

2025 - 2026

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PG & RESEARCH DEPARTMENT OF  
PHYSICS

Auxilium College (Autonomous) Vellore - 06

III - I

SPECTRA



# SECRETARY DESK



It gives me immense pleasure to convey my heartfelt greetings to all the readers of this edition of our esteemed Spectra magazine. This publication is a proud reflection of the dedication, creativity, and academic excellence demonstrated by our students and faculty members.

A department magazine is not merely a compilation of articles; it represents the dynamic intellectual spirit that characterizes our college. It serves as a platform to showcase innovative ideas, research pursuits, and artistic talents, highlighting the department's commitment to fostering holistic education. Through these pages, we witness the encouragement of critical thinking, creativity, and scholarly engagement that enrich the academic environment.

I extend my sincere appreciation to the editorial team, faculty members, and students whose persistent efforts and teamwork have made this publication possible. Their commitment and enthusiasm ensure that this magazine continues to inform, inspire, and strengthen a culture of collaboration and excellence within the department.

I urge all students to actively participate in this initiative—not only as readers but also as contributors. Your ideas, perspectives, and creativity give life and meaning to this publication. May this edition stand as a source of knowledge, inspiration, and pride for the entire department.

Wishing everyone continued achievement and success in all academic and creative pursuits.

**Dr. (Sr). Mary Josephine Rani**

# PRINCIPAL DESK



It gives me immense pleasure to extend my heartfelt greetings to the Department of Physics on the release of this edition of your department magazine. Physics has consistently stood at the forefront of scientific advancement, transforming our understanding of the universe and influencing the way we engage with the world. From foundational theories to revolutionary technological innovations, the impact of physics continues to propel progress in areas such as space research, quantum technologies, renewable energy, and medical advancements.

As students and scholars of physics, you are inheritors of a rich tradition of curiosity, discovery, and academic excellence. I encourage you to nurture a spirit of inquiry, cultivate critical thinking, and apply your knowledge creatively to address real-world challenges. The publication of this magazine is a testament to the department's commitment to fostering intellectual dialogue, encouraging research, and celebrating scholarly accomplishments.

I sincerely appreciate and commend the faculty members, students, and editorial team whose dedication and hard work have made this publication possible. May this edition inspire thoughtful reflection, ignite new ideas, and serve as a valuable source of knowledge for all its readers.

Wishing you continued success and distinction in your academic and research pursuits.

**Dr. (Sr.) Arockia Jayaceli. A**

# HOD DESK



**Dear Readers,**

It is a distinct honor to connect with you through this edition of our magazine, dedicated to celebrating the marvels of physics and its transformative influence on our world. Physics is far more than an academic discipline; it forms the very foundation of our understanding of the universe from the behavior of subatomic particles to the immense expanse of the cosmos.

Our department remains steadfast in its commitment to excellence in teaching, research, and innovation. We endeavor to nurture curiosity, analytical thinking, and a deep passion for discovery among our students. With rapid advancements in areas such as quantum mechanics, astrophysics, and emerging technologies, physics continues to expand the frontiers of human knowledge and open new possibilities for the future.

This edition highlights recent developments in the field, ongoing research initiatives, and collaborative efforts that effectively bridge theoretical insights with practical applications. As we progress, I encourage our students and scholars to embrace intellectual challenges, explore diverse perspectives, and contribute meaningfully to scientific advancement.

I extend my sincere appreciation to our dedicated faculty, students, and staff for their unwavering commitment and hard work. Together, let us continue to explore new horizons, foster innovation, and inspire the next generation of physicists.

**Dr. (Sr.) Venci. X**

# **EDITOR'S DESK**

## **Greetings from the Editorial Board of SPECTRA!**

Physics is a discipline that continually expands the horizons of human knowledge, unraveling the secrets of the universe while laying the groundwork for the technologies of tomorrow. Every new discovery enhances our understanding of the fundamental principles that govern nature and highlights their profound influence on everyday life.

At SPECTRA, we are committed to presenting insightful articles, notable research contributions, and engaging discussions that capture the dynamic and evolving nature of physics. This edition brings together the perspectives of faculty, researchers, and students who express their enthusiasm for the subject through original ideas, investigations, and scholarly reflections.

We strive to cultivate curiosity, encourage critical analysis, and promote meaningful scientific dialogue, creating a space where knowledge and creativity intersect. We hope this issue motivates you to explore new concepts, ask thoughtful questions, and immerse yourself in the captivating world of physics.

**Happy reading!**

**Dr. Deepapriya. S**  
**Assistant Professor**  
**Department of Physics**

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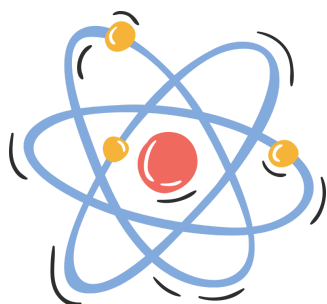


## Where to Next?

## ARTICLES

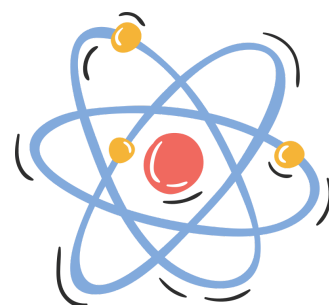
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## PG & RESEARCH DEPARTMENT OF PHYSICS

Auxilium College (Autonomous)  
Vellore - 06



# DEPARTMENT SPOT LIGHTS

## PHYSICS ASSOCIATION

On 14th July 2025, the PG & Research Department of Physics at Auxilium College (Autonomous) organized an enriching expert talk titled “Frontiers of Physics – An Insight” under the banner of the Physicos Club. The program was designed to broaden students’ understanding of contemporary developments in physics and to motivate them toward advanced research pursuits. The session was honored by the presence of Dr. M. Kumar, Associate Professor and Head of Arignar Anna Government Arts College, who served as the resource person for the event.

Dr. Kumar delivered a highly engaging and intellectually stimulating lecture highlighting the rapidly evolving frontiers of modern physics. He provided valuable insights into emerging research domains such as quantum technologies, including quantum computing and quantum communication; recent advancements in astrophysics related to black holes, gravitational waves, and space exploration; and significant breakthroughs in particle physics that deepen our understanding of fundamental forces and subatomic particles. His presentation effectively connected theoretical foundations with current experimental progress, enabling students to appreciate the practical implications of advanced research.

The program was conducted from 2:00 PM to 3:30 PM at the Computer Block Seminar Hall and witnessed enthusiastic participation from undergraduate and postgraduate students, research scholars, and faculty members. The interactive session encouraged students to raise questions and actively engage in discussions, thereby enhancing their analytical and critical thinking skills. Overall, the expert talk successfully fostered academic curiosity, stimulated research interest, and reaffirmed the department’s commitment to promoting academic excellence through meaningful expert engagement and knowledge-sharing initiatives.



## Workshop

Two academic workshops organized in 2025 to enhance students' research and technical skills. On 29.08.2025, a workshop titled "LaTeX & Overleaf – A Dynamic Duo for Document Creation" was conducted to train students in professional scientific documentation, covering typesetting, equations, references, and collaborative editing using Overleaf. Later, on 27.11.2025, a DST-FIST funded Workshop on MATLAB was organized, focusing on programming, data analysis, and computational applications in physics. Both workshops provided valuable hands-on experience and strengthened students' academic and research competencies.



## OUT REACH PROGRAM

On 22.01.2026, the PG & Research Department of Physics at Auxilium College organized a compassionate outreach visit to St Maria Theresa Home for Children. Faculty members and students participated in the visit with the objective of extending care, support, and social responsibility beyond academics. During the visit, students interacted warmly with the residents, spent meaningful time with them, and contributed essential items as a gesture of kindness and service. The experience instilled values of empathy, humanity, and community engagement among the students. Overall, the visit was deeply enriching and reinforced the importance of social commitment alongside academic excellence.

# 23 SEPTEMBER 2025 - INTERNATIONAL CONFERENCE ON FRONTIERS IN MATERIALS SCIENCE FOR A SUSTAINABLE FUTURE



The International Conference on Frontiers in Materials Science for a Sustainable Future was organized on 23rd September 2025 by the PG & Research Department of Physics & Chemistry at Auxilium College (Autonomous). The conference was conducted with the objective of creating a dynamic platform for academicians, researchers, scientists, industry experts, and students to discuss recent advancements in materials science with a strong emphasis on sustainability and environmental responsibility.

The event featured keynote addresses and technical sessions that highlighted emerging research areas such as nanomaterials, energy materials, green synthesis techniques, advanced functional materials, and semiconductor technologies. Eminent speakers shared their latest findings and emphasized the importance of developing innovative materials that support renewable energy, environmental protection, and sustainable industrial growth. The sessions provided valuable insights into how scientific research can address global challenges such as climate change, energy crisis, and resource management.

The conference also encouraged interdisciplinary collaboration by bringing together experts from various scientific and engineering backgrounds. Through paper presentations, discussions, and interactive sessions, participants exchanged ideas and explored research opportunities that contribute to the United Nations Sustainable Development Goals (SDGs). The program inspired students and young researchers to focus on sustainability-oriented research and innovation.

Overall, the conference was a significant academic initiative that strengthened research collaboration, enhanced knowledge sharing, and reinforced the department's commitment to promoting sustainable development through advancements in materials science and engineering.

24 July 2025

## Meet the Scientist



The Department of Physics, Auxilium College (Autonomous), Vellore, organized a visit to the “Meet the Scientist” program held at the Dr. Kalaignar Karunanidhi District Science Centre on 24th July 2025. This program aimed to inspire young learners by providing them with the opportunity to interact directly with eminent scientists and gain deeper insights into the latest advancements in science and technology. Students actively participated in the interactive sessions, where the scientists shared their research experiences, career journeys, and the role of innovation in addressing real-world challenges. The event created an engaging platform for students to clarify their doubts, enhance their scientific outlook, and develop curiosity-driven learning beyond the classroom. The program was highly beneficial as it motivated the students to pursue research and higher studies in science, while also exposing them to the importance of scientific temper and critical thinking in today’s world. Overall, the visit proved to be an inspiring and enriching experience, bridging the gap between classroom education and real-life scientific exploration.

## Physics Fest 2025

The Physics Fest 2025, organized by the PG & Research Department of Physics, Auxilium College (Autonomous), Vellore, on 13th August 2025, was a grand academic celebration that brought together around 60 participants from various colleges to compete and collaborate in the spirit of science. The event featured a series of intellectually stimulating and creative competitions, including Quiz, Debate, Poster Presentation, Physics Memes, and Model Making, which tested not only the conceptual knowledge of Physics but also the innovative and communicative skills of the students. Participants enthusiastically showcased their talents across these diverse events, creating a lively atmosphere of learning and exchange. After a day of exciting contests and vibrant performances, Sacred Heart College emerged as the overall trophy winner, marking their excellence in multiple events, while the fest as a whole stood out as a platform that encouraged teamwork, creativity, and a passion for Physics among young learners.



# SCI-TALK



## 14 OCTOBER - 2025 - TALK ON SINGLE XRD ANALYSIS USING WINGX SOFTWARE

The PG & Research Department of Physics organised a session on Single XRD analysis using Wingx software on 14th October 2025 from 2.00 PM to 3.00 PM at the Admin block. The PG second-year students discussed their internship work and the analysis procedure. The session enabled students to understand the use of WingX software for the theoretical analysis of single crystal.

## 26 NOVEMBER 2025 - "SESSION ON ACHIEVING PROBLEM-SOLUTION FIT"

The PG & Research Department of Physics, in collaboration with the Innovation and Incubation Cell, organized a "Session on Achieving Problem-Solution Fit" on 26th November 2025 from 2.00 PM to 3.00 PM at the Computer Block Seminar Hall, with Ms. Blessy Montgomery, Placement Officer of Auxilium College, serving as the resource person. The session introduced students to the importance of identifying and validating user-centric problems in the innovation cycle and provided practical methods such as empathy mapping, interviews, observations, and problem discovery tools. Students were guided to analyze gaps between existing solutions and actual user needs using frameworks like the Problem Statement Canvas, Value Proposition Canvas and Jobs-to-Be-Done approach. Through interactive brainstorming, group discussions and short presentations, around 60 UG and PG participants actively engaged in identifying real problems and developing early solution concepts. The resource person shared real case studies and highlighted common mistakes like solution-first thinking without evidence. The session enabled students to frame evidence-based problem statements, draft proto-solutions and gain confidence in applying structured innovation methodologies, thereby strengthening their readiness for hackathons, idea contests and incubation programs. The department plans to continue such workshops and mentoring sessions to help students progress toward prototype development and market-fit stages.



# INDUSTRIAL VISIT

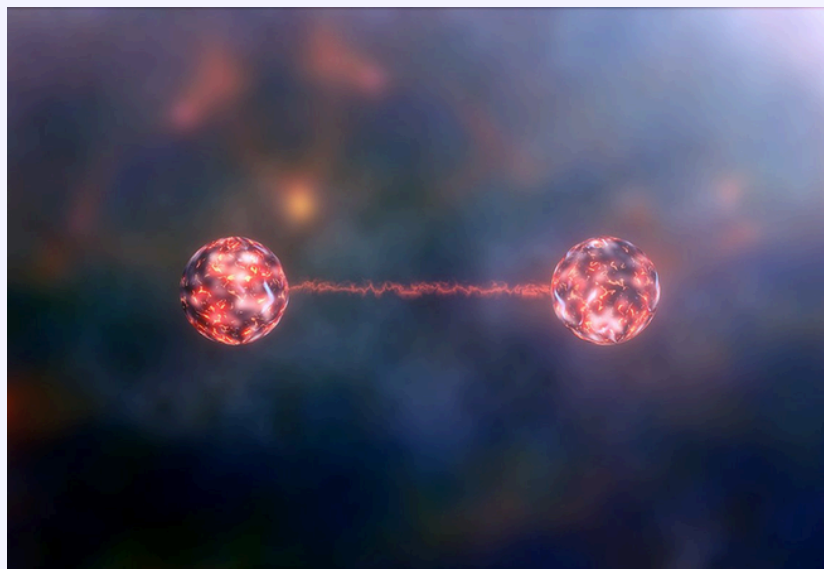
On 25th August 2025, a total of 4 faculty members accompanied 50 students on an educational industrial visit to Kodaikanal Solar Observatory, situated in the scenic hill station of Kodaikanal. The primary objective of this visit was to provide students with real-time exposure to advanced scientific research and to bridge the gap between classroom learning and practical application. At the observatory, students were introduced to the historical significance and scientific contributions of the institution in the field of solar physics. They gained in-depth knowledge about solar telescopes, sunspot monitoring, spectral analysis, and the various sophisticated instruments used to study solar activities. The experts at the observatory explained how continuous solar observation helps in understanding space weather and its impact on Earth. This interaction greatly enhanced the students' academic curiosity and deepened their conceptual understanding of astrophysics and observational techniques.

Following the observatory visit, the group proceeded to a well-known local chocolate factory in Kodaikanal, where students had the opportunity to observe the entire chocolate production process. They learned about the selection and processing of cocoa beans, mixing of ingredients, heating, molding, cooling, and hygienic packaging procedures. The visit to the chocolate factory provided insight into small-scale industrial management, quality control measures, and marketing practices. Overall, the industrial visit proved to be highly informative and enriching, offering students valuable practical exposure, improving their technical awareness, and fostering experiential learning beyond the traditional classroom environment.



# SPOOKY ACTION AT A DISTANCE: THE WONDER OF QUANTUM ENTANGLEMENT

When Albert Einstein referred to quantum entanglement as “spooky action at a distance,” he wasn’t being poetic he was expressing genuine discomfort. In the quantum world, particles can become linked, or “entangled,” such that the state of one instantly influences the state of the other, no matter how far apart they are. This phenomenon, once dismissed as a philosophical curiosity, is now at the heart of cutting-edge technologies like quantum computing and secure communication.



At its core, entanglement defies classical intuition. Imagine two electrons, prepared in such a way that their spins are entangled. If you measure one and find it spinning “up,” you instantly know the other is spinning “down,” even if it’s on the other side of the universe. This correlation happens faster than light could travel between them hence Einstein’s unease, as it seemed to challenge relativity.

Yet, countless experiments, from Alain Aspect’s groundbreaking tests in the 1980s to recent loophole-free Bell tests, have confirmed that entanglement is real. It’s not about hidden information traveling through space; it’s about quantum states being inherently connected. This challenges our classical notions of locality and realism, suggesting that reality at its smallest scales behaves more like a fabric of possibilities than a collection of independent objects.

Why does this matter? Entanglement is the key to quantum technologies poised to revolutionize our world. Quantum computers harness entangled qubits to perform calculations impossible for classical machines. Quantum cryptography uses entanglement to create communication channels that are theoretically unhackable. Even quantum teleportation, a method of transferring information via entanglement, has moved from theory to experimental reality.



In a broader sense, entanglement forces us to rethink what it means for things to be “separate.” It hints at a deeper, perhaps more holistic, structure of reality—one where everything is interconnected at a fundamental level.

As we stand on the brink of a quantum age, understanding entanglement isn’t just for physicists. It’s a glimpse into a future where the strange rules of quantum mechanics shape everyday life. And perhaps, in embracing this “spooky” reality, we’ll unlock technologies and insights that today seem as fantastical as magic.

# ISSAC NEWTON



## **ABOUT NEWTON:**

Isaac Newton was a great physicist and mathematician from England. He studied at Trinity College, Cambridge, where he developed a strong interest in science. He discovered the laws of motion and the law of gravitation. His work laid the foundation for modern physics.

## **Isaac Newton – Education and Research:**

Isaac Newton was one of the greatest physicists and mathematicians in history. He was born on 25 December 1642 in Woolsthorpe,, England. Newtons ideas changed the way people understand nature, motion, and the universe.

### **Education:**

Isaac Newton did his early schooling in his village. He was not very interested in studies at first, but later he became very curious about science and mathematics. In 1661, he joined Trinity College, Cambridge. At college, he studied mathematics, optics, and natural philosophy (physics). He learned by reading books and doing experiments on his own. His teachers noticed his intelligence, and he slowly became one of the best students. After completing his studies, he became a professor at Cambridge University.

### **Research and Discoveries:**

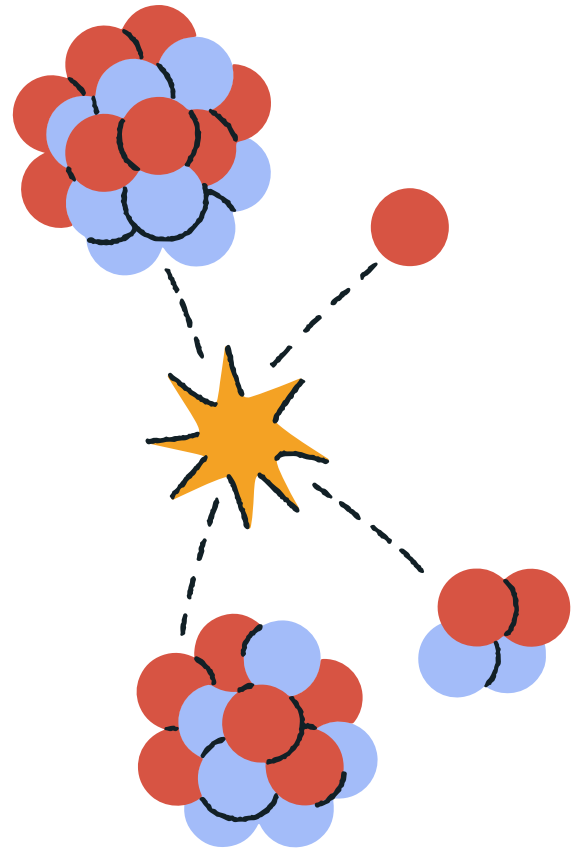
Isaac Newton made many important discoveries in physics. His most famous work is the laws of motion, which explain how objects move. These laws are still used today in science and engineering. He also discovered the law of universal gravitation, which explains why objects fall to the ground and how planets move around the Sun. Newton also did important research in optics. He proved that white light is made up of different colours by using a prism. In mathematics, he developed calculus, which is very useful in science and engineering. In 1687, Newton published his famous book Principia, which explained his laws of motion and gravitation.

### **Achievements:**

Because of his great contributions, Isaac Newton became very famous. He was knighted and became Sir Isaac Newton. His work laid the foundation for modern physics.

# RED SHIFT: COSMIC WHISPERS

In the tapestry of space, a hue is revealed  
Red shift whispers, secrets galaxies conceal  
Light stretches far, waves elongate  
A Doppler dance, as space expands its fate  
Stars recede, their light now red  
A shift in spectrum, the universe's tread  
Distance grows, velocity's might  
Cosmic expansion, a welch in sight  
Photon journey, through aeons of space  
Reddened echoes, of a distant pace  
Astronomers decode, the shift's tale  
Unveiling secrets, of the cosmic gale  
In the red shift's whisper, we hear the past  
Echoes of galaxies, long gone vast  
A cosmic clock, ticking away  
Measuring distances, in a celestial way  
The universe's heartbeat, a rhythmic sway  
Expansion's pulse, in a cosmic bay  
Red shift guides us, through the dark  
Unveiling mysteries, in the cosmic ark  
Through quasars' glare, and starlight's fade Red shift reveals, the universe's shade  
A story told, in shifting hues  
Cosmic evolution, in celestial views  
Distance and speed, a paired dance  
Red shift's whisper, a cosmic trance  
Astronomers listen, to the universe's sigh  
Unraveling secrets, of the cosmic sky  
In the red shift's glow, a tale is spun  
Of cosmic beginnings, and a universe won  
A journey through time, and space so grand  
Red shift's whisper, echoes of the cosmic land  
The universe unfolds, a mystery sublime  
Red shift's secret, a cosmic rhyme  
A language spoken, in the stars' light  
A story of creation, in the cosmic night

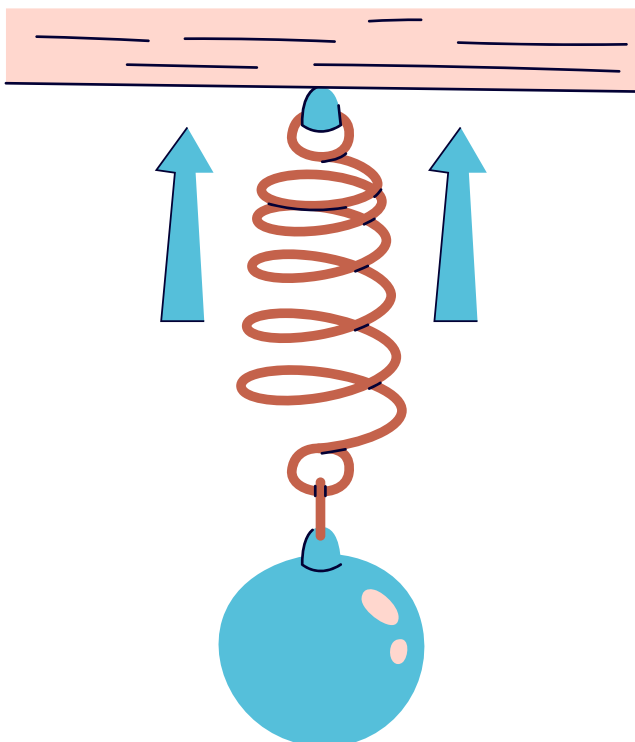


**Gayathiri. C**  
**III B.Sc Physics**

# Physics Entered My Life

It didn't knock. It slipped in quietly a falling cup, a shadow stretching longer than it should. At first it was just names: force, time, light words that felt heavy, like keys to a door I wasn't ready to open. Then one day, I noticed the way my heart kept rhythm, a pendulum learning patience, how every goodbye carried momentum. Physics taught me that nothing stays still not stars, not people, not the ache after laughter fades. I learned that energy never disappears; it only changes its clothes. So love became heat, loss became gravity, and hope became light, traveling even when the source was gone. Now when something breaks, I don't ask why me? I think of stress and limits, of systems pushed too far. And when I fall, I remember: even the universe began with an explosion, and somehow learned to expand.

**Rajeshwari. S**  
I M.Sc Physics

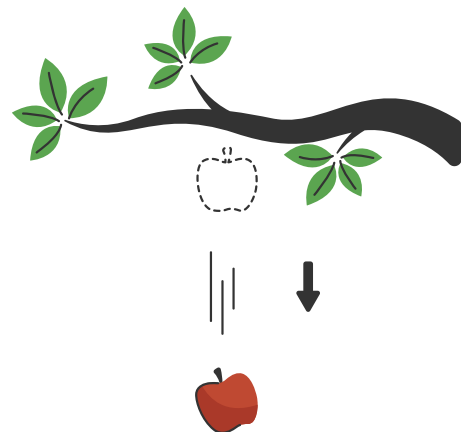


## PHYSICS TONGUE TWISTERS



1. Rapidly rotating rings revolve round rigid rods.
2. Quantum quickly quantum quantities.
3. Fierce friction forcefully freezes fast-flying fibers.
4. Bright black bodies boldly bend blue beams.
5. Tiny turbulent thermal tides twist tirelessly.
6. Several silent spinning satellites swiftly shift
7. Magnetic metal molecules mysteriously move mid-motion.
8. Precise parallel particles perfectly pass perpendicular planes.
9. "Swift spinning spheres in space speed silently."
10. "Quantum currents quickly create quirky calculations."

**Manjupriya. S**  
I M.Sc Physics



# GLOBAL PHYSICS AWARDS

## *Discoveries Shaping Our Future*

From quantum computers to exoplanets and particle collisions, recent awards show that physics is not only explaining the universe but also building the technologies of tomorrow.

### **Nobel Prize in Physics 2025**

Awarded To:

John Clarke, Michel Devoret, John Martinis

► Contribution:

Demonstrated quantum effects such as tunnelling and energy quantisation in superconducting electrical circuits.

### **2024**

Awarded To:

John Hopfield, Geoffrey Hinton

► Contribution:

Developed theoretical foundations of artificial neural networks using concepts from statistical physics.

### **2023**

Awarded To:

Anne L'Huillier, Ferenc Krausz, Pierre Agostini

► Contribution:

Generated attosecond laser pulses to observe the motion of electrons inside atoms and molecules.

Oscars of Science

Awarded To:

Large experimental collaborations working at CERN, including the ATLAS, CMS, ALICE, and LHCb experiments.

► Contribution:

These collaborations analysed data from the Large Hadron Collider (LHC) to: Study the properties of the Higgs boson in detail. Test predictions of the Standard Model of particle physics. Discover new composite particles and rare interactions. Investigate why the universe contains more matter than antimatter.

Major Awards in Astrophysics

Kavli Prize in Astrophysics (2024)

Awarded By:

The Kavli Foundation

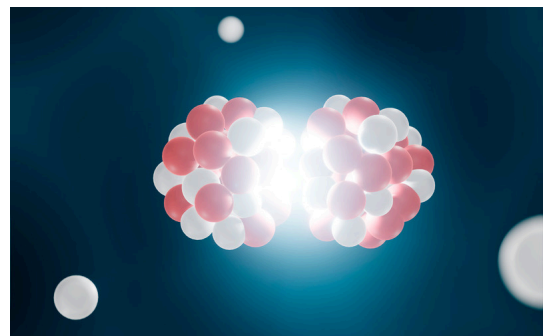
► Awarded To:

David Charbonneau

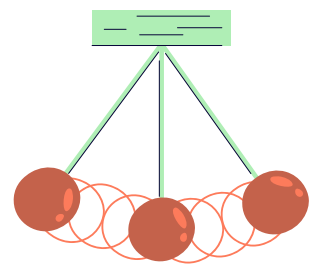
Sara Seager

► Contribution:

Pioneered techniques to detect and study exoplanets (planets outside our solar system) and analyse their atmospheres.



# Myth Busters



## Myth 1: Heavier objects fall faster than lighter ones

Reality:

In the absence of air resistance, all objects fall with the same acceleration.

Physics behind it:

From Newton's second law,

$$F=ma$$

$$F=mg$$

$$a=F/m$$

## Myth 2: Cold water always boils faster than hot water

Reality:

Hot water usually boils first, but under specific conditions cold water can boil faster called the Mpemba effect.

Physics behind it:

Factors include:

Evaporation

Convection currents

Dissolved gases

## Myth 3: There is no gravity in space

Reality:

Gravity exists everywhere in space.

Physics behind it:

Astronauts feel "weightless" because they are in continuous free fall around Earth.

Gravity at the ISS is ~90% of Earth's surface gravity.

## Myth 4: Sound travels in space

Reality:

Sound needs a medium. Space is nearly a vacuum.

Physics behind it:

Sound waves are mechanical vibrations → no medium = no sound.

## Myth 5: Time flows the same everywhere

Reality:

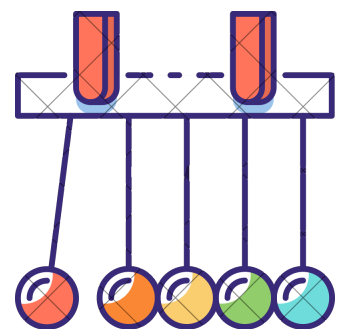
Time is relative, not absolute.

Physics behind it:

According to Einstein's relativity:

Time slows at high speeds

Time slows in strong gravitational fields.



**Viyanjana. S**  
**I M.Sc Physics**

# PHYSICS MEMES

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Why do physicists love autumn?

🍂 Leaves are falling, and so are their students 🎓

What did the proton say to the electron?

🧑🏫♂️ "You're always so negative" 😏

Why did the astronaut break up with his girlfriend?

🚀 He needed space 😂

Why do physicists love coffee?

☕ It's a great way to energize their particles ⚡

What did the quantum physicist say to his cat?

🐱 "I'm observing you, but only sometimes" 😏

7. Why did the physicist go to the doctor?

🧑🏫🩺 Had a few "quantum leaps" in blood pressure



8. Why do physicists make terrible bakers?

🍰 They always forget to account for the dough



Why did Newton avoid social media?

🧑🏫 He was afraid of attracting too much gravity



What do you call a physicist who's an excellent baker?

🍰 A particle-fermion baker 😏

Why did Einstein go to the doctor?

🧑🏫 He was feeling a little "relativistic" 😏

**M.jency youvanjale Abarna**  
**I B.Sc Physics**

1. Physics: where 'simple' means 3 pages of derivation."

2. "Physics students don't panic... they just increase entropy."

3. "The only thing constant in my life is uncertainty." (Heisenberg approved)

4. "Acceleration is directly proportional to exam fear."

5. "I have potential... but I refuse to convert it into kinetic."

6. "My brain has high resistance. Current doesn't flow."

7. "Physics: where 'simple' means 3 pages of derivation."

8. Quantum tunneling: how information passes through my brain without interaction."

9. Time is relative... especially during exams."

10. Physics is 10% understanding and 90% rewriting the same equation in different forms."

**Praneetha shri R**

**I Msc.physics**



# PHYSICS POEM

## Universe Unfolds

The universe unfolds, a cosmic tale,  
A story of stars, that never fades,  
From fiery birth, to silent night,  
The celestial journey, of pure delight.

Galaxies collide, merge and sway,  
Spacetime warps, in a cosmic play,  
Black holes luminate, dark and bright,  
A celestial welleh, infinite delight.

Comets streak, with icy tail,  
Meteor showers, a fleeting gale,  
Aurora's dance, in shimmering hues,  
A cosmic spectacle, for all to muse.

In this grand ballet, we find our place,  
A small yet vital, cosmic face,  
A speck of dust, in the universe's eye,  
A fragment of wonder, that touches the sky.

The cosmic welleh, ebbs and flows,  
A rhythm of life, that forever grows,  
A celestial symphony, of sound and light,  
A universe singing, in infinite delight.

From quantum foam, to cosmic vast,  
The universe whispers, its eternal past,  
A story of creation, of birth and growth,  
A cosmic epic, of infinite depth and breadth.

**Sonali. S**  
**III B.Sc Physics**



## PHYSICS IN COOKING!

In the quiet kitchen before dawn where stoves  
awaken and kettles yawn physics whispers in  
steam and flame turning simple meals into  
science game

Microwaves hum with unseen Waves  
Electromagnetic energy behaves.  
Water molecules twist and spin,  
Generating heat from deep within.  
No fire, no flame, yet warmth appears,  
Modern physics serving meals for years'.

A pressure cooker sings its song, Trapping  
steam holding strong.  
Higher pressure, boiling climbs,  
Cooking faster, saving time. A sealed container  
laws obeyed  
'Thermodynamics on Display'

Every taste has science inside,  
Every texture where formulas hide. From  
crispy crust to melting cheese, phase changes  
work with elegant ease The kitchen turns  
classroom, warm and bright, Where daily life  
proves theories right!!!!

So next time you cook! Pause and see The  
laws of nature serving tea!!  
Not just recipes passed hand to hand  
But physics written in grains and pans.  
In every meal, both art and truth  
Science nourishes mind and youth!!.

'The Hidden Physics Behind Every Meal'

**Sindhiya. S**  
**III B.Sc Physics**

# PHYSICS POEM

## LAWS OF MOTION

Sir Isaac Newton was his name,  
Observing objects was his game.  
He made three rules about what he saw,  
When we see motion, it's described by a law.

The first law of motion is just a piece of cake,  
To make an object move, all it needs is a shake.

The second law of motion is about a force,  
Give it a shove and the object takes that course.

The third law of motion is pure satisfaction  
for each force made there's an equal and opposite  
reaction.

Pushing or pulling, exerting a force  
Moving and shaking, it's physics, of course!

**Valarselvi**

**III B.Sc Physics**

## COSMIC THREADS

"Forces dance in cosmic play,  
Energy flows in every way,  
Atoms whisper secrets true,  
Physics weaves the universe a new .

**Madhumitha. S**

**III B.Sc Physics**

## MYSTERIES OF QUANTUM MECHANICS

In the quantum realm, where particles roam,  
Uncertainty reigns, in a probabilistic home,  
Wave functions collapse, in a fleeting sigh,  
Reality's fabric, a quantum lie.

Entangled states, a cosmic tie,  
Connect the dots, in a hidden sky,  
Schrödinger's cat, in a superposition state,  
Alive and dead, a paradoxical fate.  
Particles dance, in a probability haze,  
Wave-particle duality, a quantum craze,  
Observations power, a conscious gaze,  
Collapsing worlds, in a quantum daze.

In this strange land, where physics reigns,  
The observer's role, a quantum game,  
Reality's essence, a hidden code,  
Quantum secrets, in a cosmic node

**M. Sanjana Mary**

**III B.Sc Physics**



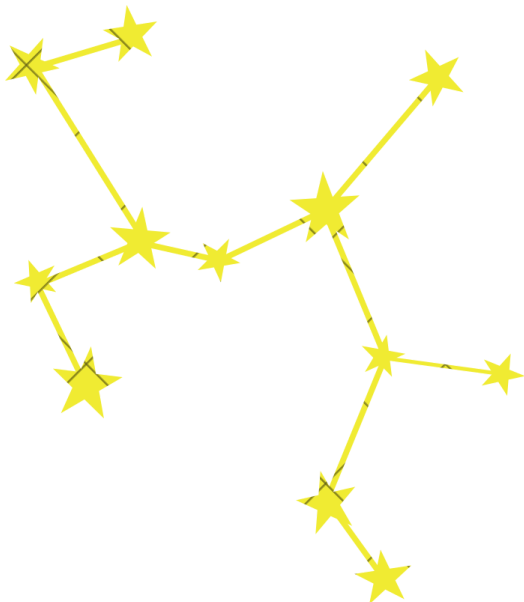
# PHYSICS POEM

## THE FABRIC OF ALL THINGS

Small quanta dance in shadows deep,  
Where certainty is fast asleep.  
A wave, a particle, a spin,  
The realm where strange new laws begin.  
Then gravity, with subtle grace,  
Bends the curved fabric of space.  
From falling apple's swift descent,  
To galaxies, in motion bent.

Einstein's light, a constant speed,  
Relativity's quiet creed.  
And Newton's force, a rigid rule,  
The cosmic, mathematical tool.  
Energy cannot be undone,  
It shifts and flows from star to sun.  
In atom's core or void of dark,  
Physics reveals the wondrous spark.

**D. Premadharshini**  
III B.Sc Physics



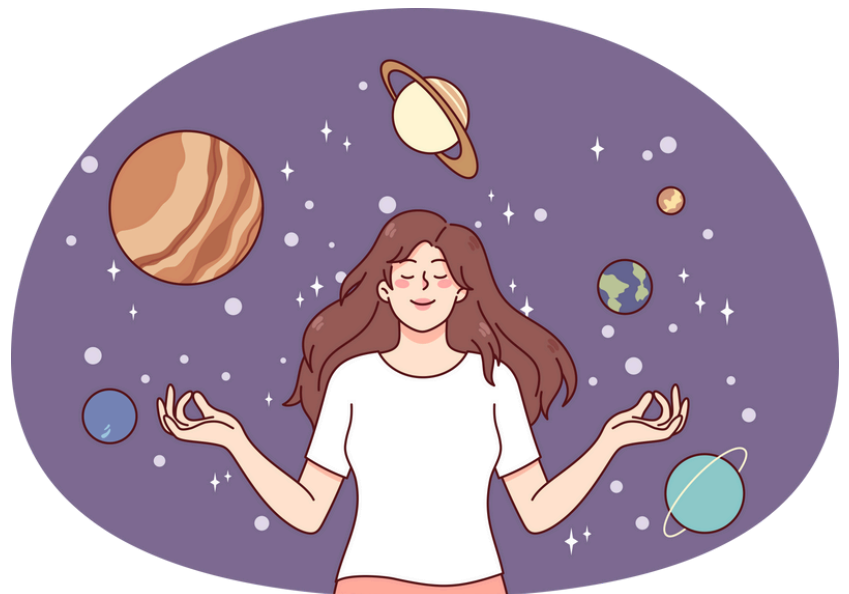
## LIFE OF UNIVERSE

The universe was born in a burst of flame,  
From a tiny point with no time or name.  
Stars were formed from clouds of dust,  
Burning bright because they must.

Stars give light and warmth and heat,  
Making elements when they meet.  
When they die, they spread the dust,  
From which new worlds rise and trust.

On one small planet, life began,  
Slowly growing—plant to man.  
The universe expands, silent and wide,  
Holding all life deep inside.

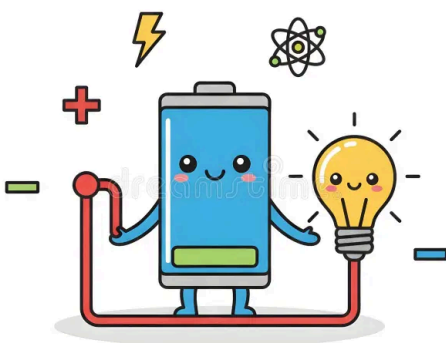
**S. Shalini**  
III B.Sc Physics



## PHYSICS ARCHITECTURE

The Architecture of Reality  
Beyond the veil of common sight,  
Where quanta shimmer in silent light,  
Lies nature's code precise, profound,  
In tensor fields and constants bound.  
Through calculus the planets trace  
Their curved geodesics through spacetime space;  
As Isaac Newton framed the cosmic scheme,  
And gravity shaped the stellar dream.  
Yet deeper still, where certainties cease,  
And waves and particles find no peace,  
The quantum world in silence speaks  
In probability's mystic peaks.  
There, light bends softly in curved domains,  
Foretold by Albert Einstein's equations' chains;  
Where mass and energy intertwine,  
In symmetry elegant, almost divine.  
Entropy marks time's arrow bright,  
Through thermodynamic truth and might;  
From ordered dawn to diffused decay,  
Energy transforms but does not stray.  
Fields that ripple, charges that flow,  
Maxwell's currents ebb and glow;  
In every circuit, star, and flame,  
Physics signs its hidden name.  
Not merely numbers, cold and austere,  
But wonder disciplined, sharp and clear.

**Renuka. P**  
II B.Sc Physics



## THE DANCE OF ELECTRICITY

The dance of electricity  
Tiny electrons race and run,  
Faster than the rising sun.  
Through silver wires they brightly glow,  
Making bulbs and motors glow.

A spark, a flash across the sky,  
Lightning dances way up high.  
From calm storm skies to power grand,  
Electric force is close at hand.  
Invisible, yet strong and bright,  
It turns our darkness into light.

**Ramya K.R**  
II B.Sc Physics



# RIDDLES

## 1. The Silent Force

I pull without touching,  
Work without moving,  
Store energy in space,  
Weaken with distance squared,  
Opposites attract.

Answer: Electrostatic force (Coulomb force)

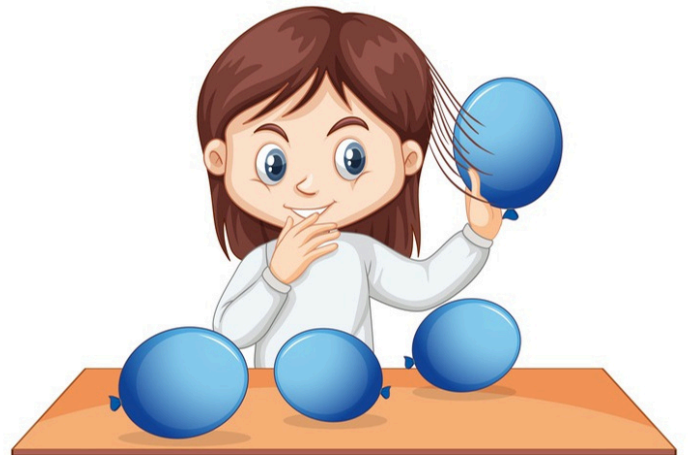
Why: Acts at a distance, follows inverse-square law, electric potential energy is stored in the field.

## 2. The Time Trickster

I slow down when you move fast,  
Bend in strong gravity,  
Same law for all observers,  
GPS must correct me.

Answer: Time dilation (Relativity)

Why: Both special and general relativity affect time; satellites must adjust clocks.



## 3. The Forbidden Collapse

Cannot be compressed beyond limit,  
Quantum rule resists gravity,  
If it fails → supernova.

Answer: Electron degeneracy pressure

Why: Pauli Exclusion Principle prevents electrons from occupying same state; supports white dwarfs.

## 4. The Loop of Nothing

Current flows forever,  
No energy loss,  
Needs very low temperature.

Answer: Superconductivity

Why: Zero electrical resistance below critical temperature.

**Shakthi Shree. S**  
**I M.Sc Physics**

# INTERESTING PHYSICS FACTS

1. Light travels very fast – It moves at about 300,000 kilometers per second!
2. Sound cannot travel in space – Because space has no air for sound waves to move through.
3. Nothing can go faster than light – According to Albert Einstein's theory.
4. An apple falling led to gravity discovery – Isaac Newton developed the idea of gravity after observing a falling apple.
5. You weigh less on the Moon – The Moon's gravity is weaker than Earth's gravity.
6. Water can boil and freeze at the same time – This happens at a special point called the triple point.
7. Electricity travels almost at the speed of light – That's why lights turn on instantly.
8. Time moves differently in space – Time can slow down when objects move very fast or are near strong gravity.

## STELLAR EVOLUTION

**Bhavana. R**  
**II B.Sc Physics**

### 1. Birth of a Star – Nebula Stage

- \* Stars are born in huge clouds of gas and dust called a nebula.
- \* Gravity pulls the gas together.
- \* The center becomes hot and dense → forms a protostar.

### 2. Main Sequence Stage (Stable Stage)

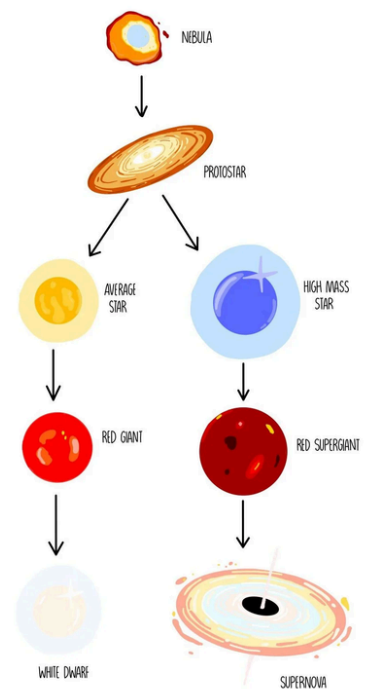
- \* Sun is currently in this stage.
- \* Hydrogen atoms fuse to form helium (nuclear fusion).
- \* Huge energy is released → star shines.
- \* This is the longest stage of a star's life.

### 3. Red Giant / Supergiant Stage

- \* Hydrogen in the core finishes.
- \* S expands and becomes cooler on the surface.
- \* It turns red in color.
- \* Small star → Red Giant.
- \* Massive star → Red Supergiant.

### 4. Final Stages (Death of a Star)

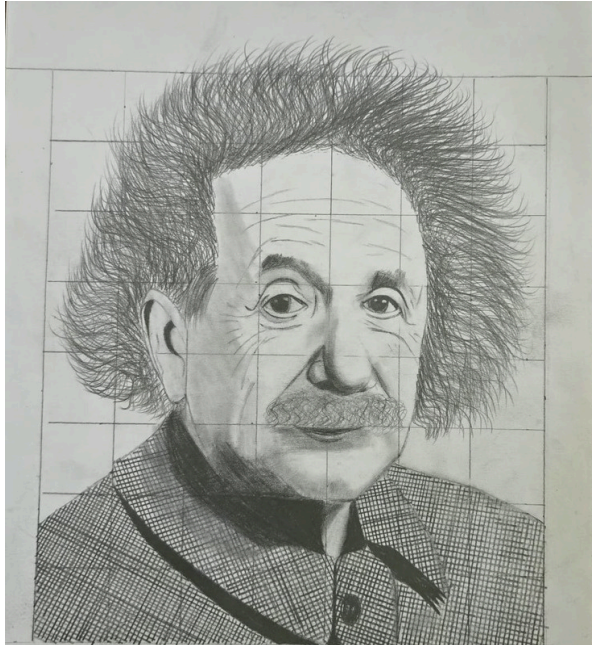
- \* Outer layers are thrown away → Planetary Nebula
- \* Core remains as a White Dwarf
- \* Slowly cools and fades.



**Priya Dharshini**  
**II B.Sc Physics**

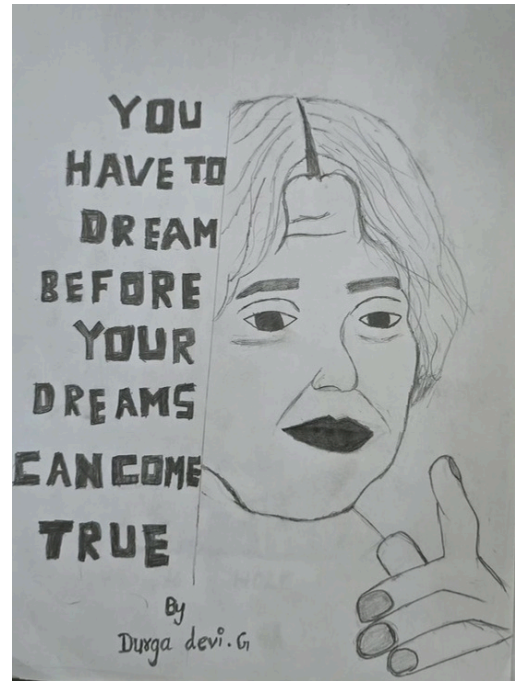
# PHYSICS ART

## ALBERT EINSTEIN



**KAVIYA VARSHINI. S.K**  
**I B.SC PHYSICS**

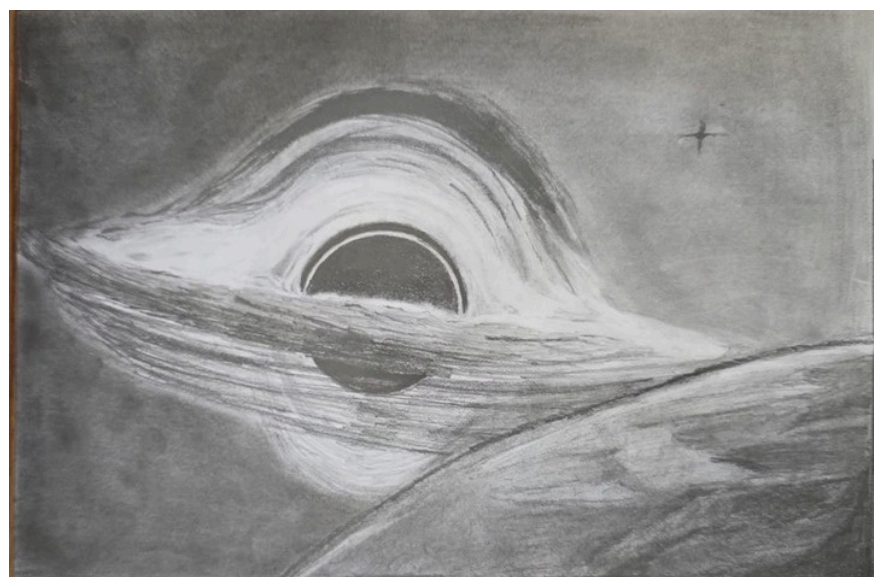
## A.P.J ABDUL KALAM



**DURGA DEVI. G**  
**II B.SC. PHYSICS**



**SILVIYA CARMEL. A**  
**I B.SC. PHYSICS**



**BHAVISHYA. S**  
**I B.SC. PHYSICS**

# Students Achievements

## S. ANUSHA

- Participated in Quiz Competition.

## SHAFIYA

- Participated in Model Making Competition.
- Participated in Debate Competition.

## BHAVANA R

- Participated in Quiz Competition.

## PRATHANNA

- Participated in Debate Competition

## MADHIHA

- Participated in Debate Competition

## SINDHIYA S

- Secured 3rd Place (Overall) at State Level Intercollegiate Science Fest conducted by Don Bosco College, Yelagiri.
- Won CM Trophy - SDAT and secured 2nd Place.

## MADHUMA CHANDRA KUMAR

- Physics Fest 2025 (13th Aug) - I Prize, Poster Presentation.
- Physics Fest 2025 (6th Feb) - II Prize, Poster Presentation.
- Thiruvalluvar University - Interdivisional Badminton Tournament - Runner Up.
- Thiruvalluvar University - Intercollegiate (Vellore Division) - Winner.

## V. SONIYA

- Secured III Place in Muthamizh Vizha (Poem Competition).

## SANJANA M

- Secured 2nd Place in CM Trophy - SDAT.
- Participated in CM Trophy State Match, Tirunelveli (Oct 9).

## AARTHI K

- Won CM Trophy State Match held at Tirunelveli on October 9.
- Secured 2nd Place in CM Trophy - SDAT.



# Faculty Achievements

## DR. (SR). VENCI. X

She has published a research article titled "Tailoring CdSe Nanoparticles at Different pH Levels for Improved Methylene Blue Photodegradation" in the reputed journal *Environmental Geochemistry and Health*, highlighting significant contributions to environmental nanotechnology. She also secured a design patent titled "Smart Glasses for Blind" (Design Patent No. 456720-001), published on 26.04.2025, showcasing innovation in assistive technology. She presented her research at a multidisciplinary international conference and published the proceedings in *InSight Bulletin*.

## DR. R. SARJILA

She has published two conference Proceedings papers in the IEEE conference *Innovations in Power and Advanced Computing Technology (i-PACT 2025)*, focusing on AI-driven mental wellness and advanced fuel cell analysis. She also received the Auxilium Seed Money Grant for her project titled "Smart Meter: AI Powered Energy Monitoring." Additionally, she served as a Technical Reviewer for *i-PACT 2025*, jointly organized by Universitas Airlangga, Universiti Malaya, and Vellore Institute of Technology, reflecting her active engagement in international academic forums.



## DR. N.R DEVI

She has been recognized as a Ph.D. Research Supervisor under Thiruvalluvar University (Ref. No. TVU/CFR/Ph.D. Guideship/order.2025/2694, Dt: 23.04.2025). She has published three research articles in reputed international journals, including *Heat Transfer Engineering*, *Journal of Molecular Structure*, and *Thermal Science and Engineering Progress (2025)*. She also published a conference proceedings in the IEEE proceedings of *i-PACT 2025* on silver nanofluids for heat transfer enhancement. Furthermore, she delivered an oral presentation at the 5th IEEE International Conference on *Innovations in Power and Advanced Computing Technologies (i-PACT 2025)*, held at Universitas Airlangga, Indonesia.

## DR. DEEPAPRIYA. S

She has published four Scopus-indexed research articles in high-impact journals, including *Chemical Engineering Journal (IF: 13.2)*, *Materials Today Energy (IF: 8.6)*, *Materials Letters*, and *Journal of Alloys and Compounds (2025)*. She has secured two design patents titled "Smart Glasses for Blind" (No. 456720-001) and "Solar-Wind Hybrid System" (No. 462819-001) published in 2025. She also published a Scopus-indexed book chapter with Taylor & Francis on electrochemical water splitting applications. Dr. Deepapriya received Research Guideship (Ref. No: TVU/CFR/Ph.D. Guideship/order/2025/27027) under Thiruvalluvar University. She presented her research at a multidisciplinary international conference and published conference proceedings in *InSight Bulletin*. In recognition of her outstanding research contributions, she received the Research Excellence Award from Association of Global Academicians and Researchers (IGAR) on 8th October 2025.

## DR. SARANYA. P.E

She has published two Scopus-indexed research articles in reputed international journals, including *Materials Letters (Impact Factor: 2.7)* and *Materials Chemistry and Physics (Impact Factor: 4.7)* in 2025, focusing on advanced electrode materials and electrochemical applications. She has also secured two design patents titled "Smart Glasses for Blind" (Design No. 456720-001, Published on 26.04.2025) and "Solar-Wind Hybrid System" (Design No. 462819-001, Published on 20.06.2025), demonstrating her innovation in assistive and renewable energy technologies.

