Events Head):

My journey with VIT Stellar Club has been transformative. Starting in the events domain, I moved from one event to another, learning to manage logistics, coordinate teams, and solve challenges on the spot. Each experience refined my management skills, teaching me adaptability and teamwork. I embraced new skills, applied knowledge from different clubs, and pushed myself beyond my limits. Stellar became my learning ground, shaping me into a better leader and problem-solver. As I continue this journey, I remain committed to growing, innovating, and contributing to Stellar's success, ensuring it reaches even greater heights.

EXECUTIVE-BOARD

Parv Pachouri (Design Head):

The vastness of space has always been a field of deep interest for me. A genuine fascination led me to VIT STELLAR, where, as a fresher, I had the opportunity to truly live out my cosmic dreams by being a part of this incredible club. Now, as I step into the role of Design Head, I am elated by the thought of expressing my love for astronomy through design. As the successor of Supransha Thapa, I am eager to build on her legacy and elevate the design domain of VIT STELLAR to new heights. My journey as a volunteer at Gravitas and my contributions to Celestial Dive 3.0 have further deepened my connection with the astronomy community on campus. Beyond design, I strive to learn something new every day whether it's about technology, space, finance, or daily life and I channel that curiosity into every creative endeavor. As the official Design Head, my goal is to craft visuals that not only reflect the cosmic essence of VIT STELLAR but also ignite the same fascination for space that first brought me here.

Anirudh J (Editorial Head):

The beauty of astronomy lies in its accessibility—just a simple glance upward, and you're immersed in the wonders of the night sky. As the editorial head, I want to inspire people to take that chance, to look up and be awed.

As the old adage goes, "Nothing is stronger than the written word." Yet, we often forget its power. Inspired by our advisory, I want to pass that inspiration forward, creating a space where ideas can flourish without restrictions. Through this, I hope to help others grasp the abstract cosmos and cultivate a deeper appreciation for it.

Looking ahead, I am beyond excited for this tenure and all the opportunities it brings. Let's embark on this journey together —one word, one idea, and one star at a time.

EXECUTIVE-BOARD

Shivankar Sinha (Publicity Head):

Taking on the role of Publicity Head for VIT Stellar is both an honor and a challenge that I am eager to embrace. Since joining the club in 2024, it has been an incredible journey filled with creativity, collaboration, and learning. Publicity is more than just spreading the word it's about creating impact, building engagement, and ensuring that every initiative and event gets the recognition it deserves. With the strong foundation laid by the previous board, my focus is on expanding our reach, bringing in fresh ideas, and enhancing Stellar's presence.I am fortunate to have a dedicated board alongside me, each member bringing their expertise and enthusiasm to take the club to greater heights. Together, we strive to make this year even more exciting, engaging, and memorable for everyone at VIT Stellar.

Rishit Gupta (Finance Head):

Being nominated as the Finance Head of VIT's Astronomy Club, Stellar, was a moment of immense pride—one that will always hold a special place in my heart. My journey with Stellar began during Cosmic Walk 2024. The past year has been an incredible ride, filled with unforgettable nightslips and countless learning experiences. The previous board set a remarkable standard, and working alongside them taught me invaluable lessons about shaping Stellar into what it is today.

Now, it's my turn to build upon that foundation and elevate the club even further. As Finance Head, I will give it my all and make sure there's always ample money in Stellar's account , ensuring Stellar reaches new heights. I cannot go without mentioning my advisory Finance Head, Swayam, whose guidance and expectations continue to inspire me. I am also deeply grateful for my amazing board members, who stand by me every step of the way. Together, we aim to make this year an exciting and enriching experience for everyone in the club, fostering a shared love for astronomy while taking VIT Stellar to new horizons.

ADVISORY-BOARD

Aniket Rai (Ex Chairperson):

What a journey it's been! Leading VIT-Stellar has truly been one of the highlights of my college life. From organizing 40+ events to growing with an amazing team, every step was packed with learning, laughs, and memories I'll always hold close.

Now, as I move into the Advisory Board, I'm genuinely excited to watch the next team take charge. Led by Subhra, and joined by Arya, Sarvesh, Anushka, Aaditya, Abishek, Rishit, Parv, Shivankar, and Anirudh — this new board is full of energy, ideas, and drive. I have no doubt they'll take Stellar even further.

Wishing them all the best as they carry the torch forward. The legacy continues — and I'm excited to cheer them on from the sidelines!
With lots of love (and fewer meetings now),
Aniket — your friendly neighborhood ex-Chair

Vishwajith Prabhakar (Ex Secretary):

I feel so happy that I got to spend 3 years of my college life in VIT STELLAR. These 3 years have been the best and most transformative years for me. I learned and grew up as a new person because of STELLAR. I'm very excited to see what's in store for STELLAR in the future, as I'm handing over the board to the new creative minds of STELLAR. I wish all the best for everyone who will be working to take STELLAR forward to its greater destination.

ADVISORY-BOARD

Devangi Arora (Ex Vice Chairperson):

As I write this, my heart feels heavier than I ever imagined. How do you say goodbye to something that has become a part of you? VIT Stellar wasn't just a club for me, it was my home away from home.

Being Vice Chairperson was never just a title, it was a journey of responsibility, privilege and something I poured my heart and soul into.
42 events, countless memories, unbreakable bonds—this journey shaped me in ways I never imagined. To my board members, Selva ma'am, and my Stellar family, you were my safe space,my greatest strength and my closest friends.
This journey was about the people who made it all worth it, the ones who stood beside me through it all, who made even the hardest days feel lighter by just being there.

As I pass the baton on to Arya Diwakar, I do so with a heart full of love. Arya, I have seen your dedication and your ability to lead with both strength and kindness. I know that under your leadership, Stellar will reach greater heights.
Though my tenure ends, Stellar will always be home. This isn't a goodbye, it's a forever kind of love!

Aayush Nagpal (Ex Co Secretary):

My Journey as the Co Secretary of VIT STELLAR was absolutely amazing. From planning to actually conducting so many successful events, I had the time of my life. Working with all domains, interacting with so many new people and learning so many new skills. I'm grateful that I had such a wonderful team of people who became family by the end of our tenure. Now, as a member of Advisory Board I'd love to help the club and juniors in whatever way I can. Passing on the baton to Anushka, I have no doubts that she is going to do a wonderful job. She has the ability to stay calm in all situations and handle whatever life throws at her with a smile. I'm sure the new Board will take the club to new heights and I can't wait to see it!!

ADVISORY-BOARD

Muskaan Patni (Ex Technical Head):

Becoming a part of VIT-Stellar has been one of the major turning points in my life. Starting with the club in 2023, this club helped me set my goals and guided me to achieve them, so much so that I was eventually able to serve the stellar family as the Technical head. Running a club is never easy, it has its own highs and lows but it all become somehow manageable when you have good people around to support you throughout. My journey too was similar and I had the best team of people that I could have ever asked for. They eventually turned out to be the ones who stuck around. From handling small workshops to organizing events on a large scale, I have learnt leadership skills, persistence, and patience. It was only through this club, that I could do the things that I never thought were possible for me. Now, as I step into the Advisory Board, my role shifts from leading the charge to supporting and guiding the next generation as they take Stellar to new heights. It's a bittersweet feeling to pass on this role, but I couldn't have asked for a better person than Abishek to take over as the next Technical Head. To the future board, I hope you continue to dream big and push the boundaries of what this club can achieve and always remember "As long as you have a vision, and the willingness to pursue it, nothing can limit you."

Avanish Gharat (Ex Editorial Head):

Stellar, a club which I had joined in my first year because a friend told me it would be fun. Never had I thought that I would play such a role in shaping its future. My tenure in Stellar was an eventful one to say the least, thanks in no small part to my other board members and our lovely junior core. We achieved most of what we set out to do in a year, except two things. Both of which I hope this year's tenure not just completes but aces.
Signing off, Avanish Gharat

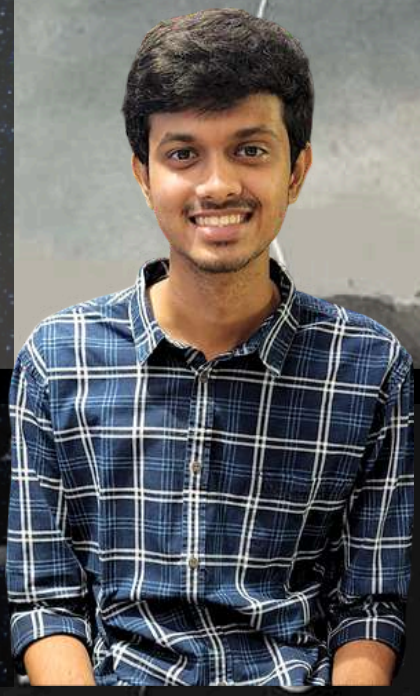
ADVISORY-BOARD

Sanchita Jindal (Ex Management Head):

Stepping into the role of Events and Management Head at VIT Stellar has been an incredibly fulfilling journey. Over the past year, I've had the privilege of planning and executing diverse events that sparked curiosity, fostered learning, and brought our community of astronomy enthusiasts closer together. From star-gazing nights to expert talks, each event was a step toward making space science more accessible and exciting for all. As I now join the Advisory Board, I'm thrilled to continue supporting the club from a new perspective. What excites me most is seeing fresh ideas and energy from my successor, who I'm confident will take VIT Stellar to even greater heights. The baton is in great hands, and the future of our club shines brighter than ever.

Swayam Galgalikar (Ex Finance Head):

Being the Finance Head of VIT Stellar has been an amazing journey—full of learning, challenges, and rewarding moments. From budgeting for events to ensuring every workshop had the resources it needed, I got to see firsthand how smart financial planning can bring stellar ideas to life. Now, as I move into the Advisory Board, I'm excited to support the club in a new way while watching the next Finance Head take things even further. I have no doubt they'll bring fresh energy and innovative ideas to keep VIT Stellar financially strong and ready for new adventures. The club's future is bright, and I can't wait to see where it goes next!



ADVISORY-BOARD

Shreejata Gupta (Ex Events Head):

As a newcomer to the Advisory Board, first of all wonderful experience to be back into action of words again. Had a blast working for our cool club VIT Stellar in the whole past year, kinda missing my role to work for it now, like planning events, discussing with others, making eventflow, going through all the SW protocols, keeping timeframe for that and overall thinking of a way to make each one of those memorable enough, also had been EVENT POC and event coordinator for Yantra and Gravitas in the past year, had a blast of fun and management experience as a whole. Passing on my role to Aaditya Sharma, goodluck to him, and poggers to the whole club, I know you guys can keep shining our name to the sky and beyond.

Supransha Thapa (Ex Design Head):

It fills me with bittersweet emotions to write this. After putting my heart and soul into this tenure, it feels strange to be seen as an 'advisory' figure now. There's a deep sadness in knowing my time has come to an end, but also immense joy in seeing my juniors carry forward this legacy into a bright future. The design domain has always been both stressful and incredibly fun. The collective efforts of everyone shine through in offline events, where we are all bound by the same responsibility. My tenure as Design Domain Head was eventful and fulfilling, and I hope my successors experience the same joy. Wishing you all the best—have a blast!


PAST EVENTS

SPINFINITY

Our much-anticipated event, Spinfinity, lit up Yantra week as we celebrated the wonders of pulsars. It was a joy to see fellow enthusiasts revel in these rapidly spinning neutron stars—nature's precision timekeepers and powerhouses.

The presentations unravelled the mysteries of pulsars, from their role as cosmic lighthouses guiding us through the universe to their contributions in extreme physics.

To top it off, we hosted a hands-on session where participants became data detectives, organizing software code to decode pulsar data. Transforming cosmic chaos into meaningful insights wasn't just fun—it was a leap forward for astronomical research. Who knew science could be this stellar?

CELESTIAL COMBAT

Imagine stepping into a galaxy where virtual wars turn real, and every participant becomes a cosmic warrior. Celestial Combat, the crown jewel of VIT Stellar's Riveria 2025, wasn't just an event, it was an interstellar adventure that transported us from reality to a cosmic battlefield.

Armed with gel blaster guns loaded with vibrant, dye-filled capsules like comets streaking across the sky we engaged in an exhilarating mission. Teams soared through the battlefield, dodging shots like meteors while chasing victory by capturing the prized flags.

The energy was astronomical! Participants were left flabbergasted, their excitement echoing like supernova bursts. For many, it wasn't just a competition, it was a memory etched in the stars, a moment they were proud to be part of.

In the end, Celestial Combat felt like channelling the spirit of a young astronaut bold, fearless, and ready to conquer the cosmic battlefield.

ASTROGENESIS

Astrogenesis, our cosmic speaker event, was an unforgettable journey into the transformative role of robotics in spacecraft. We were thrilled to host experts from the club who shared captivating insights into how advanced robotics is revolutionizing space exploration—from enhancing precision in spacecraft operations to enabling groundbreaking missions in the cosmos.

Our speakers enthralled the audience with stories of robotic innovations, highlighting their critical role in pushing the boundaries of interstellar exploration. From tackling the harshest cosmic environments to performing intricate tasks with unmatched accuracy, robotics emerged as one of the unsung heroes of space technology. Astrogenesis truly celebrated the synergy between robotics and space, leaving us inspired to reach for the stars together!

Cosmic Walk 3.0:

Cosmic Walk 3.0 was more than just an astronomy event. It was an event where curiosity took the spotlight.

With a quick astrophotography session by experts from our club, participants embarked on a celestial journey. We went around our very own campus, basking the glory of the magnificent night sky. At various checkpoints throughout the walk, constellation like Leo, Gemini, Virgo and Ursa Major came to life along with interesting facts and myths behind the stars. With the simple astrophotography techniques learnt, participants got to capture the night sky with just their smartphones and nothing more. Towards the end we opened up for discussion to reflect on our thoughts, as astronomy isn't just about looking up but thinking deeper too.

With a memory of an unforgettable experience, we closed for the night with a profound appreciation for the simple yet elegant night sky.

Astropixel 2.0

After the incredible experience of capturing the during Cosmic Walk 3.0, VIT-STELLAR conducted the second edition of the astrophotography contest, Astropixel 2.0. Members of the club got to submit they're astrophotography. From a plethora of beautiful pictures celebrating the night sky, we found our winner. This was the very talented Sarvansh Mishra who submitted the following photograph:

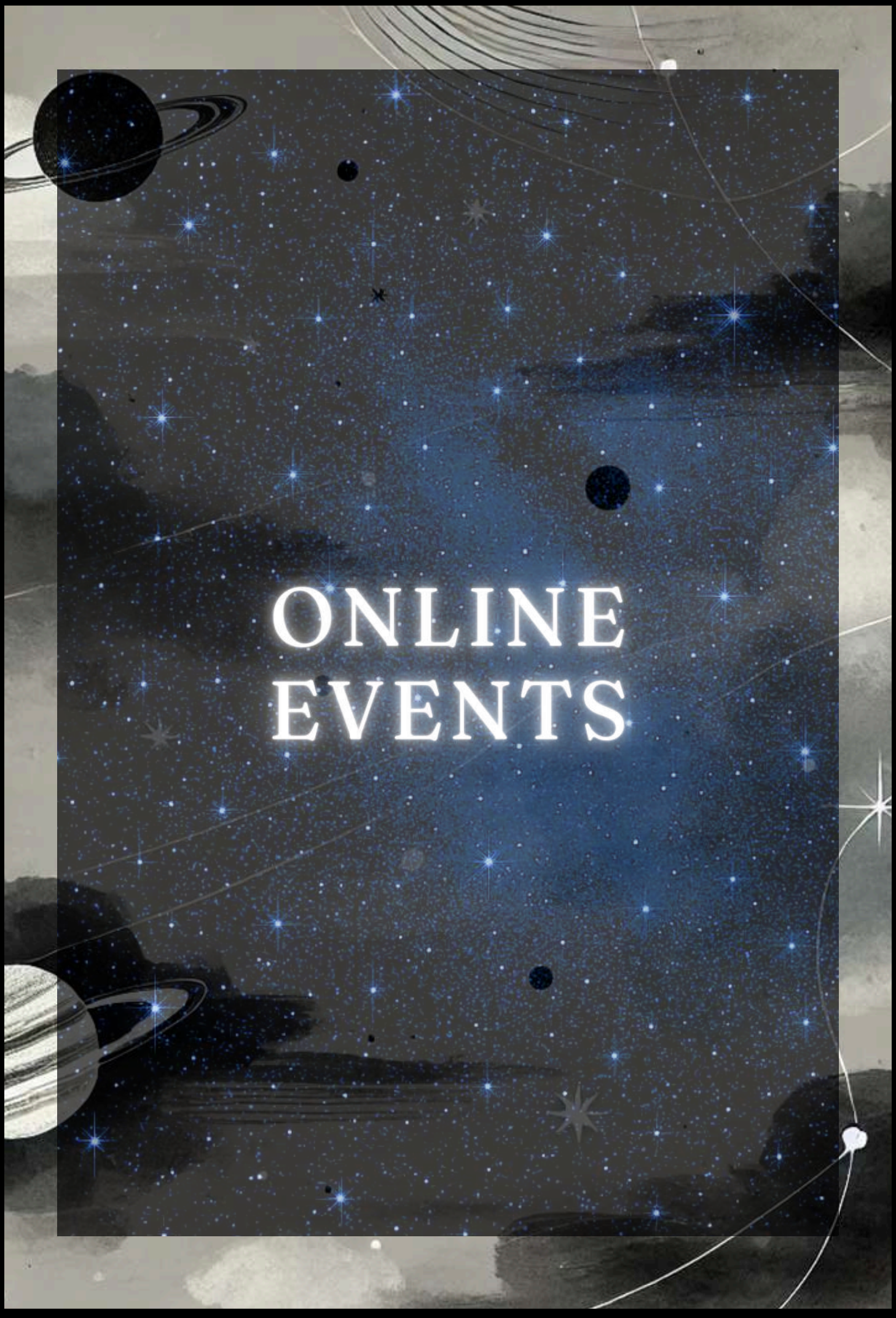
SARVANSH MISHRA
(24BCE0995)

ASTRO PHOTOGRAPHY

SARVANSH MISHRA
(24BCE0995)

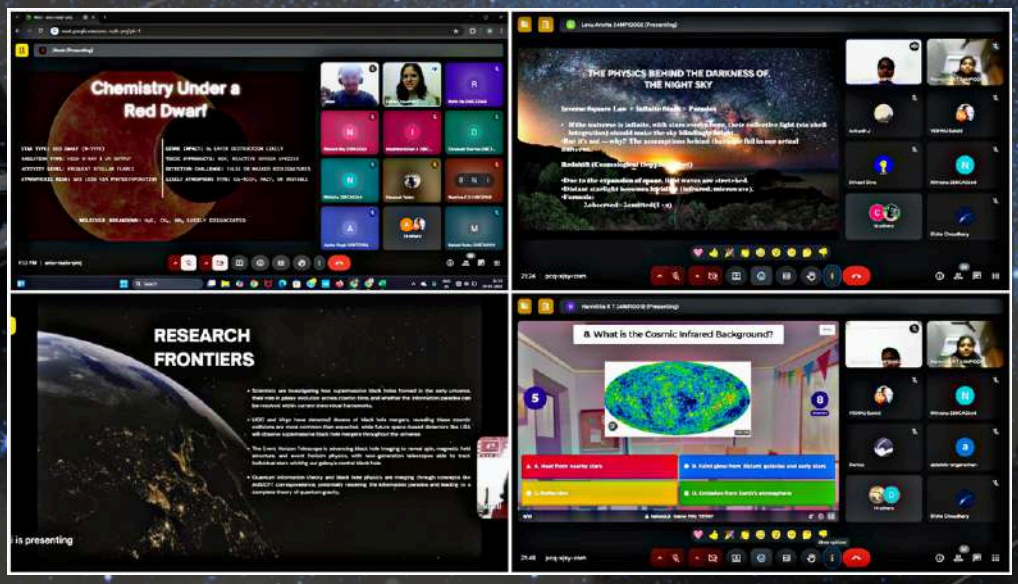
ASTRO PHOTOGRAPHY

SHREYAN BOSE
(23BME0225)


ONLINE
EVENTS

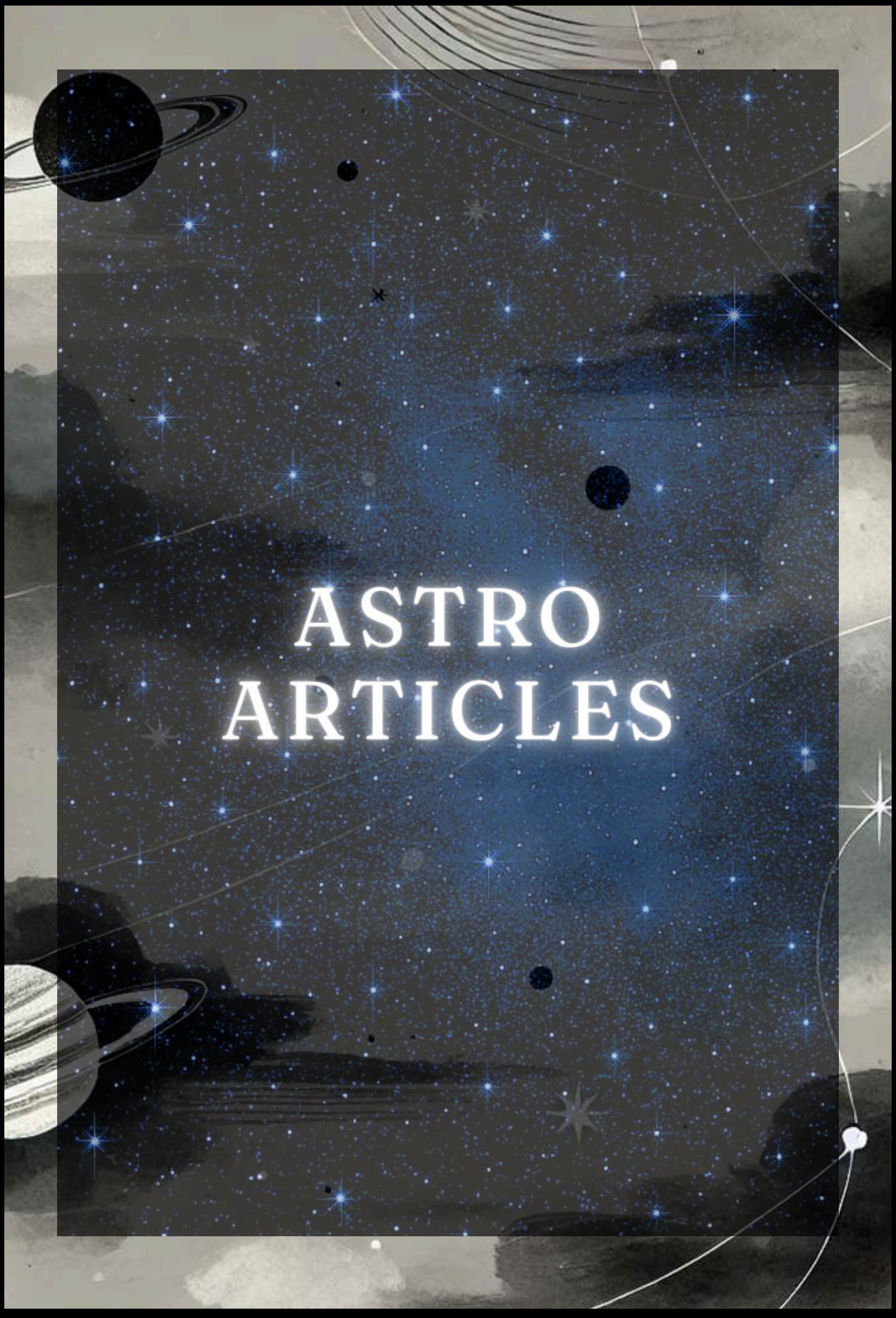
SPEAKER SESSION

This summer, Astronomy Club - VIT Stellar brought its space enthusiasts numerous online sessions, engaging them through their screens, bringing creativity and connection right at home, making the boring holidays more fun and enlightening. The participants of these sessions, had the opportunity to explore various aspects and corners of space, learning the true theories behind various mysteries of the universe. The audience also had the opportunity to engage in quizzes and interactive sessions to gain deeper insights on all that they discovered. From wormholes and space travelling to exoplanets and blackholes, there wasn't a single aspect of cosmic exploration left untouched, offering the audience well rounded journey through the universe.



NON-SPEAKER SESSION

As the summer vacations started, the Stellar club prepared themselves to dive deeper into space exploration, bringing all enthusiasts together through Instagram lives and quizzes through platforms like Google forms, on various dimensions of the universe. They also conducted engaging events like CosmoPuzzle and Skyscan, giving the participants a hands-on experience to look up at the sky and identify constellations and various celestial objects. Along with space exploration, Stellar club stood as an inspiration to all, by raising awareness about drug abuse through online poster making contests, which also allowed the participants to demonstrate their artistic skills. Overall, these events, a cosmic blend of fun and facts, managed to make the summer vacations anything but ordinary.

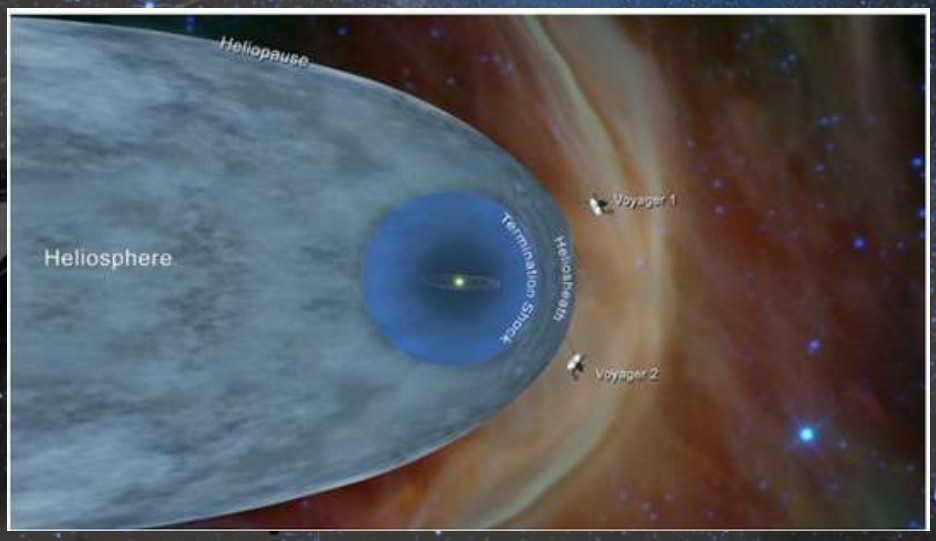

ASTRO
ARTICLES

Voyager: Sailing the Cosmic Seas

Bon Voyage: A Journey Beyond The Horizons

Nearly half a century ago, humanity launched two of its most ambitious spacecraft into the great unknown—beyond the stars visible to the naked eye. It was neither a battle for power nor a race to conquer but an act of pure curiosity, giving birth to the Voyager Missions.

In the summer of 1977, Voyager 1 and Voyager 2 were launched within two months of each other, tasked with unveiling the mysteries of our solar system's outermost planets—Jupiter, Saturn, Uranus, and Neptune—along with their moons, rings, and magnetic fields.



A Celestial Pathway

A rare planetary alignment, occurring once every 176 years, allowed the Voyagers to use Jupiter's gravity as a slingshot, propelling them toward their destinations while conserving time and fuel.

Voyager 2 launched first on August 20, 1977, with Voyager 1 following on September 5. Though launched later, Voyager 1 took a faster route, reaching Jupiter and Saturn ahead of its twin. Both carried cameras, spectrometers, and other instruments to study these distant worlds up close for the first tim

The Outer Planet Odyssey

Jupiter: A World of Storms and Fire
When the Voyagers reached Jupiter in 1979, they uncovered a world of turbulence. The Great Red Spot was a swirling storm larger than Earth, and Io's volcanic eruptions—never before seen beyond our planet—shocked scientists. Europa's icy shell hinted at a hidden ocean, raising the possibility of extraterrestrial life.

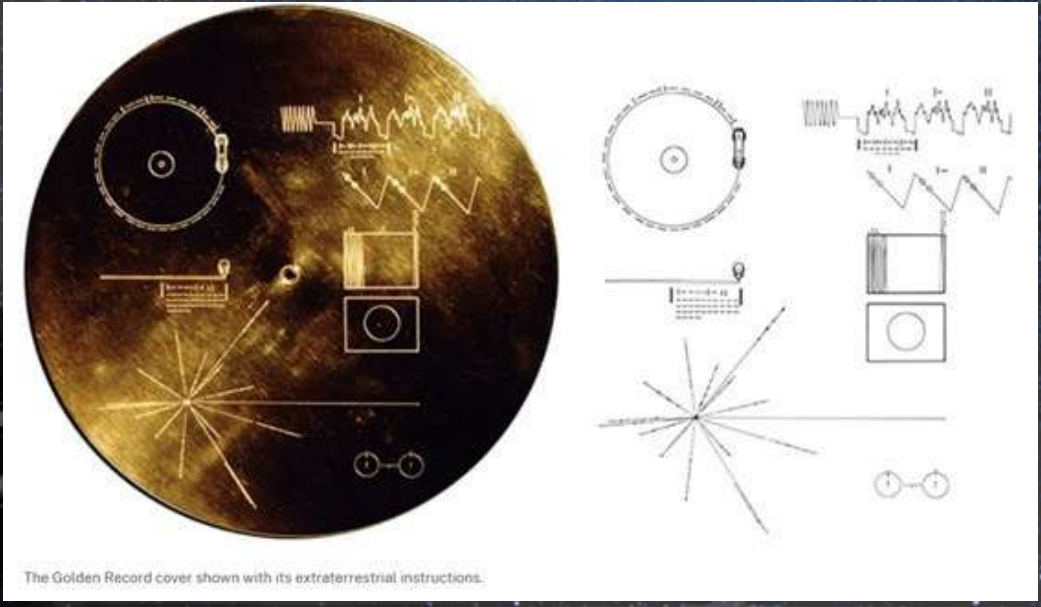
Saturn: The Lord of the Rings
Saturn, visited between 1980 and 1981, revealed rings of dazzling complexity, shaped by tiny moons weaving through ice and dust. Titan, Saturn's largest moon, was shrouded in an orange haze, its atmosphere rich with organic molecules—potential building blocks of life.

Uranus and Neptune: The Ice Giants
In 1986, Voyager 2 became the first and only probe to visit Uranus, discovering a tilted magnetic field and supersonic winds. Three years later, Neptune greeted Voyager 2 with violent storms, including the Earth-sized Great Dark Spot. Triton, Neptune's moon, erupted geysers of liquid nitrogen, making it one of the most mysterious objects in the solar system.

Voyaging into Infinity
The planetary tour ended, but the Voyagers continued. Voyager 1 entered interstellar space in 2012, followed by Voyager 2 in 2018. They now send back whispers from beyond the Sun's influence, providing rare data on cosmic radiation and the space between the stars.

The Golden Record: A Message to the Cosmos

Each Voyager carries a Golden Record—a time capsule of Earth, curated by Carl Sagan's team. This gold-plated copper disk contains greetings in 55 languages, nature's sounds, and music spanning cultures and eras. Should intelligent beings discover these wandering messengers, they will hear the echoes of our world—our voices, our music, our story.



The Golden Record cover shown with its extraterrestrial instructions.

A Legacy That Lives On

Though their power fades, the Voyagers still speak to us, their signals growing fainter as they drift farther into the unknown. Their journey inspires new missions, like the James Webb Space Telescope peering into the cosmos, the Perseverance rover searching for life on Mars, and the upcoming Europa Clipper and Dragonfly, which will explore ocean worlds beyond Earth. The Voyagers remind us that exploration is endless. As long as we look to the stars, we continue the journey they began—a journey of discovery, wonder, and reaching for the infinite.

~ Rashi Jha
(24BVD0196)

Interpreting Interstellar

Fact vs. Fiction in Space Science

Have you ever thought of reaching Mars in 7 seconds, or experiencing strong winds on Jupiter? With Wormholes, you can. It's not the typical worms you see in your households, but the structure is somewhat similar.

So what is this Wormhole? It's a bridge that carries data from one point to another in the shortest way possible — just like the message you send from one device to another, unlike traditional mailing.

Wormholes, also known as Einstein-Rosen bridges, were theorized by the founding fathers Einstein and Rosen. Let’s explore how Interstellar approached the concept of Wormholes.

Before we analyse it, we must appreciate the fact that scientist Kip Thorne beautifully visualized how a Wormhole might look.

The film did a remarkable job presenting the concept, but there are some key scientific aspects to consider.

The first challenge is the unstable nature of Wormholes. Inside black holes, once you enter the event horizon, the gravitational field is so powerful that you would experience spaghettification (stretching of an object into a long, thin shape by extreme gravitational forces).

According to Einstein's equations, Wormholes naturally try to collapse, just like how you instinctively close your leftover food box after smelling it a couple of days later.

To keep a Wormhole open, you need an exotic matter — a substance with negative mass that would repel objects like a space rebel. By placing this exotic matter within the Wormhole, you prevent it from closing.

While Interstellar creatively visualized the Wormhole, this key factor of exotic matter wasn’t explored in detail.

Additionally, a real Wormhole would likely distort light in complex ways due to extreme gravitational lensing, making it resemble a warped tunnel rather than a perfect sphere. Does this mean the chances of getting to Mars via a Wormhole are slim? You're right — but don't lose hope.

In 2022, using Google's supercomputer Sycamore, scientists created a holographic Wormhole resembling its mathematical properties using qubits (quantum bits). Quantum entanglement was observed, supporting the Einstein-Rosen bridge theory, where information is traversed across the Wormhole.

~ Mohammed Faheem
(24MID0158)

Mystery Of Fast Radio Bursts

You are alone on a quiet night when suddenly a thunderous knock disturbs the silence. You slowly open the door with your heart pounding.. but there's no one there. No signs of life. Just an unsettling silence.

This is the same mystery of Fast Radio Bursts (FRBs). They are transient radio waves originating from the depths of space lasting for only a few milliseconds.They emit an enormous amount of energy equivalent to what the Sun emits over several days or even years.

This makes them some of the most energetic signals ever detected from deep space adding to the mystery of their origins.

Duncan Lorimer and his student David Narkevic discovered the first FRB in 2007 while analyzing pulsar data from the Parkes Radio Telescope in Australia.

This 5-millisecond burst,later named the Lorimer Burst, appeared to have traveled billions of light-years. Initially suspected to be a data glitch but further analysis confirmed its deep-space origin. The discovery left scientists puzzled, fueling endless speculation about what could have caused it.

One widely accepted explanation is that they are caused by the collision of two magnetars as they possess a magnetic field over a thousand times stronger than that of other neutron stars.

This collision generally can lead to the production of two waves- gravitational waves that can distort space and time and the other FRBs.

Scientists have also made the discovery on how gravitational waves are formed when two heavy objects collide like two merging black holes.This discovery strengthens the growing evidence that violent cosmic events could be linked to FRBs.

It has also been suggested that if they originate from black hole explosions, they could provide the first direct evidence of quantum gravity effects.

One of the wildest theories can be the sign of extraterrestrial intelligence which we usually refer to as aliens possibly demonstrating advanced technological signals, or technosignatures.

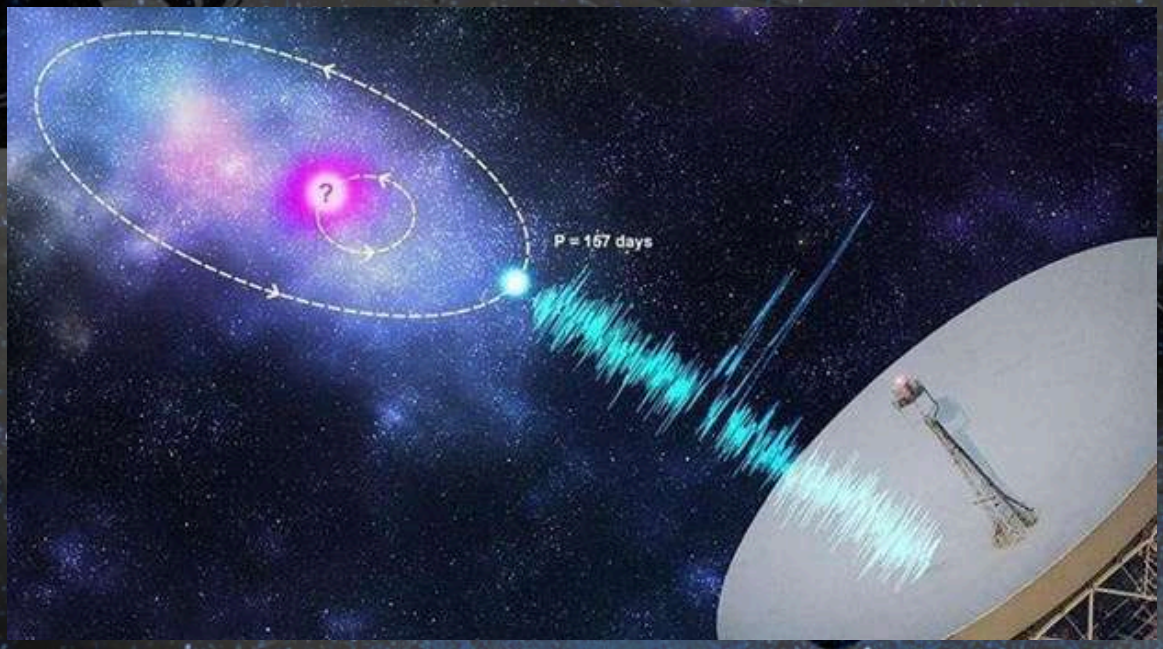
When the first repeating radio signal was detected, some scientists initially considered the possibility that it originated from a distant civilization.

The mysterious source was even nicknamed "LGM-1" (Little Green Men-1), reflecting the possibility that we might not be alone.

Another exotic potential source is cosmic strings which are hypothetical relics from the birth of the universe. These dense filaments of energy are thought to thread space and time after interacting with hot plasma of the early universe which resulted in powerful radio bursts.

If true, FRBs wouldn’t be mere flashes of radio waves,they could be remnants of the early universe, providing valuable insights into physics that we have yet to fully understand.

In recent research,astronomers discovered radio waves from a galaxy that is about 2-billion light years away from earth and is believed to be more than 11 billion years old. FRBs are associated with this galaxy that was believed to be dead.



Yet, despite all these theories, the true origins of FRBs still remains a mystery.And here's the real question, what if these signals aren't just random bursts of energy but a pattern, a message, maybe even a warning?The universe is sending a message but are we really paying attention?

~ Jiya Jaiswal
(24BCM0096)

The Dawn of Space Exploration

Hi, dreamers and star-gazers! Do you ever gaze up at the night sky and feel that unmistakable what if? You're not alone! We've gazed up at the stars for centuries, spun tales of the universe, and imagined reaching farther. But gazing wasn't sufficient—no sir! We had to leap in, pursue the uncatchable, and dance with the far-off stars.

It's a tale of courage, ingenuity, and our timeless need to explore the ultimate playground: space—where curiosity is endless, and the final frontier just hangs there waiting for us to go take a look!

The Space Race (1957–1975)
For as long as humans have looked up at the night sky, we've dreamed of exploring the great beyond. But everything changed in 1957 when the Soviet Union launched Sputnik 1, the world's first artificial satellite. Just a month later, Sputnik 2 carried Laika, the first living creature to orbit Earth. The Space Race had officially begun.

Not wanting to be left behind, the United States answered in 1958 with Explorer 1, its first satellite. This mission wasn't just about catching up—it led to the discovery of the Van Allen radiation belts, a major breakthrough in space science.

Then came 1961, and history was made again. The Vostok Missions sent Yuri Gagarin into space, making him the first human to orbit Earth. The world was in awe. But the real showstopper? 1969. Apollo 11 landed humans on the Moon for the first time, with Neil Armstrong and Buzz Aldrin stepping onto the lunar surface. "That's one small step for man, one giant leap for mankind" Armstrong declared, and space exploration was never the same again.

By 1971, the Soviet Union took the next big step, launching Salyut 1 , the first space station, paving the way for long-term human presence in space.

The Modern Space Age (Post-1975 – Present)

✯ Planetary Exploration Missions ✯

The Voyager Program (1977) which launched Twin probes Voyager 1 & 2 that explored Jupiter, Uranus, and Neptune. Voyager 1 entered interstellar space in 2012, followed by Voyager 2 in 2018.

At this point, we got bored of our own moon so we sent the Cassini-Huygens Mission (1997) A collab between NASA & ESA to study Saturn and its moons.

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Now, our curious mind boggled whether we can live somewhere other than our beloved Earth.

The Mars Pathfinder (1996) Mission Delivered Sojourner, the first rover on Mars, which analysed the Martian soil and atmosphere then after a while Mars Exploration Rovers (2003) Spirit and Opportunity found evidence of past water activity then comes the Mars Orbiter Mission (Mangalyaan) (2013) which was India's first interplanetary mission it reached Mars orbit in 2014 whereas the Tianwen-1 (2020): CNSA's second Mars mission, carrying 14 scientific instruments.

✯ Lunar Missions ✯

The Chandrayaan Missions (2008 – Present), Chandrayaan-1 confirmed water on the Moon whereas Chandrayaan-2 studied the lunar surface and then Chandrayaan-3 (2023) made it into global headlines as it landed near the south pole of moon making India the first country to achieve this.

Chang'e Missions (2007-Present) ,Chang'e-1 mapped the Moon while Chang'e-2 provided high-resolution images then they launched Chang'e-4 and it landed on the far side and then Chang'e-5 which returned lunar samples.

Artemis Program (2022-Present) A NASA's initiative to return humans to the Moon and establish a long-term presence.

✯ Space Telescopes and Observatories ✯

Space telescopes and observatories are our cosmic eyes, peering deep into the universe beyond Earth's atmosphere. Unlike ground-based telescopes, these spaceborne instruments bypass atmospheric distortions, capturing clearer and more detailed images of distant galaxies, nebulae, and exoplanets.

From the legendary Hubble Space Telescope (1990) that Provided high-resolution images, revealing ancient galaxies, dark energy, and exoplanet atmospheres.

Kepler (2009), which revolutionized our understanding of exoplanets, these observatories have expanded our knowledge in ways once thought impossible. Now, The James Webb Space Telescope (2021) is taking things even further, using infrared vision to study the earliest galaxies and distant worlds in stunning detail.

✯ Honorable Mentions ✯

NASA’s Parker Solar Probe (2018) and India’s Aditya-L1 (2023) are pioneering solar missions, studying the Sun’s corona, solar wind, and magnetic fields to unlock its mysteries and impact on space weather.

SpaceX has revolutionized space travel through landmark missions including the reusable landings of the Falcon 9 rocket, the first-ever Crew Dragon commercial astronaut flight (2020), and the test flight of the high-performance Starship for deep space missions. Inspiration4 mission in 2021 was the historic all-civilian spaceflight, and Starlink is building a worldwide satellite internet constellations network.

~ *Rudranshu Mishra*
(24BEC0255)

The Universe Redefined

Most of us have assumed the universe to be confined to only what our eyes can see and interpret, and yet it seems limitlessly vast and mysterious. But this misconception is false that the universe is what our eyes can grasp; it is not limited to the stars, galaxies, planets, black holes, etc. It is so much more than that.

Our observable universe is called Baryonic Matter (Protons and neutrons are forms of baryons), which constitutes only 5% of the entire composition. The rest comprises Dark Matter (27%) and Dark Energy (68%). The adjective "dark" itself explains the mysterious nature of these and that the knowledge of humans is very limited in these departments. Yet how do we know they exist? Well, that is because some of the calculations made about the dynamics of large galaxies didn't match the predictions, it was vague.

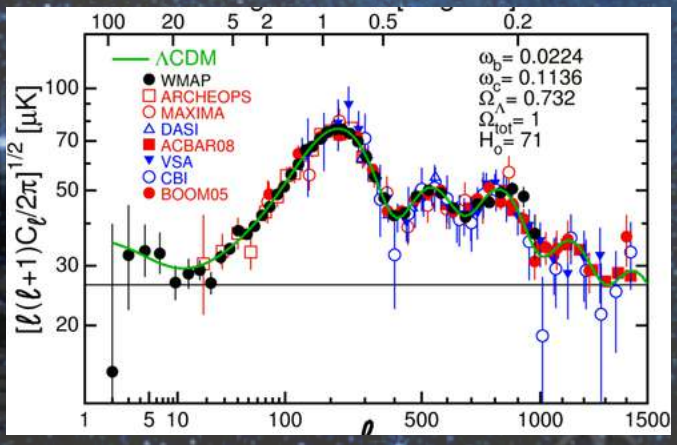
The first instance was reported by Fritz Zwicky in 1933 when he was studying the Coma Cluster and he noticed that the expected velocities of the particles were much higher than what he had calculated.

He concluded that the universe constituted mysterious particles or Dunkle Materie (Dark Matter). Even though this idea was turned down as 'foolish' by pundits, it repeatedly occurred in other observations as well, hence confirming the idea.

The evidence of dark matter was speculated because of a few anomalies experienced during the study of various mechanics of space-time.

One of them as as follows -

COSMIC MICROWAVE BACKGROUND (CMB) ANISOTROPY



The green line on the graph represents the theoretical prediction from the Lambda Cold Dark Matter (ΛCDM) model. This model assumes that the universe is composed of ordinary matter, dark matter, and dark energy.

The peaks and troughs in the graph correspond to acoustic oscillations in the early universe. These oscillations are the result of pressure waves traveling through the hot plasma of the early universe, driven by the interplay between gravity and radiation pressure.

- The first peak corresponds to the largest scale sound waves that have had enough time to compress and rarefy once.
- The second and subsequent peaks correspond to smaller scales and represent higher harmonics of the sound waves.

The peaks in the CMB power spectrum reflect sound waves in the early universe's plasma. Formed by the tug-of-war between gravity and radiation, these waves left imprints when photons decoupled. Their patterns reveal the universe's density, composition, and geometry. Here's a breakdown of their significance:

1. **First Peak**

- **Location:** At $\ell \approx 220$
- **Significance:** Represents the largest-scale sound waves that had time to compress once before the universe became transparent (recombination). This peak reflects the overall geometry of the universe.
- **Implication:** The height and position of the first peak indicate that the universe is spatially flat, meaning that the total density of the universe is close to the critical density. This includes contributions from ordinary matter, dark matter, and dark energy.

2. **Second Peak**

- **Location:** At $\ell \approx 540$
- **Significance:** Represents sound waves that had time to compress and rarefy once. The height of this peak provides information about the density of baryonic matter (ordinary matter).
- **Implication:** A higher second peak suggests a higher density of baryonic matter. The observed ratio of the first and second peaks' heights helps constrain the amount of ordinary matter in the universe.

3. Third Peak

- **Location:** At $\ell \approx 800$
- **Significance:** Represents sound waves that had time to compress twice before recombination. The height of this peak provides information about the density of dark matter.
- **Implication:** The ratio of the heights of the third peak to the first and second peaks helps determine the density of dark matter. A higher third peak indicates a significant amount of dark matter.

4. Higher Peaks and Damping Tail

- **Location:** Higher ℓ values beyond the third peak.
- **Significance:** Represent smaller-scale oscillations and the effects of photon diffusion (Silk damping). These peaks and the damping tail provide additional details about the early universe's conditions, such as the viscosity of the photon-baryon fluid and the thickness of the last scattering surface.
- **Implication:** The detailed shape and decline of the power spectrum at high ℓ \ell values help refine models of the universe's composition and the processes occurring during recombination.

The peaks and their relative heights in the CMB power spectrum are crucial for determining the universe's composition and geometry. By analyzing these peaks, scientists can infer the amounts of dark matter, ordinary matter, and dark energy, as well as the overall shape and evolution of the universe.

~ Prateek Srinath
(24BDE0081)

Solar Remix: A New Arrangement of Worlds

A Universe of Stability—Or Is It?

Life thrives on order. From the rhythm of our daily lives to the precise orbits of planets around the Sun, stability shapes our existence. But what if that stability unravelled? What if the solar system—a masterpiece sculpted over billions of years—were scrambled? Would the cosmos adjust, or would chaos reign supreme?

The planets aren't randomly placed. Rocky worlds like Earth, Venus, and Mars cluster near the Sun, while gas giants drift farther out. This structure isn't coincidence— it results from the Sun's gravitational influence and the process of planetary formation, the cosmic engineering at its finest. But if we swapped them, could Earth survive?

"When you look at the stars and the galaxy, you feel that you are not just from any particular piece of land but from the solar system."

~ Kalpana Chawla
(Late Indian-American Astronaut)

Earth's Fate in a New Orbit

If Earth were flung into Mars' orbit, it would become a frozen wasteland. The Sun would shrink in the sky, casting weak, lifeless light. Oceans would freeze into towering glaciers, oxygen levels would plummet, and the last remnants of life would struggle against 7 unstoppable frost

Move Earth to Venus' orbit, and it would be doomed to fire instead of ice. The Sun's relentless heat would boil the oceans away, thickening the atmosphere into a suffocating prison of carbon dioxide and Sulfuric acid clouds. The sky would glow an eerie yellow, and Earth—once a cradle of life—would become a smouldering, lifeless rock.

Jupiter: Guardian or Cosmic Tyrant

Jupiter, the solar system's great protector, acts as a gravitational shield, absorbing or deflecting asteroids that might otherwise annihilate Earth. But what if we moved it?

Bring Jupiter closer, and catastrophe unfolds. Its immense gravity could destabilize Earth's orbit, sending us spiraling into the Sun—or worse, flinging us into deep space, where we'd freeze into an icy tomb, drifting endlessly through the abyss with no Sun to warm us, no sky to call home—just a silent, lifeless exile in the void. More terrifying still? If Jupiter had always been closer, it might have prevented, Earth's formation entirely, erasing our history before it even began. Send Jupiter farther away, and its protection vanishes. The asteroid belt, once kept in check, turns into a firing range, bombarding Earth with cataclysmic impacts. The very force that safeguarded life for eons would, in its absence, spell its extinction.

"Our solar system is actually a wild frontier, teeming with different, diverse places: planets and moons, millions of objects of ice and rock."

~ Carrie Nugent
(Asst. Prof. of Planetary Science)

Neptune: A New Earth—or a Blue Nightmare?

If Neptune were pulled into Earth's orbit, its icy coating would melt, giving rise to endless, alien oceans. Carbon and nitrogen in its atmosphere could, in theory, foster life. But Neptune is a tempestuous world, where winds scream at 1,200 mph and storms rage with unimaginable ferocity. Could life take root in such chaos, or would Neptune remain a world where stability is nothing but a fleeting illusion—yet?

The Fragile Balance of the Cosmos

The solar system isn't just a random collection of planets—it's a delicate masterpiece, finely tuned by gravity and time. Even the slightest disruption could send worlds spiraling into ruin.

And perhaps the most unsettling truth? Stability is an illusion. The universe doesn't promise order—it merely tolerates it. We exist not because of some divine guarantee, but because, against impossible odds, everything fell into place. But if we ever dare to disrupt this delicate balance, the cosmos will remind us—chaos always wins.

"In all chaos there is the cosmos, in all disorder a secret order."

~ C. G. Jung
(Late Swiss Psychiatrist)

~ Nakshatra Gundel
(24BBS0150)

Stellar Ghosts: The Remnants of Exploded Giants

Imagine a star much bigger than our Sun running out of fuel. When this happens, it explodes in a spectacular event called a supernova and what is left is called a neutron star. Neutron stars are the remains of the cores of massive stars that have reached the end of their lives. The life of a star, no matter its size, is a balancing act between the inward "push" of gravity and the outward push provided by photons generated as they conduct nuclear fusion, the forging of heavy atomic nuclei from light nuclei, at their cores.

The peaks in the CMB power spectrum represent acoustic waves that formed in the hot, dense plasma of the early universe due to the interaction between gravity and radiation pressure. As the universe expanded and cooled, these oscillations were frozen into the CMB at the time of recombination. The location and size of these peaks provide valuable insights into the universe's age, composition (like dark matter and baryons), and geometry, helping cosmologists refine models of the universe's origin and evolution.

So, why are they called neutron stars? When a massive star that is 10 to 20 times bigger than the sun reaches the end of its life-span, it stops producing new heavy elements at its core. At that stage, the core is mostly iron. However, even the iron isn't strong enough to support the star against its own crushing gravity. As the core collapses, gravity squeezes the atoms so tightly that electrons and protons merge together, forming neutrons. This turns the core into a dense ball of tightly packed neutrons. These neutrons are so tightly packed together that they physically refuse to be squeezed any further. This halts the collapse and leaves behind a neutron star. This quantum phenomenon is called neutron degeneracy pressure.

One might wonder how dramatic the gravitational collapse must be to give birth to a neutron star. Collapse of such massive stellar cores has a striking effect on the material within it. Imagine taking a jumbo jet, something as massive as a Boeing 747, and shrinking it down to the size of a soccer ball while keeping all of its weight packed inside. That's what happens when a massive star collapses into a neutron star, it becomes incredibly small but still holds an enormous amount of mass.

This makes neutron stars the densest material we can see in the universe. Neutron stars are so dense that the speed it would take to escape their gravitational pull is half the speed of light.

As a consequence, the gravity of neutron stars is so strong that if you dropped a single grain of sand onto a neutron star, its gravity would pull it down so forcefully that when it hit the surface, it would explode with the energy of a large nuclear bomb. This shows just how unimaginably strong the gravity of a neutron star is.
Neutron stars and pulsars are some of the most extreme and mysterious objects in the universe.

These remnants of once massive stars push the limits of physics. The next time you look up at the night sky, remember hidden among the stars are these cosmic lighthouses guiding the astronomers in their quest to understand the mysteries of our ever expanding universe..

~ Shristi Sahani
(24BEL0021)

How to Kill a Black Hole?

We have all heard about black holes, the big scary void in space that you can't escape from. Have you ever wondered how they finally die? A black hole is a phenomenon that occurs in space when a star dies. A really really big star. The external layers get blasted off in a supernova, but the internal layers collapse in on themselves and get really really dense.If the mass is sufficient, the star collapses into a singularity, and the Schwarzschild radius defines the event horizon—the boundary beyond which nothing escapes. Literally nothing can escape, not even light. There is, however, one problem with this. Students of thermodynamics will know that black holes cannot just absorb entropy, without gaining entropy of its own; this violates the second law of thermodynamics, which says that energy can neither be created nor destroyed, only converted from one form to another. Therefore, Jacob Bekenste in proposed that black holes must have entropy, proportional to the area of their event horizon. If a body has entropy, it must also have temperature, but having a temperature would mean that it has to radiate energy.

This was quite a paradox, because no one could explain how any radiation could come out of a black hole if its job description included sucking everything in and never letting it leave. Finally, Stephen Hawking proposed Hawking radiation in 1974. 12th grade physics taught us that a particle is also a wave. We also know that space is a vacuum. However, according to quantum mechanics, space is never truly empty. A vacuum with no particle is observed because waves are interfering with each other and cancelling each other out.

Heisenberg's uncertainty principle (energy edition) states that, for a very short time, energy can fluctuate, creating temporary particle-antiparticle pairs. An antiparticle has the same mass as its particle but opposite electric or magnetic properties. Every subatomic particle has an antiparticle—e.g., the positron is like the electron but with opposite charge. These pairs usually annihilate quickly, returning their borrowed energy to the vacuum.

These splits happen all the time across space, but if each particle ends up on opposite sides of a black hole's event horizon, it gets interesting. The particle inside the horizon gets sucked in. From an outside perspective, it has negative energy, which subtracts from the black hole's energy—causing its mass to decrease.

This mass obviously can't just disappear (remember the second law of thermodynamics?), so it's transferred to the particle formed outside the event horizon. This energy, combined with curved spacetime dynamics, propels the (positive) particle toward infinity. These particles—usually photons, neutrinos, and electrons—make up Hawking radiation! This causes black holes to slowly lose mass (very slowly; a normal-sized one takes 10^67 years to decay). Since the process is so slow, Hawking radiation hasn't been detected yet. Black holes get hotter as they shrink, making radiation more detectable in smaller, primordial black holes from the early universe. This shows black holes aren't eternal vacuum cleaners. Given time, they leak energy and vanish. In short, nothing sucks forever—not even black holes!

~ Sanjana Joshi
(24BME0383)

Women in Astronomy

There is no better time to acknowledge the women who make the world better with all the things they do. Since March 8th is the day we celebrate International Women's Day, I take this as an opportunity to thank and appreciate the women who pursue STEM. Similarly in Astronomy there have been many women who have contributed significantly but still not recognized enough to date. Though the list becomes indefinite if I mention every name, I write about three of the most astonishing women who I adore and respect a lot who have contributed huge in the field despite facing a lot of discrimination.

Jocelyn Bell Burnell:

Born in 1943, Bell is an Irish physicist who completed her doctoral degree in Astronomy working on Quasars at Cambridge University. She discovered "Pulsars" in 1967, noticing repeated radio pulses from a distant source and explaining the phenomenon. Despite her significant contribution, she was not awarded the Nobel Prize in 1974, which went to her mentors.

But to this date, it is Jocelyn Bell who is recognized as the discoverer of Pulsars and she was awarded the "Special Breakthrough Prize in Fundamental Physics" in 2018 from which she received $3 Million, which she used to establish a fund to help female, minority and refugee students to become research physicists.

Cecilla Payne- Gaposchkin:

Born in 1900, Cecilla completed her education at Cambridge, leaving with an unofficial degree as Cambridge didn't award degrees to women at that time. She later joined Harvard for a PhD in Astronomy. She was the first to show that stars are mainly made of Hydrogen and Helium, but her thesis was rejected. Henry Russell later confirmed her results but got most of the credit. In 1925, she became the first person to earn a PhD in Astronomy from Harvard's Radcliffe College. Despite being heavily discriminated against due to her gender, she was denied a professorship at Harvard and classified as a TA with a lower salary than her male colleagues. In 1956, over 30 years after her PhD, she became Harvard's first female professor and later the first female chair of the Astronomy Department. This is a clear example of gender discrimination in STEM. She later mentored many young women in Astronomy, encouraging them to pursue careers in science.

Henrietta Swan Leavitt:

Born in 1868, Leavitt completed her education from Radcliffe College Harvard. She studied Cephid variable stars in the Magellanic clouds. She established a precise mathematical relation between a Cephid's intrinsic brightness and pulsation period known as the "Leavitt Law" allowing astronomers to use them as Standard Candles. Edwin Hubble later used Leavitt's law to prove that galaxies exist beyond Milky Way.

Her work directly led to the discovery that the universe is expanding, forming the basis of modern Cosmology. She identified over 2,400 variable stars during her time. Despite her discovery, she worked in a low-wage, assistant role. Leavitt was not widely credited during her lifetime. Though her work might seem insignificant, it is one of the most important things which led to formulation a lot of modern Astrophysics.

~Abishek Ranganathan
(23MPI0023)

ASTRO FACTS

Voyager 1's cameras were turned off in 1990 to conserve power, meaning it has been traveling "blind" for over three decades.

Parker Solar Probe is the fastest human-made object, reaching speeds of 700,000 km/h (430,000 mph).

Cassini snapped a selfie with Earth as a tiny dot behind Saturn's rings.

Artemis Program (2022): The Orion spacecraft carried Shaun the Sheep on a test flight to the Moon.

Curiosity Rover sings "Happy Birthday" to itself every year, programmed by NASA.

In 1990, Voyager 1 turned its camera back toward Earth and captured the famous Pale Blue Dot image—a tiny speck of Earth in the vastness of space.

Voyager 1 was launched after Voyager 2 but overtook it due to a faster trajectory, making it the first to leave the solar system.

By the time a signal from Voyager reaches Earth, it’s weaker than a trillionth of a watt—yet NASA's Deep Space Network can still detect it!

The cover of the Golden Record features diagrams explaining how to play it and how to locate Earth using pulsars.

Instead of solar panels, the Voyagers use Radioisotope Thermoelectric Generators (RTGs), which convert plutonium’s heat into electricity.

ASTRO-RECOMMENDATIONS

The Dawn of Space Explorations

THE RIGHT STUFF
– ***Tom Wolfe***
A classic that captures the early space race, astronaut experiences, and the intense rivalry between the U.S. and the USSR.

THE CASE FOR MARS
– ***Robert Zubrin***
A visionary book explaining how humans can colonize Mars, perfect for those interested in Mars missions like Mangalyaan and Tianwen-1.

HUBBLE'S UNIVERSE: GREATEST DISCOVERIES AND LATEST IMAGES
– ***Terence Dickinson***
A visually stunning book that explores the most breathtaking images and discoveries from the Hubble Space Telescope.

LIFTOFF: ELON MUSK AND THE DESPERATE EARLY DAYS THAT LAUNCHED SPACEX
– ***Eric Berger***
A must-read for understanding SpaceX's rise, Falcon 9's breakthrough, and how reusable rockets changed the space industry.

Voyager : Sailing the Cosmic Seas

PALE BLUE DOT: A VISION OF THE HUMAN FUTURE IN SPACE
– Carl Sagan
Inspired by the famous Pale Blue Dot image captured by Voyager 1, Sagan explores the significance of space exploration.

THE INTERSTELLAR AGE: INSIDE THE FORTY-YEAR VOYAGER MISSION
– Jim Bell
A firsthand account by a planetary scientist who worked with the mission, offering insights into Voyager's journey and discoveries.

MURMURS OF EARTH: THE VOYAGER INTERSTELLAR RECORD
– Carl Sagan, Ann Druyan, et al.
*A detailed account of the **Golden Record**, its selection process, and what it represents for humanity.*

WORD - SEARCH

M T O P C C D S Q R C E D R S
L S L O Y N V C S T C G C E U
W U I K R D F R L C T H B L O
K D F R I T Z U E N A X I P H
D Q A C E B C N G N M R T P N
I F N A T T T L D O D S E O J
X X S Y T R S R O G E I S D R
X X Y K I R A A R U J D L O Q
X V U C E S U U L Z D E O V F
W K I L E T C M X E I R V T F
Q T P K U I Y X B W S E M V M
Y E H C V N R S R R F A R F P
K A S U I R I S J D A L Z G W
R B X Z G K A I V V I S P G N
P Y Z C B E I C O J L X D Q C

Words to look for:

Chandrasekhar
Asterism
Umbra
Sirius
Doppler
Sidereal
Kepler
SETI
OortCloud

We Dare Therefore We Are

From nothing burst a blinding light
A void that no one can comprehend
Imbalance grew and space gave way
For something grand to spark and stay
They danced, very delightful to see
Shaping the threads of galaxies
No blunder—time began its quest,
To weave the stars and shape the rest
From gas swirling and shining bright
The newborn stars began their light
Space stretched, unfolding with embrace
A canvas set for time and stars to trace
They spun, and giants blazed anew
Who knew what they were onto?
From clouds of dust, new worlds emerged
Time raced and soon voices were heard
One world stood out, green and blue
With mountains and oceans, life grew
From single celled to creatures compound
Their minds questioning how things unfold
They turned their eyes to stare at infinity
To understand beyond what they could see
From dust they rose, insignificant and small
Yet they dared to question, the birth of all

~ Ashwath Raman
(23MPI0028)

CREDITS

DESIGNERS

Parv Pachouri
Anika Malhotra
Rasheswari Padhi
Yashwin R.
Natalya Arora
Satyam Sarraf
A. Srijan
Avika Shukla
K. Rithish

EDITORS

Anirudh J.
Rashi Jha
Nakshatra Gundeli
Muhammad Faheem
Sanjana Joshi
Rudranshu Mishra
Prateek Srinath
Jiya Jaiswal
Shristi Sahani
Abishek Ranganathan
Ashwath Raman