

Newsletter  
**REVERBERATIONS '22**  
Celebrate Physics



**Department of Physics (Aided)**



**Dwaraka Doss Goverdhan Doss Vaishnav College**

Arumbakkam, Chennai (Autonomous)

College with Potential for Excellence

Linguistic Minority Institution, Affiliated to University of Madras

# Inside The Newsletter

We are happy to present you with this Newsletter - Reverberations '22 by the Department of Physics [Aided], Dwaraka Doss Goverdhan Doss Vaishnav College. It showcases the compilation of articles written by our students, activities organized by our department and accolades received by our faculty and students.

Our department believes in developing scientific temper, building overall excellence and making our students life-long learners which are important to build our society. We have organized many webinars , workshop and hands on training throughout the year to ensure these. This e-newsletter tries to give you a flavour of these.

*Enjoy Reading!*

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# Greetings from Secretary

**Jai Shree Krishna!**

I am very happy to release REVERBERATIONS '22- the newsletter of Department of Physics [Aided]. Our institution marches forward with the vision to impart value-based quality academia. In this journey, this Department has been a pillar of support for empowering students with wisdom, knowledge, and skillset to groom them as future leaders. The USP of this Department is that along with academic development, it focuses on other aspects such as developing collaborations, linkage with various institutions, outreach activities to hone the abilities and overall development of the students. The efforts of teachers and performance of Department of Physics was highlighted and well appreciated by the Chairman of NAAC peer visit recently. I congratulate everyone in this Department who have been incessantly striving to provide the best platform for the students to groom themselves as excellent citizens with a scientific attitude. This is an exemplary Department for having many Projects from DBT, DST, Vigyan Prasar, TIFR, IMSC and other Govt. agencies I am happy to see the contributions of the students for this newsletter and to know about various activities carried out by the department. Best wishes to the Department in all its endeavours! am happy to see the contributions of the students for this newsletter and to know about various activities carried out by the department. Best wishes to the Department in all its endeavours!

**Shri.Ashok Kumar Mundhra**  
**Secretary**



## Message from Principal's Desk

It gives me immense pleasure to release *REVERBERATIONS* '22. This department has grown from the time of its inception with a committed team of teachers, who have contributed to the holistic growth of the students. The Department has been doing exemplary work by organizing trans-disciplinary activities, webinars, workshops, various STEM activities, alumni meet, and many programs for the betterment of students. With the world progressing faster towards imparting 21st century learning skills, it is imperative to build necessary skills in students to achieve success to become global citizens. The Department of Physics gives a huge platform to students through a diverse set of activities. This department has been encouraging collaborative STEM learning and trains the students to look beyond textbooks through their Tripe Helix Science Club activities. With the refurbished lab facilities and new STEM lab, I am sure this Department will be able to serve student community better. This is a Department having outreach contributions and offers many value added courses. I congratulate the entire team for bringing out this newsletter.



I wish the best for the Department which is marching with excellence towards its Diamond Jubilee.

Dr.S.Santhosh Baboo, M.Sc., Ph.D.  
Principal

## From HOD

The Department of Physics believe in student-centric education and it is our prime duty to ensure equitable quality education. Our Department being a Government-aided Department, caters students from different backgrounds, supports inclusive education and provides them with scholarships. Especially in classrooms with students from diverse backgrounds, we need innovative, evolving, flexible and affordable methods to achieve this.

Our Department is endowed with team of teachers who strongly believe in their professional growth. They explore new teaching methods and mentoring techniques as the needs of every batch changes with time. Collaboration and idea exchange with their peers and others keeps us agile. Student centric approach and encouraging holistic development has been the bridge that connects us with our learners.

Reverberations '22 is a testimony of this and congratulations to the entire team!

I thank the Principal and our Management for their consistent support and encouragement.



**Dr.D.Uthra**  
Associate Professor & Head

## Editors' Note

Greetings readers!

*Intelligence is the ability to adapt to change*

We welcome to savour REVERBERATIONS '22, the newsletter for 2021-22 from Department of Physics (Aided), Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai. Our classrooms helps students to explore beyond textbooks and build their ICT skills. This helps them connect with the real world which is not compartmentalized as arts, science, commerce, vocational, creative, or technical. Our students' participation in various platforms shows students have diverse interest and skills. Active engagement of our students, in different kinds of activities is evident through this compilation.

We are happy to guide this enthusiastic team. Our congratulations to the entire team of creative minds, who have been willingly and happily working as a team to bring this Reverberations '22. Our team places it's sincere thanks to our Secretary, Principal and our Management for their continuous encouragement in bringing out this newsletter.

-Dr.V.Renganayaki & Dr. D. Sridevi  
Editors, REVERBERATIONS '22



**Dr.V.Renganayaki**



**Dr. D. Sridevi**

## About our College



Dwaraka Doss Goverdhan Doss Vaishnav College, a linguistic minority institution established in the year 1964, by the Rajasthanis and Gujaratis settled in Chennai for the cause of higher education. The college with the sole purpose of imparting knowledge and value-based education saw its grand day on June 30, 1964. In the year of its inception, the College offered a degree course in Mathematics along with Pre-University Courses. The very next year degree courses in Physics and Economics were introduced. Shri. Thotadri Iyengar, teacher of our former president Shri. APJ Abdul Kalam was our first Principal. Then Shri.S.R.Govindarajan, a great Physics teacher headed the institution and saw its immense growth.

<https://www.dgvaishnavcollege.edu.in/>



Ours is a Green Campus where environmental friendly practices and education combine to promote sustainable and eco-friendly practices. Our campus offers an opportunity to take the lead in redefining its environmental culture and developing new paradigms, consistently striving to enrich the greenery.

# About our Department

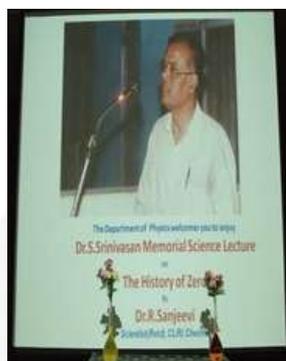
The Department of Physics was established in the year 1964 by the visionary teacher Prof.S.R.Govindarajan. It was moulding the young minds through the B.Sc.Physics Degree Programme. It has been bestowed with dedicated teachers right from the time of inception. Three teachers from this Department served as Principal of our college - Shri S.R.Govindarajan, Shri C.Rangarajan, Dr.B.Krishnan and contributed to the growth of the institution immensely. The path for our mission has been laid by the great visionaries - who were willing to collaborate, reach out, innovate, experiment beyond classroom teaching and empathize diverse needs of their students.

This department has a unique pride of being the parent department nurturing three different degree courses in self financing streams over the decades. To meet the growing demand for Physics graduates, the Department introduced B.Sc.Physics course in the Evening College in 1984. Later, under the headship of Major. Dr.S.Srinivasan, M.Sc.Physics course was started and from the year 2011-12, it added another course in that bouquet- B.Sc Physics with Computer Applications under the leadership of Dr.D.Uthra, to meet the changing trends and needs of fast growing IT field.

This Department provides every student a platform to spot their interests, hone their skills, follow their own path and build scientific temper. This is made possible by the dynamic dedicated team of faculty who are highly qualified, who engage themselves in regular professional development and is a part of various scientific forums. With excellent lab facilities, a good collection of library books, very effective pedagogical tools, efficient teachers and a plethora of opportunities, it's a haven for students who want to pursue Physics.



**Shri.S.R.Govindarajan**



**Major Dr S Srinivasan**

<https://www.dgvaishnavcollege.edu.in/programs/science/department-of-physics-aided/>

# Vision & Mission

## OUR VISION

To train the students to develop scientific temper, achieve excellence in education in the field of Physics and related areas and equip them with skills, knowledge and become life-long learners.



## OUR MISSION

To create an academic base that responds to the need of the students to understand the basics of Physics and its ever evolving nature of applications in explaining all observed natural phenomenon as well as predicting the future applications to the new phenomenon with a global perspective.

Apply one's knowledge and understanding relating to physics and skills to new/unfamiliar contexts and to identify and analyze problems and issues and seek solutions to real-life problems.

To be a tool for transformation marching in the road map of our country's vision towards Higher Education



# Our Department Faculty

## Teaching Staff



**Dr.D.Uthra, M.Sc., SLET, Ph.D.**  
Spectroscopy, Electronics, Science  
Communication, STEM Mentoring



**Dr.D.Syamala, M.Sc.,M.Phil.,M.E., Ph.D.**  
Spectroscopy, Crystal growth, Electronics



**Dr.V.Renganayaki, M.Sc., SLET, Ph.D.**  
Spectroscopy, Crystal growth, Solid State Physics,  
Science Communication



**Dr.V.Sangeetha, M.Sc., M.Phil., Ph.D.**  
Crystal growth, Nuclear Physics



**Dr.D.Sridevi, M.Sc., M.Phil., Ph.D.**  
Nano science, Electronics



**Ms.D.Pourkodee, M.Sc., NET**  
Electronics, Microprocessors

**Dr.K.Selva Kothai Nachiyar, M.Sc., M.Phil., Ph.D.**  
Solid State Physics, Soil Research,  
Environmental Studies, Science Communication



# Our Department Faculty

## Non-Teaching Staff

**Dr. M. Leena,**  
M.Com., M.Phil., Ph.D.,  
PGDCS , Lab Assistant



**Mr. J. Sathish, B.Sc., M.A.**  
Lab Assistant

**Ms. C. Anitha,**  
B.Sc., (MBA),  
Lab Assistant



**Ms. Jayalakshami Bai**  
Attender

# Collaborative Projects

- \* Prestigious Muthamizh Aringnar Translation Project of Tamilnadu Govt.- Dr.Uthra, Dr.V.Renganayaki and Dr.Selvakothai Nachiar are translating books on Venkatraman Series
- \* Dr. D.Uthra and Dr.Renganayaki are Reviewers e-content in Physics for Higher Secondary students through Samgraha Shiksha, TN School Education Department
- \* Dr.D.Uthra and Dr.V.Renganayaki created 12 posters on S&T milestones of our country for Vigyan Sarvatra Pujyate, DST , Govt.of India
- \* Dr.D.Uthra is involved in Vigyan Vidhushi Project, Vigyan Prasar, DST
- \* Dr.D.Uthra shortlisted as translator for e content by NPTEL
- \* Dr.D.Uthra, is vetting Science worksheets of Vigyan Pratibha, a HBCSE and TIFR , IMSc Initiative
- \* Dr.V.Renganayaki and Dr.D.Uthra involved in translating Books of Issac assimov under Kaleidoscope project, MHRD

# Our Refurbished Laboratory



# Our Science Club 'Triple Helix'

Triple Helix is a Science Club registered as a member of VIPNET (VigyanPrasarNETWORK of science clubs), under Vigyan Prasar, an autonomous organization under DST, Govt. of India. Through this, students get a platform to disseminate knowledge and information on Science & Technology (S&T) by participating in various STEM Activities, Science communication, and Outreach.

The department is actively involved in training School teachers, engage students and teachers in hands-on activities, creating teaching-learning e-content modules, create awareness on inclusivity and women in STEM and popularize Govt. DBT and DST schemes.

## Vision:

Serve as part of a national network of science clubs and be a part of exciting national movement.

## Mission:

Reach out to students and fellow citizens to popularize science.



# Department Achievements



## National Level Online FDP in Science Pedagogy with IAPT

Jointly Organize

Hosted by  
Department of Physics & IQAC

**NATIONAL LEVEL ONLINE FACULTY DEVELOPMENT  
PROGRAMME IN SCIENCE PEDAGOGY**

Dates: 09 - 16, August 2021  
@2pm -4pm

**CHEIF PATRONS**

Shri. Ashok Kumar Mundhra  
Conventor

Dr.S.Santhosh Baboo  
Principal

**ORGANISERS**

Dr. V.Rangarajshri  
Assistant Professor  
Dept. of Physics

Dr. T. S. Pravin  
Coordinator IQAC

**RESOURCE PERSONS**

Dr.T.S.Natarajan  
Professor of Physics, IIT  
Madras

Dr.O.S.K.S.Sastri  
Professor of Physics,  
Central University of Rajasthan

Dr.D.Uthra  
Assistant Professor in Dept.  
of Physics,  
Dr.Jawahar College

Dr.Anupama Harshini  
Dwaraka Doss Goverdhan Doss  
Vishnav College

Dr.Anoop Jaiswal  
Physical Education  
Dwaraka Doss Goverdhan Doss  
Vishnav College

Dr.Apurva Barve  
Coordinator, Centre of Excellence  
in Research and Innovation,  
Dwaraka Doss Goverdhan Doss  
Vishnav College

Dr.C.Vijayan  
Professor of Physics,  
IIT Madras

DWARAKA DOSS GOVERDHAN DOSS  
VAISHNAV COLLEGE  
100th Anniversary Celebrations, 2019-2021  
College with Potential for Excellence  
Creating World of Tomorrow

In association with

**INDIAN ASSOCIATION OF PHYSICS TEACHERS (IAPT)**

Organises

**NATIONAL LEVEL ONLINE FACULTY DEVELOPMENT  
PROGRAMME IN SCIENCE PEDAGOGY**

Hosted by  
Department of Physics & IQAC

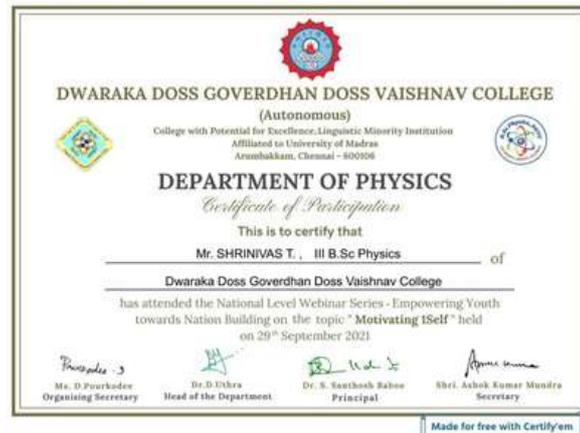
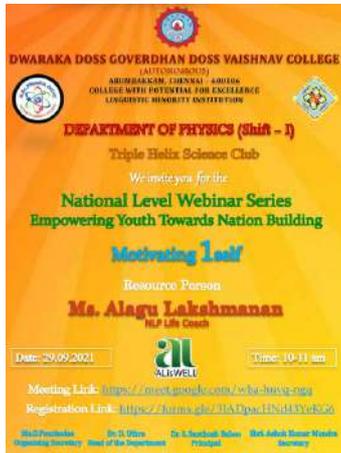
Dates: 09 - 16, August 2021  
@2pm -4pm

**REGISTER  
HERE**

The Department of Physics and Internal Quality Assurance Cell (IQAC) of Dwaraka Doss Goverdhan Doss Vaishnav College organised a National level online faculty development programme in Science pedagogy in association with Indian Association of Physics teachers, (RC 13) during 9-16, August 2021. The objectives of the FDP were to empower the faculty members with innovative pedagogy techniques for their professional development and students and enhanced learning; to inculcate and enhance the abilities of the faculty members to carry out independent research, write successful research projects etc. Also the aim of the FDP included familiarity with the usage of technological tools and simulation methodologies.

<https://youtu.be/r58KHbLBXKQ>  
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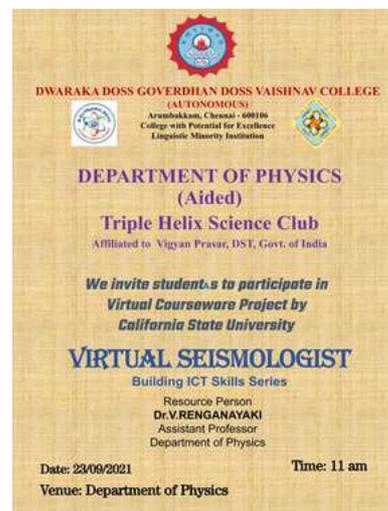
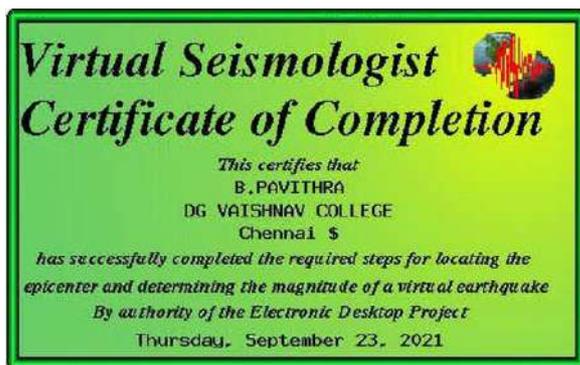
# National Level Webinar Series - Empowering Youth Towards Nation Building- Motivating Oneself



Our Department has organized national level webinar series - Empowering Youth Towards Nation Building on the topic Motivating Oneself under the banner of Triple Helix Science Club. Our Science Club is registered under Vigyan Prasar, DST, Govt. of India. The resource person of the program Ms. Alagu Lakshmanan, Neuro Linguistic Programming - Life Coach, AlisWell, Bangalore interacted with the students very effectively. She introduced strategies & techniques to the students and made them to interact and gave them insight on how to manage Stress, Time Management and to improve self-awareness in themselves.

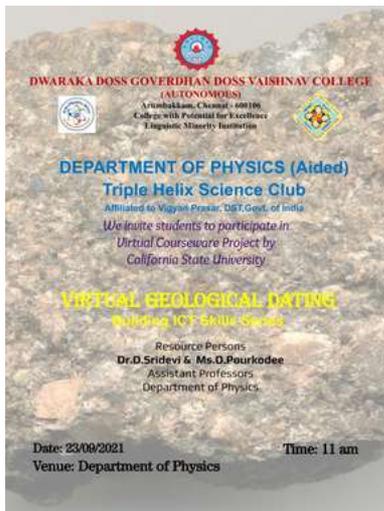
<https://youtu.be/9otevZu2HWE>

## Building ICT Skill Series 'Virtual Seismologist'



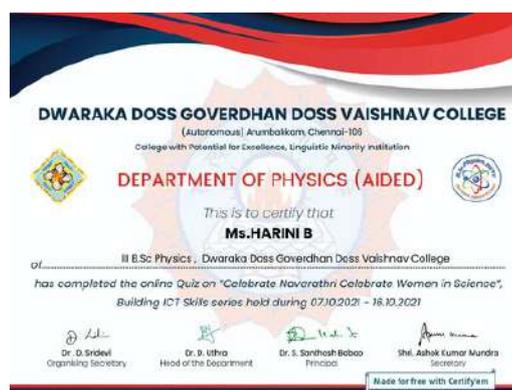
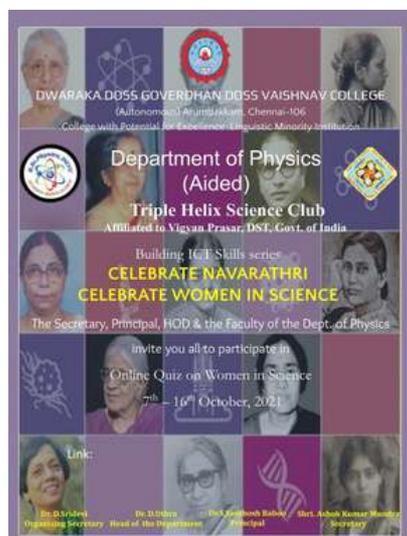
Triple Helix Science Club - Department of Physics (Aided) has organized Building ICT Skill Series, Virtual Seismologist - The Virtual Courseware Project from California State University. This Virtual Courseware produces interactive, online simulations for the life science laboratory or for earth science field studies. The activities are designed to enhance an existing curriculum and include online assessments. Virtual Earthquake is an interactive Web-based activity designed to introduce the user to the concepts of how an earthquake EPICENTER is located and how the RICHTER MAGNITUDE of an earthquake is determined.

# Building ICT Skill Series 'Virtual Dating'



Triple Helix Science Club - Department of Physics (Aided) has organized Building ICT Skill Series, Virtual Dating - The Virtual Courseware Project from California State University. This Virtual Courseware produces interactive, online simulations for the life science laboratory or for earth science field studies. The activities are designed to enhance an existing curriculum and include online assessments. Virtual Dating is an interactive Web-based activity designed to introduce the user to the concepts of how geologists and archeologists determine the ages of rocks and ancient artifacts.

# Building ICT Skill Series – Celebrate Navarathri Celebrate Women in Science -Quiz



As a part of Navarathri celebration, TRIPLE HELIX SCIENCE CLUB of Department of Physics (Aided), Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai organized Building ICT Skill Series online quiz based on India Science. India Science is an Internet-based science Over-The-Top (OTT) TV channel. It is an initiative of the Department of Science and Technology (DST), Govt of India, implemented and managed by Vigyan Prasar (VP), an autonomous organization of the Department of Science and Technology.

# Asteroid day



International asteroid day is observed on June 30th every year and is a United Nations recognized campaign to raise awareness of asteroids, their potential threat to our planet and the scientific secrets that can be discovered by studying them. This day is observed to inspire, engage and educate the people about asteroids opportunities and risks. This year's International Asteroid Day marks the 113th anniversary of the largest recorded asteroid impact that took place near the Tunguska River in Russia's Siberia.

As a part of this awareness program, TRIPLE HELIX SCIENCE CLUB of Department of Physics (Aided), Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai has organized an online picture quiz in collaboration with Asteroid Foundation, Luxembourg to spread awareness about the asteroids and their impact on earth.

# VIGYAN SARVATRA PUJYATE- Popular Science Lecture - In collaboration with DST Govt. of India



Government of India is celebrating a year-long programme Azadi ka Amrut Mahotsav to pay homage and showcase India's achievements in 7

5 years of Independence. The Government of India's science and technology organisations in close partnership with state agencies are leveraging this 'Mahotsav' as an opportunity, to celebrate S&T achievements over the 75 years through programmes that inspire our youth and help them navigate into building a progressive nation.

Vigyan Sarvatra Pujyate (FEB 22-28,2022) is a week dedicated to Science and Technology. This is jointly organised by DST, DBT, CSIR, MoES, DAE, DOS, ICMR, AICTE, and DRDO under the leadership of the office of the Principal Scientific Officer to the Government of India and the Ministry of Culture. Vigyan Prasara has been given the responsibility for coordinating the event. Website: <https://vigyanpujyate.in/>

[https://youtu.be/4oXf3wqK9\\_4](https://youtu.be/4oXf3wqK9_4)

<https://youtu.be/EHNqyMQ-8Q8>



Ariviyal Palagai (An initiative of Vigyan Prasara) work towards bringing out all relevant contents in Tamil Language for this program. In Tamil Nadu, TNSTC (Tamil Nadu Science and Technology Centre) plays a pivotal role in conducting this event during this period. Department of Physics, Dwaraka Doss Goverdhan Doss Vaishnav College, Arumbakkam, Chennai hosted popular Science lectures in association with Ariviyal Palagai and TNSTC.

Dr. Jayasree Sharma, Gynecologist, infertility Specialist & General Physician, Chennai gave a public lecture 'Covid-19 challenges and its Lessons' on 25 February 2022.

Dr. Narendran Gopalan, Scientist - E, Senior Deputy Director, ICMR, National Institute for Research in Tuberculosis - NIRT gave a talk 'Science and spirituality to lead research for a better world in 15 years' on 28 February 2022.



# THROUGH THE WINDOW

JAYA SHREE KS  
III B.Sc. PHYSICS

Through the window,  
I see trees on either sides of the pathway.  
Flourishing with flowers during Spring,  
and the path becomes alive with colours.  
Shedding their leaves during Autumn,  
and they become a graveyard of crimson leaves.  
Then, growing again into crowns of luscious green leaves,  
and the path signifies hope and prosperity.  
The successes, failures and growth are parts of life.  
And change, as they say, is the constant one.



Through the window,  
I see people with different traits but what do they all have in common, I wonder.  
They are in a search. For life. For love. For peace. For a career.  
Each encounters one experiences in here,  
alters them for the good, for the bad.  
I observe them enjoying the moments and I learn from them this: to leisurely live through the journey and focus on  
the moment as the crimson leaves fall over along with the yellow flowers.  
At the end reaching where we need to  
rather than where it leads to  
Is what life is all about.

# EXOPLANETS

JAYA SHREE K S  
III B.Sc. PHYSICS

An exoplanet (planets around other stars) is any planet outside our solar system. Most orbit other stars, but free-floating exoplanets, called rogue planets, orbit the galactic center and are untethered to any star. In Milky Way galaxy, there are about one billion stars like our sun. Also, there are about one billion galaxies in our universe. There are different types of exoplanet present in the universe namely: Earth like planets, Super earth planets, Mini-Neptune planets, large Neptune planets and gas giants. The Earth-like planets are similar to that of our Earth and super Earth planets are potentially a rocky world larger than Earth. Whereas the Neptune-like planets are gaseous worlds around the size of less or greater than Neptune. And gas giants are giant planets composed mainly of gas. But the most common exoplanets are super Earths and mini Neptunes.

The very first exoplanet was discovered in the 1990s and since then we know 4569 confirmed planets. Exoplanets can be detected by direct and indirect methods which consist of the transit method, radial velocity method and many more. Where in a direct imaging method, the central star is blocked, thereby the image of the planet is captured. The transit method only works for star-planet systems that have orbits aligned in such a way that, as seen from the Earth, the planet travels between us and the star and temporarily blocks some of the light from the star once during every orbit. A planet does not usually block much light from a star, (only 1% or less) but this can be detected. By this method, exoplanet can be detected with its size. In radial velocity method where the planet and the star, orbit their common center of mass. Because the star is so much more massive than the planets, the center of mass is within the star and the star appears to wobble slightly as the planet travels around it. Astronomers can measure this wobble by using spectroscopy and estimates the ratio of the masses of the stars, and some orbital elements.

But when multiple methods are used together, we can learn the vital statistics of the whole planetary systems. The TRAPPIST-1 star system is home to the largest batch of roughly Earth-size planets ever found outside our solar system. The star system consists of 7 planets and it was discovered by Spitzer telescope.

The Indian Space Research Organisation (ISRO) is embarking upon Exoworlds, an ambitious exoplanet mission. The launch is set for 2025. The mission 'Exoworlds' would find answers to the queries on the possibility of evolution of life in exoplanet system.

This article is based on the talk 'exoplanets' organized by Indian institute of astrophysics, Bangalore by Prof. T. Sivarani, Indian institute of Astrophysics.

<https://www.youtube.com/watch?v=g9Vr7lwZWdw&feature=youtu.be>

## IS NON-STICK PAN SAFE?

KIRTIVASAN V  
III B.Sc. PHYSICS

If we look back at the history of Indian cooking, people used clay materials, then moved to aluminium and steel. We have spent hours for scrubbing the burnt crust, charred bits than cooking a food, even now we get scolding's from our lovely mum to scrub the vessels properly. So, to help our lovely mothers there comes the Non-Stick pan made of PTFE (polytetrafluoroethylene) material which provide a strong property for cooking like resistance towards friction electrical, mechanical and temperature which the home chefs and expert chefs felt comfortable. PTFE (polytetrafluoroethylene) avoids burn crust, charred bits which were easily stuck in these aluminium, steel and clay vessels. In turn this made the cooking and washing easy. But do we know whether PTFE is safe for health? What if we accidentally consume a PTFE particle during scrambling? Let's have a look on the history of a non-stick pan.



POLYTETRAFLUOROETHYLENE is the slipperiest stuff made by Mr. Plunkett; it is also known as Teflon although it has been a familiar kitchen feature on non-stick cookware since 1960s. Teflon has also made a strong impact in the industrial world it can be found everywhere from electronics to Aeronautics to clothes. we might even have a pair of pants with Teflon embedded in the fabric maybe we have not noticed it. It was invented accidentally in 1938 by a chemist named Roy Plunkett, he was trying to create a CFC gas which is non-toxic refrigerant for Du Pont company but instead of a gas he ended up with a slippery polymer powder. The PTFE has incredible properties came from its molecular structure. It is a polymer, made of long chains of repeating units of atoms strung together.

We know that PTFE doesn't stick to anything, then how can it be so strongly attached to something like a pan?

It's simple, a method which involves sandblasting the pan or etching it with chemicals to make it rough. Then the surface will create a strong friction, to be a grip for the upcoming coat. And a special primer is applied, which acts like a glue. Its exact composition is a trade secret guarded by each manufacturer. The pan is sprayed with liquid PTFE and heated to around 800-degree Fahrenheit. The layers then solidify into a smooth, slick coating. When you later cook eggs in this PTFE-coated pan, the extra tight carbon-fluorine bonds just ignore the water, fat and protein molecules in the eggs. Without these interactions, the food just slides around without sticking.

Do we know whether if it is safe to cook in a PTFE-coated pan?

Yes, it's safe, only when one is careful. PTFE is stable at moderate temperatures, like one would use to cook eggs or fish, but above 500 degrees Fahrenheit, it starts to degrade, and heating it further releases chemical fumes that can make you feel sick. People also used to think that accidentally consuming PTFE that flaked off a scratched pan was bad, but the current consensus is that it's harmless. Because PTFE doesn't interact with other chemicals very well, it isn't thought to break down inside your body, but it is advised to use it carefully by using wooden sticks and soft cloth.

## Conclusion

Non-stick pan is safe to use unless one over heat it. It is definitely a boom to home cooks because of its pros, but at the same it is advised to use soft clothes for cleaning and a wooden stick for cooking. There are lot of good quality non-stick pans available in the market, that you can afford. But the fact is opting a cheaper thing of whatever item would a problem, so opt for a high graded pan and replace it after a long run

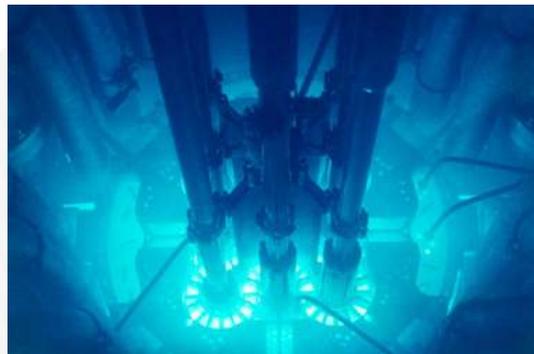
# CHERENKOV RADIATION

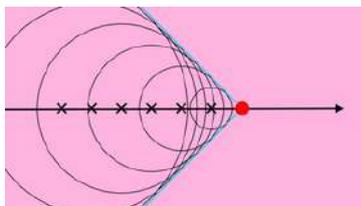
SURENDAR N  
I B.Sc.PHYSICS

Is it possible to go faster than the speed of light? No, but yes, rather than having an object going faster than light instead where an object is traveling at near the speed of light then we slow downlight. The light emitted by the object is called Cherenkov light. It's kind of cheating but physics is all about fun right?

In fact from the experimental point of view, the electromagnetic Cherenkov radiation was first observed in the early 1900s by the experiments developed by Marie and Pierre Curie when studying radioactivity emission. In essence, they observed that the phenomenon consists of the very faint emission of a bluish-white light from the transparent substances in the neighborhood of strong radioactive substances. But the first deliberate attempt to understand the origin of this light was stated by Mallet in 1926-1929. He observed that this light emitted by a variety of transparent bodies placed close to a radioactive source always had the same bluish-white quality. Mallet found such an emission; he could not explain the nature of this phenomenon. But the complete work was carried out between the years 1934-and 1937 by Pavel Alekseyevich Cherenkov. To honor both the physicists this effect is still called Wawilov-Cherenkov radiation in Russia. Only 3 years later soviet jet physicists Ilya Frank and Igor Tamm performed the theoretical description and developed the Frank-Tamm formula which describes the whole spectrum completely. In 1958 Cherenkov, Tamm and Frank were eventually awarded the Nobel Prize in Physics "for the discovery and interpretation of the Cherenkov effect".

According to classical physics, a moving charged particle emits electromagnetic waves. In a quantum mechanical picture, when a charged particle moves inside a polarizable medium with molecules, it excites the molecules to the higher levels and excited states. Upon returning to their ground state, the molecules re-emit some photons in the form of electromagnetic radiation. So when an electrically charged particle moves through a dielectric medium (glass or plastic) faster than the speed of light (because the speed of light in a dielectric medium is less than the vacuum), the light emitted by that particle is called Cherenkov light.





From the above picture, If the light is emitted at a point  $x$ , it radiates from that point in a sphere. The sphere grows at the speed of light but the particle, which is represented by this red dot, is traveling faster than the speed of light. We can see that the dot moves from the point  $x$  faster than the sphere grows. This is a continuous process with a series of spheres. There are quite a lot of areas of application for the Cherenkov Effect. The probably most important one is the detection of cosmic radiation using so-called Cherenkov flashes. For example, in the IceCube neutrino observatory at the South Pole, a block of ice of  $1\text{km}^3$  is used. Neutrinos react with the ice and create muons which then radiate Cherenkov light due to the high index of refraction of ice.

[https://www.thphys.uni-heidelberg.de/~wolschin/eds14\\_3s.pdf](https://www.thphys.uni-heidelberg.de/~wolschin/eds14_3s.pdf)

[https://rjp.nipne.ro/2010\\_55\\_5-6/0601\\_0618.pdf](https://rjp.nipne.ro/2010_55_5-6/0601_0618.pdf)

<https://www.youtube.com/watch?v=YjxOBSXaOKs>

## RAMAN EFFECT

PAVITHRA B  
II B.Sc. PHYSICS

In 1921, C.V. Raman was on a trip to Europe when he noticed the striking blue colour of some icebergs and the Mediterranean Sea. He was inspired to want to understand the reason behind the phenomenon. He conducted experiments with transparent blocks of ice and light from a mercury arc lamp. He recorded the spectra from shining the light through ice and detected what would come to be known as the Raman Lines, caused by the Raman Effect.

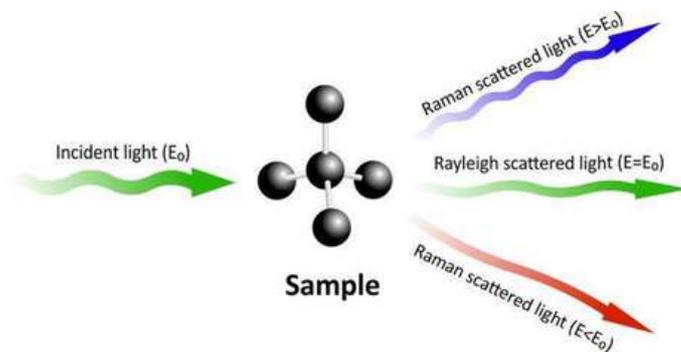
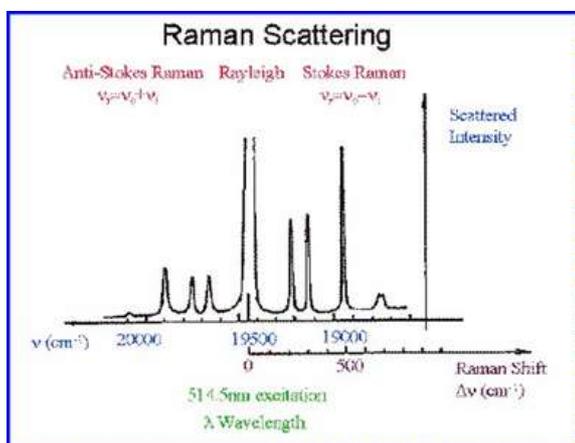
The Raman Effect is the process of scattering light particles by molecules of a medium. The scattering occurs due to a change in the wavelength of light as it enters the medium. When a beam of light travels through a dust-free, transparent chemical, a small fraction of the light emerges in directions other than where it should.

When the photons strike molecules in a medium at high speeds, they bounce back and scatter in different directions depending on the angle with which they hit the molecules. If the frequency of the incident and the emitted photon is different, then it's called Raman scattering. Raman scattering can be separated into stokes and anti-stokes lines. In the stokes line, the frequency of the emitted photon is less than the frequency of the incident photon.

Raman Effect had become the principal method of non-destructive chemical analysis for both organic and inorganic compounds. The unique spectrum of Raman scattered light for any particular substance served as a "fingerprint" that could be used for qualitative analysis, even in a mixture of materials. Raman spectroscopy could be applied not only to liquids but also to gases and solids.

Raman spectroscopy has been used to monitor manufacturing processes in the petrochemical and pharmaceutical industries. Illegal drugs captured at a crime scene can be analyzed rapidly without breaking the evidence seal on the plastic bag. Chemists can watch paint dry and understand what reactions are occurring as the paint hardens. Using a fibre-optic probe, they can analyze nuclear waste material from a safe distance.

Raman received the Nobel Prize in Physics in 1930 for the discovery of the Raman effect and was the first Asian to receive a Nobel Prize in any branch of science.



<https://www.acs.org/content/acs/en/education/whatischemistry/landmarks/ramaneffect.html#c-v-raman>

<https://theprint.in/science/what-is-raman-effect-the-discovery-that-india-celebrates-with-national-scienceday/372787/>

# FACTS ABOUT MARS

ROHITH AK  
II B.Sc.PHYSICS

1. Mars is also known as the Red Planet. This is because Mars is covered in soil, rock, and dust made from iron oxide which gives the surface a red rusty color.
2. Mars is named after the Roman god of war.
3. Mars has 2 moons called Deimos and Phobos. They are named after the two horses that pull the Roman god of war, Mars', chariot. They may be asteroids captured by Mars' gravity.
4. A day on Mars lasts 24 hours and 37 minutes.
5. One year on Mars is 687 days long. That's 1.9 Earth years. This is because Mars is further away from the sun so it takes longer to orbit it.
6. The tilt on the axis of Mars is 25 degrees which means that the planet experiences seasons like we do on Earth as different parts of the planet are closer to the sun at different times of its orbit.
7. Mars has very weak gravity. Gravity on Mars is 37% less than on Earth. This means that on Mars you could jump 3x higher than on Earth.
8. Mars experiences violent dust storms powered by the sun which can last for months. The dust storms can completely cover the planet and continually change Mars' surface.
9. Mars is home to Olympus Mons, a dormant volcano and the largest volcano and highest mountain in our solar system. It is 16 miles high and 600 km across the base, making it 3x the height of Mount Everest.
10. Mars has the largest canyon in our solar system, Valles Marineris. It is 4 miles deep and stretches thousands of miles long.

[https://www.littlehouseofscience.com/20\\_fascinating\\_\\_fun\\_science\\_facts\\_planet\\_mars](https://www.littlehouseofscience.com/20_fascinating__fun_science_facts_planet_mars)



# INTERESTING FACTS ON STARS

ABINAYA R  
II B.Sc. PHYSICS

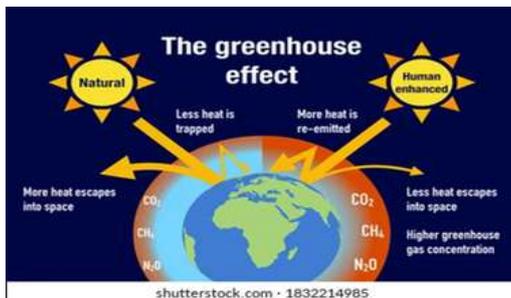
- Every star you see in the night sky is bigger and brighter than our sun - Of the 5,000 or so stars brighter than magnitude 6, only a handful of very faint stars are approximately the same size and brightness as our sun and the rest are all bigger and brighter. Of the 500 or so that are brighter than 4th magnitude (which includes essentially every star visible to the unaided eye from an urban location), all are intrinsically bigger and brighter than our sun, many by a large percentage. Of the brightest 50 stars visible to the human eye from Earth, the least intrinsically bright is Alpha Centauri, which is still more than 1.5 times more luminous than our sun and cannot be easily seen from most of the Northern Hemisphere.
- Red hot and cool ice blue - NOT! We are accustomed to referring to things that are red as hot and those that are blue as cool. This is not entirely unreasonable, since a red, glowing fireplace poker is hot and ice, especially in glaciers and polar regions, can have a bluish cast. But we say that only because our everyday experience is limited. Heated objects change colour as their temperature changes, and red represents the lowest temperature at which a heated object can glow in visible light. As it gets hotter, the colour changes to white and ultimately to blue so the red stars you see in the sky are the "coolest" (least hot), and the blue stars are the hottest!
- Our sun is a green star - That being said, the sun is a "green" star, or more specifically, a green-blue star, whose peak wavelength lies clearly in the transition area on the spectrum between blue and green. This is not just an idle fact but is important because the temperature of a star is related to the colour of its most predominant wavelength of emission. (Whew!) In the sun's case, the surface temperature is about 5,800 K, or 500 nanometres, a green-blue. However, as indicated above, when the human eye factors in the other colours around it, the sun's apparent colour comes out a white or even a yellowish-white.
- Stars don't twinkle - Stars appear to twinkle ("scintillate"), especially when they are near the horizon. One star, Sirius, twinkles, sparkles and flashes so much sometimes that people report it as a UFO. But in fact, the twinkling is not a property of the stars, but Earth's turbulent atmosphere. As the light from a star passes through the atmosphere, especially when the star appears near the horizon, it must pass through many layers of often rapidly differing density. This has the effect of deflecting the light slightly as it were a ball in a pinball machine. The light eventually gets to your eyes, but every deflection causes it to change slightly in colour and intensity. The result is "twinkling." Above the Earth's atmosphere, stars do not twinkle.

<https://www.nasa.gov/ames/spacescience-and-astrobiology/interesting-fact-of-the-month/past>

# GREEN HOUSE EFFECT

MUNEESH KUMAR V  
I.B.Sc. PHYSICS

The presence of the atmosphere on the earth plays a very important role in human lives. The top of the atmosphere is at  $-19^{\circ}\text{C}$  and the bottom of the atmosphere is at  $+14^{\circ}\text{C}$ . The increase in  $33^{\circ}\text{C}$  from top to bottom is due to some gases present in the atmosphere. These gases are called Greenhouse gases and this effect is called the Greenhouse effect. The greenhouse gases are mainly  $\text{CO}_2$ , water vapour, Ne, He,  $\text{NO}_2$ ,  $\text{CH}_4$ , Xe, Kr, ozone and  $\text{NH}_3$ . Except for  $\text{CO}_2$  and water vapour, all others are present only in a very small amount in the atmosphere. The radiation from the Sun is mainly in the visible region of the spectrum. The earth absorbs these radiations and reradiates them in the infrared region. Carbon dioxide and water Vapour are good absorbers of infrared radiation since they have more vibrational degrees of freedom compared to nitrogen and oxygen which keeps the earth warmer. The amount of  $\text{CO}_2$  present in the atmosphere is increased from 20% to 40% due to human activities since the 1900s.



The major emission of  $\text{CO}_2$  comes from the burning of fossil fuels. The increase in automobile usage worldwide causes this damage. Due to this increase in the  $\text{CO}_2$  content in the atmosphere, the average temperature of the earth increases by  $1^{\circ}\text{C}$ . This effect is called global warming.

It has a serious influence and alarming effect on ice glaciers in Arctic and Antarctic regions. In addition, the  $\text{CO}_2$  content is also increasing in the ocean which is very dangerous to species in the ocean. In addition to  $\text{CO}_2$ , another very important greenhouse gas is Chloro fluorocarbon(CFC) which is used as a coolant in refrigerators worldwide. In human-made greenhouse gases,  $\text{CO}_2$  is 55%, and CFCs are 24%. Nitrogen oxide is 6% and methane is 15%. CFCs also have made huge damage to the ozone layer. A lot of efforts are taken internationally to reduce the emission of  $\text{CO}_2$  and CFCs in various countries. Nowadays a lot of research is going to replace non-fossil fuels to replace the fossil fuels in the automobile industry. The major emission of  $\text{CO}_2$  comes from developed countries like the USA and European countries. Various treaties are formed between countries to reduce the emission of  $\text{CO}_2$  to a considerable level before the 2020s. But still, global warming is not taken seriously in various countries.

<https://www.britannica.com/science/greenhouse-effect>

# WHAT IF EARTH STOPPED SPINNING?

UDHAYA SRI C  
I B.Sc. PHYSICS

- The earth rotates at an average speed of 1,000 miles per hour giving us day and night while harnessing wind, tides and temperature. So what happen if these revolutions that are so vital to our existence were to suddenly stop. The moment the earth stops spinning everything that isn't safely secured or tied down will be suddenly sent flying 1,000 miles per hour due to the heavy wind.
- The fastest wind ever recorded was 253 Miles per hour, but in this scenario, we are talking about winds four times as strong as an atomic blast.
- Our planet transforms to make a perfect sphere. In less than a minute towering tsunamis would sweep more than 17miles inland. All the water from the world's ocean would surge towards the pole. Since the globe bulges at the equator. The seven seas would turn into two forming One Mega ocean in the North and another in the South.
- The oceanic displacement would form a massive supercontinent along the equator wrapping the entire earth. While this might make it easier for any surviving humans to work together there'd be little anyone could do to improve their lot.
- Resources would be scarce the world would experience wide-scale Drought and most species will be endangered if not already extinct.
- Agriculture would be nearly impossible to maintain since a full day would now last an entire year. In other words, you'd see the sun for six straight months and another half of the year in Deadly cosmic rays effectively kill all living things on the planet and over time the world as we know it would turn into Mars as we know it.
- Even if we don't come to a screeching stop, the world will one day stop spinning in about 18.5 billion years.

<https://whatifshow.com>

<https://astrosociety.org>



# THE KARDASHEV SCALE

SUJITHAA K  
I B.Sc.PHYSICS

The Kardashev scale is a purely hypothetical scale for measuring a civilization's level of technological advancement based on the amount of energy it can harness. It was devised in 1964 by a soviet astronomer, Nikolai Kardashev while considering an important question related to the Search for Extraterrestrial Intelligence (SETI). This scale defined three levels of civilizations, based on the order of magnitude of power the civilization can harness. Nikolai Kardashev had proposed three basic categories in The Kardashev scale; they are Type I, Type II, and Type III.

Type I, a civilization that is capable of harnessing the total energy of its planet. This Type I civilization is usually defined as one that can harness all the energy that reaches its home planet from its parent star and perhaps can harness the power of volcanoes, simply all the planetary power is within their control. The energy usage of this civilization is  $10^{16}W$ . Type I civilization is also called planetary civilization.

Type II is a civilization that is capable of harnessing the energy of material resources of its host star and its planetary system. Noble Prize-winning physicist Freeman Dyson proposed a hypothetical structure that would help to harness the energy of its host star known as the Dyson sphere, an advanced structure that is constructed around its host star. This Dyson sphere will act like a machine that would surround the star and be able to collect all of its energy. The energy usage of the civilization is  $10^{26}W$ . Type II civilization is also called a stellar civilization.

Conceptual art of Dyson sphere

Type III, A civilization able to marshal the energy and material resources of its entire host galaxy. This super civilization could use all the energy produced by all the stars in their host galaxy, one way of achieving this type of civilization is by covering every star in their galaxy with Dyson spheres. A typical galaxy contains a few hundred million stars, so that is a whole lot of energy. The energy usage of this civilization is  $10^{36}W$ .

Type III civilization is also called a galactic civilization. In 2015, a study of galactic mid-infrared emissions concluded that "Kardashev type III civilizations are either very rare or do not exist in the local universe".





Various extensions of the scale have since been proposed including a wider range of power levels (types 0, IV, V and VI). Kardashev believed a Type IV civilization was too advanced and didn't go beyond Type III on his scale

Type 0, a civilization able to use the energy of its home planet, but not to its fullest

At the current time, humanity has not yet reached Type I civilization status. We are currently at about 0.73 on the Kardashev scale. Physicist and futurist Michio Kaku suggested that, if humans increase their energy consumption at an average rate of 3 per cent each year, they may attain Type I status in 100-200 years, Type II status in a few thousand years.

[https://en.m.wikipedia.org/wiki/Kardashev\\_scale](https://en.m.wikipedia.org/wiki/Kardashev_scale)

<https://bigthink.com/13-8/kardashev-scale/>

## Invention of Telescope

NANDHINI V  
I B.Sc.PHYSICS

Many people believe that Galileo Galilei was the first astronomer to invent and build the telescope; However, the first telescope was made by Hans Lipperhey in the early 1600s. He is a Dutch Glass maker, and he managed to reduce the amount of light in his telescope while focusing it. His model inspired other scientists to work on Perfecting the telescope.

What is the history of the telescope?

The telescope back to early makers of eyeglasses and lenses. In 1400s, glasses were used widely across Europe. These lenses weren't clear and powerful. By the end of the 1500s and early 1600s, lens makers improved their abilities to cut and polish glasses. It was at this time that Hans Lipperhey, who made spectacles in the Netherlands, began experimenting with lenses

Since Lipperhey allowed only a small amount of light to enter his telescope, and focused it, the images became clear but remained dim. No other telescope makers have done this, so this was the beginning of the telescope's evolution. In September of 1608, Lipperhey took his telescope to Prince Maurice of Nassau. A week later, Lipperhey was applied to patent his new device. Other scientists and glass makers came forward to claim that they has similar devices. Lipperhey was denied because of the claims. The telescope were spread across the Europe after Lipperhey. By the end of may in 1609, the telescopes could easily be found and purchased in large cities like Paris. Galileo picked up Lipperhey's telescope and began to improve it. Galileo's telescope was the first to be used for space observation. Later, Thomas Harriot in England managed to build a telescope that could magnify objects by eighttimes.



**What did the first telescope look like?**

The first telescope consisted of long tubes with one or several cylindrical sections. The tube could be made of tin, lead, cardboard, and wood held together by Copper, cloth, or leather ties and /or glue. Polished lenses and mirrors were placed inside the tubes to magnify images and reflect light.

**Current modern telescope:**

NASA is currently constructed the James Webb Space Telescope. The webb will be primarily act as an infrared telescope. The mirror in the Webb is comprised of 18 different segments that fold and adjust. To protect it from the sun, the telescope has a shield with five layers, each the size of tennis court. Hubble telescope is the most well known of modern telescope. It was launched in the year 1990.

[https://en.m.wikipedia.org/wiki/History\\_of\\_the\\_telescope](https://en.m.wikipedia.org/wiki/History_of_the_telescope)  
<https://nineplanets.org/questions/who-invented-the-telescope/>

# INTERESTING FACTS ABOUT EARTH

SANGEETHA C  
I B.Sc PHYSICS

From extreme climates to peculiar creatures, here are some top facts about Earth.

- Did you know that our planet is rocketing around the sun at 67,000 mph? Or that it may once have been purple? Here are 50 facts about Earth.

## 1. We are the third rock from the sun

Our home, Earth, is the third planet from the sun and the only world known to support an atmosphere with free oxygen, oceans of liquid water on the surface and life. Earth is one of the four terrestrial planets, according to NASA: Like Mercury, Venus and Mars, it is rocky at the surface.

## 2. Earth is squashed

Earth is not a perfect sphere. According to the National Oceanic and Atmospheric Administration (NOAA), as Earth spins, gravity points toward the centre of our planet (assuming for explanation's sake that Earth is a perfect sphere), and a centrifugal force pushes outward. But since this gravity-opposing force acts perpendicular to the axis of Earth, and Earth's axis is tilted, centrifugal force at the equator is not exactly opposed to gravity.

## 3. The planet has a waistline

Gravity pushes extra masses of water and earth into a bulge, or "spare tire" around our planet. At the equator, the circumference of the globe is 24,901 miles (40,075 kilometres), according to Space.com. Bonus fact: At the equator, you would weigh less than if standing at one of the poles.



#### 4. Earth is on the move

You may feel like you're standing still, but you're constantly moving fast. Depending on where you are on the globe, you could be spinning with the planet at just over 1,000 miles per hour, according to Space.com.

People on the equator move the fastest, while someone standing on the North or South pole would be perfectly still. (Imagine a basketball spinning on your finger. A random point on the ball's equator has farther to go in a single spin as a point near your finger. Thus, the point on the equator is moving faster.)

#### 5. The planets move around the sun

The Earth isn't just spinning: It's also moving around the sun at 67,000 miles (107,826 km) per hour, according to the American Physical Society.

#### 6. Earth is the billions of years old

Researchers calculate the age of the Earth by dating both the oldest rocks on the planet and meteorites that have been discovered on Earth (meteorites and Earth formed at the same time when the solar system was forming). Their findings? Earth is about 4.54 billion years old, according to the National Center for Science Education.

#### 7. The planet is recycled

The ground you're walking on is recycled. Earth's rock cycle transforms igneous rocks to sedimentary rocks to metamorphic rocks and back again.

<https://www.livescience.com/19102-amazing-facts-earth.html>



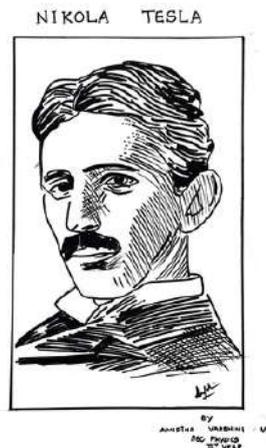
# Artwork by our Students



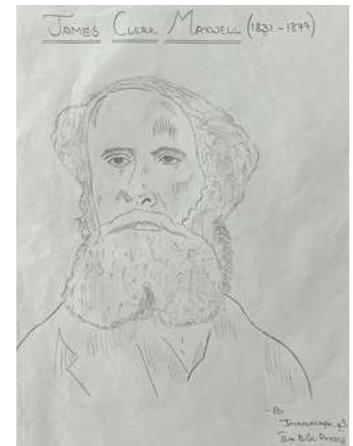
**JAYASHREE K S**  
III B.Sc.Physics



**VASANTH R**  
III B.Sc.Physics



**AMIRTHA VARSHINI V R**  
II B.Sc. Physics



**JAYAPRAKASH S**  
II B.Sc. Physics



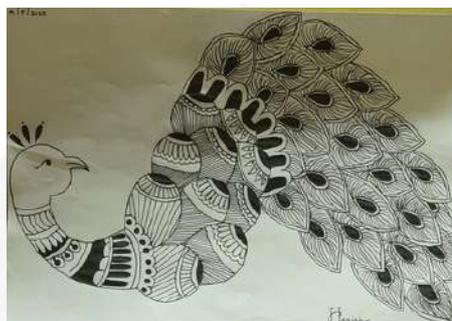
**ABHIJITH R**  
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BHARATHI.V**  
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**GAYATHRI S**  
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**HARISHRIRAM H**  
III B.Sc.Physics

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# VIRTUAL SIEMOLOGIST & VIRTUAL CARBON DATING-Virtual Courseware Projects





# Achievements by our students



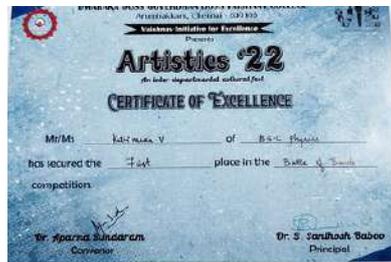
Pride 2022 Trophy



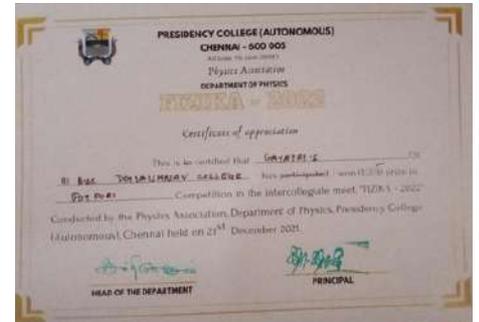
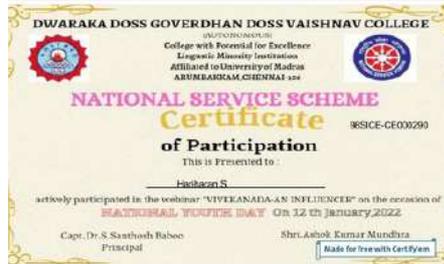
Performance during NAAC visit



Artistic 2022









# Congratulations!

**JAM 2022** JAM 2022 Scorecard  
Joint Admission test for Masters  
Indian Institute of Technology Roorkee

**CANDIDATE'S DETAILS**

Name: **SHRIHARI KANNAN** Date of Birth: **23-Mar-2002**  
Parent's/Guardian's Name: **K KANNAN** Registration Number: **PH711F420**

**CANDIDATE'S PERFORMANCE**

Test Paper (Code)	Number of Candidates Appeared in the Test Paper	Marks Scored (out of 100)	All India Rank
Physics (PH)	12740	42.00	1106

**CUT-OFF MARKS\***

Test Paper (Code)	GEN	GEN-EWS/OBC-NCL	SC/ST/PwD
Physics (PH)	26.00	23.45	13.00

\*A candidate is considered to be in the merit list if the marks scored are greater than or equal to the cut-off marks registered for the category, for which a valid category certificate, if applicable, must be produced along with this Scorecard.

17 March 2022  
Digital Signature: 03c5d0f3a4e208a2c59f7d2d70a7034f

Prof. Ramesh Krishna Peddinti  
Organizing Chair, JAM 2022  
(on behalf of JAM AD)

- Candidates should note that being on the merit list on any test paper neither guarantees nor entitles one to admission to IITs or IISc.
- Candidates who are in the merit list of JAM 2022 can apply for admission to programmes at IITs and IISc, for which they are eligible entry in the academic year 2022-23.
- For admission to various programmes, the candidates in the merit list must submit the admission form ONLINE at the JAM Online Application/Processing System website (<https://jaos.iit.ac.in>) between 11 April 2022 and 11 May 2022 with all the relevant documents. There is NO need to send a hard copy of the admission forms/documents. Only those applications that are complete in all respects and have been properly submitted/uploaded within the stipulated time and date will be considered.
- Upon applying, offers will be made to candidates based on the order of merit, the candidate's choice(s) and the number of seats available at the admitting institute(s). Such candidates must satisfy the Eligibility Requirements (ERs) and Minimum Educational Qualifications (MEQs) of the programme(s) of the admitting institute(s). The fulfilment of ERs & MEQs is decided by the department offering the programme and the prerogative to accept/reject the candidate vests with the department.
- For latest updates on ERs, MEQs and other admission related information, the candidate must refer to the JAM 2022 official website: <https://jam.iit.ac.in> and the Admission Brochure available therein.
- The authenticity of the contents of this Scorecard may be verified with the JAM Office, Indian Institute of Technology Roorkee, Roorkee - 247667, until July 29, 2022.
- Information given in this Scorecard should not be used by any person/institute without prior permission of the JAM Office, Indian Institute of Technology Roorkee, Roorkee - 247667.

## Shrihari K III B.Sc. Physics Cleared JAM - 2022

## Harini B. III B.Sc. Physics Cleared MAT FEB 2022

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ROLL NUMBER : 316218211  
NAME : HARINI B  
GENDER : FEMALE  
PATRIENY'S NAME : BALASUBRAMANIAN S

DOB : 16 AUGUST 2001  
CATEGORY : GENERAL  
WORK EXPERIENCE : NOT WORKING  
MOTHER'S NAME : SULOCHANA S

Language Comprehension		Mathematical Skills		Data Analysis & Sufficiency		Reasoning & Critical Reasoning		Indian & Global Environment	
Scaled Score	Percentile Below	Scaled Score	Percentile Below	Scaled Score	Percentile Below	Scaled Score	Percentile Below	Scaled Score	Percentile Below
69.63	95.45	52.29	68.28	78.07	87.66	51.64	66.92	60.75	69.81
Composite Score		Percentile Below		Scaled Score		Percentile Below		SPECIAL UP TO: FEBRUARY 2022	
721.56		95.62		95.62		95.62		SIGNATURE	

Note:

- Please refer to the website (<https://www.aima.org>) to view, download, update and upload scaled score and its information pdf to internet your score.
- Your score has already been e-mailed to the mail id registered by you.
- Score card will be downloaded from AIMA website only. Score card can be used as soft copy.
- You need retain this score card for future reference and records.

**Management Aptitude Test and Test Scores**

- The Management Aptitude Test (MAT) is designed to measure the aptitude of a candidate for pursuing management education and should be used only for this purpose.
- MAT is administered in five sections-Language Comprehension, Mathematical Skills, Data Analysis & Sufficiency, Intelligence & Critical Reasoning and Indian & Global Environment-each section testing a different ability relevant for management education.
- All MAT administrations necessarily have different questions. Thus one administration may be slightly more difficult or less difficult than another. Scaling has been used to take care of these differences.
- The scaled scores reported are standardized scores for respective sections. These scores are reported on a scale of 0 to 100. Extreme scores (below 15 or above 85) are rare.
- The percentile below column indicates the percentage of candidates in the test who scored below that of the candidate in the section.
- The Composite score is an overall scaled score based on the first four sections of MAT. This is reported on a scale of 0 to 900.
- The percentile below for the Composite Score represents the percentage of candidates whose composite scores are below the candidate's. The composite score has a validity period of one year.
- All scores and percentile below figures are reported after rounding off to the nearest whole number.
- Personal data is as reported by the candidate.

©-AIMA

## Dubbing Videos Initiative under STEM

As a part of STEM Initiative, Our department students are part in dubbing videos created by Padmashri.Aravindgupta. These are to create a help handle to school children of Tamilnadu to understand their science concepts better. This initiative was also a great learning for our students to develop their skills too.

### The Team



**SANDHIYA R**  
**19D1121**



**SHRINIVAS T**  
**19D1130**



**ABINAYA H**  
**19D1150**



**VANI SRI D**  
**19D1134**



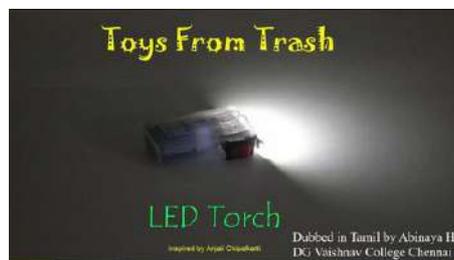
**VASANTH R**  
**19D1141**



**DAKSHAYANI T**  
**19D1137**

Our students have dubbed nearly 25+ videos this year and 100+ videos in past years, which are out in the Youtube channel of Padmashri Aravindgupta. Few photos of the videos are shared here and the links to the recent videos are also mentioned. Click on the video names to watch and enjoy Watch and have a fantastic experience

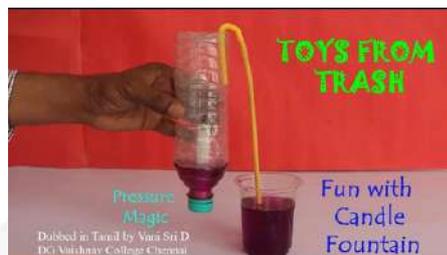
- [Expansion of air](#)
- [Shimmering Fish](#)
- [Moving Monkeys](#)
- [Potato Inertia](#)
- [Brain Muscle Coordination](#)
- [L.E.D. Torch](#)
- [Tin Shrink](#)
- [Fun with Candle](#)
- [Air has Weight](#)
- [Hiding Fish](#)
- [Soda bottle Fountain](#)
- [Resistant Pencil](#)
- [Bottle Shower](#)
- [Bi Metallic Alarm](#)
- [Shimmering Matchbox](#)
- [Terrific Tornado](#)
- [Paper Circuit Greeting](#)
- [Fun with CO2](#)
- [Fun with Hot Water](#)
- [Straw Flute](#)
- [Musical Sound](#)
- [Two Bottle Fountain](#)
- [Fun with Candle Fountain](#)
- [Invisible Glass](#)
- [Fun with Colourful Gas](#)



L. E. D. TORCH - TAMIL  
1.4K views · 7 months ago



AIR HAS WEIGHT - TAMIL  
1.9K views · 7 months ago



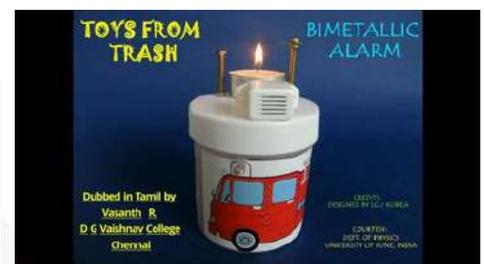
FUN WITH CANDLE FOUNTAIN - TAMIL  
1.1K views · 7 months ago



FUN WITH CO2 - TAMIL  
1.7K views · 7 months ago



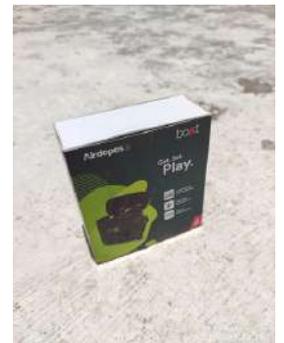
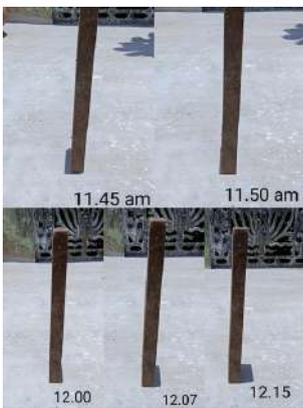
INVISIBLE GLASS - TAMIL  
3.4K views · 7 months ago

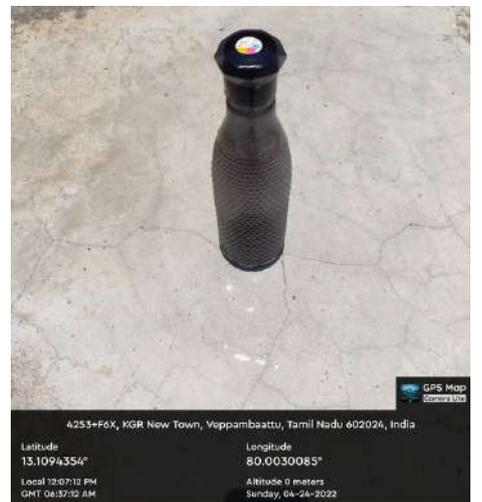


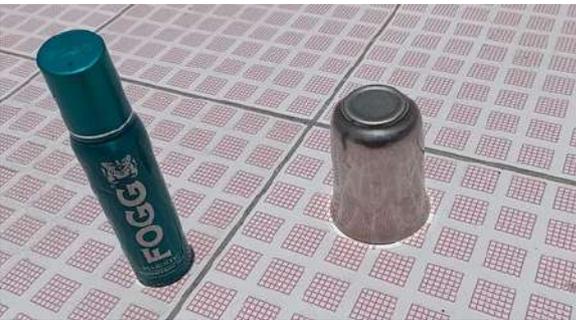
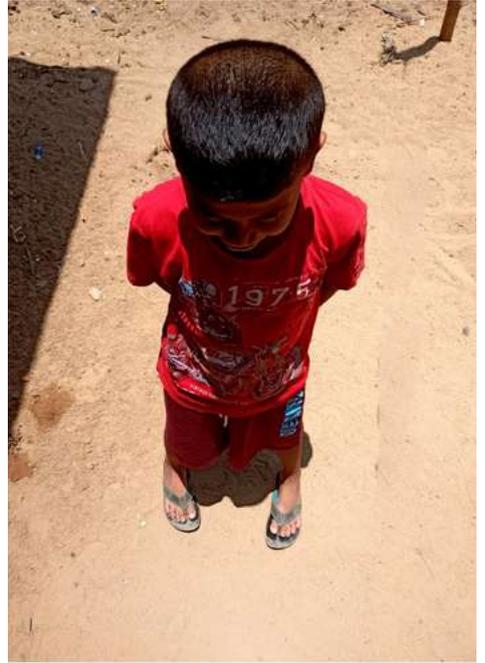
BI-METALLIC ALARM - TAMIL  
1.3K views · 7 months ago

# Zero Shadow day

Zero Shadow is a phenomenon when the sun is exactly overhead and the shadows of symmetrical and vertical objects vanish. This happens for locations between the tropics and is caused by the northern and southern motion of the sun during the course of a year. This was observed in Chennai and Bangalore on April 24, 2022, and our students enthusiastically captured it. Below, we have pictures captured by our students. Our III Year students Santhosh Babu S, Jaya Shree KS, Vani Sri D, Sandhiya R, Harini B, Shrinivas T, Vignesh J, Hariharan S, Gopinath R, Kirtivasan V, Dakshayani T, Vasanth R and Abhijith R from II Year, and I Year students Arif Mohammed A, Ganesh B, Giridurai D, Harshaa V, Meenakshi G, Muneesh Kumar V, Nandhini V, Pranava, Rithika Anbu, Bharathi V, Samrithik S, Sangeetha C, Siddharthan K, Sorna Kumar.V, Sujith Bala, Sujithaa K, Vineeth V captured the photos below during Zero Shadow Day.







# Ayudha Pooja Celebration



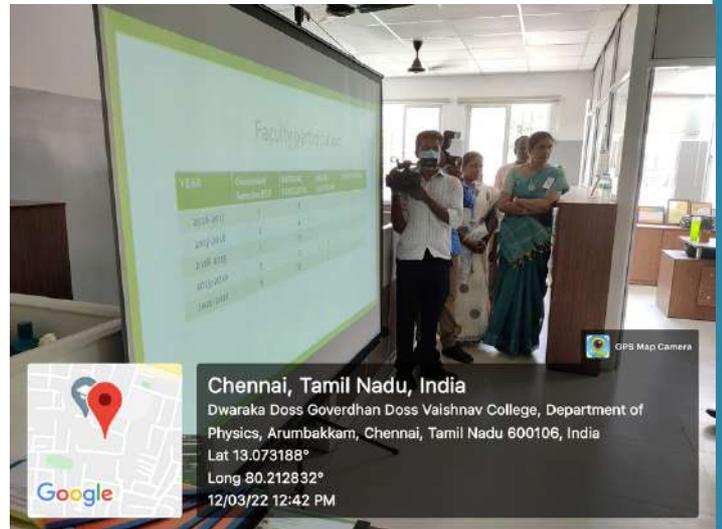
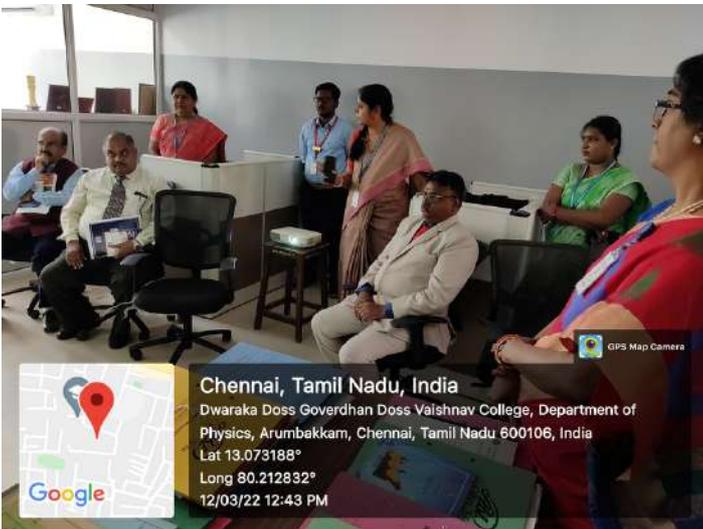
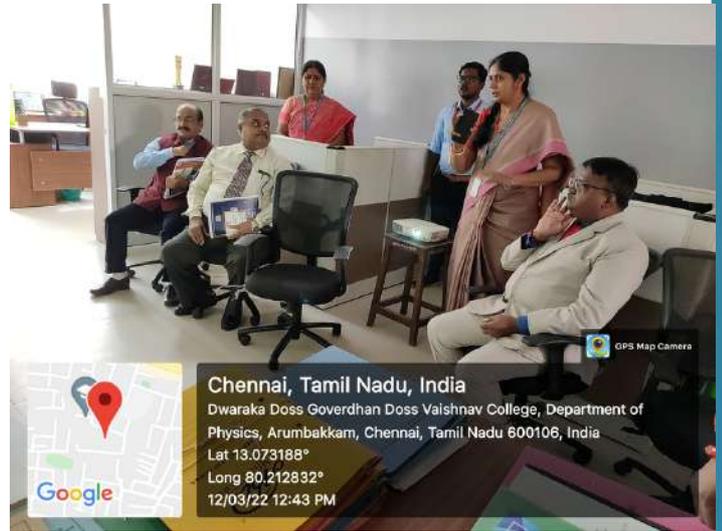
Watch this video on

<https://youtu.be/xv2PgZS-am0>

# NAAC Visit



# AUTONOMY Visit



# Our Youtube channel

As mentioned throughout, our students have left no way of learning out, they show great interest towards creation and they are active in our youtube channel too. We have our youtube channel entitled as *DGVC PHYSICS* where our students share different lessons for school children and various general awareness information. Our alumni students share their experience and college life to others via this.

We have uploaded nearly 60 videos in our channel of various fields.

Click below to subscribe our channel

[DGVC PHYSICS](#)



**Celebrate Women in STEM**  
3 videos · DGVC PHYSICS

- Women in STEM series 1. Dr.B.Vijayalakshmi (5:47)
- Women in STEM series 3. Bimla Buti (2:43)
- Women in STEM Series 2. Dr. Kamala Sohoni (4:39)

**Basic Electronics - S...**

**Basic Electronics - Semiconductor Physics**  
DGVC PHYSICS

These are the teaching learning materials created by our students with teachers guidance. These videos will help College students and Higher Secondary school students learn these concepts.

3 videos

- Semiconductor Diodes-Part1 (18:59)
- Semiconductor Diodes- Part 2- Characteristics of a pn junction diode (11:42)
- Semiconductor Physics - Part 3- Characteristics of a Zener Diode (6:29)



**National Science day - Covid 19 lessons and challenges**  
176 views · 2 mo ago

**Feedback from our students**  
30 videos · DGVC PHYSICS

- Helping students to identify their skills pays...Shravan ... (5:45)
- One platform leads to another... says Shravan, a ... (5:17)
- Sportsman SM Sekhar on support he recieved to ... (7:40)
- Shanmaathi our Allied Physics student on her le... (2:19)
- YouTuber Abirami on her Allied Physics Days (7:34)

**Digital electronics - ...**

**Digital electronics - Learning material created by our students**  
DGVC PHYSICS

3 videos

- De Morgan's Theorems I&II using Logic gates (5:53)
- NAND, NOR, EXOR and EXNOR gates (5:35)
- Learn Basic Logic Gates (5:53)

**National Level Online Faculty Development Programme in Science Pedagogy**  
712 views · 8 mo ago

Dr.V.Rengasayagi Asst Prof, Dept of Physics, Convener of FDP

42 Dislike Live chat Share Download Save

DGVC PHYSICS 211 subscribers



**Commerce students demonstrate basic concepts they learnt in Non-Rigour Elective Physics, Nov, 2019**  
583 views · 11 mo ago

**Social media addiction by SriRanjan**  
43 views · 4 months ago

Home : Sri Ranjan.S  
Reg no : 1613091063126  
Roll no : 38D1349

4 Dislike Live chat Share Download Save

DGVC PHYSICS 177 subscribers

**National Science Day-Vijayan Survarthi Palyate- Dr.Narendran Gopalani, Sr.Deputy Director ICMR-NIRT 2/2**  
80 views · 1 mo ago

Try YouTube Kids

6 Dislike Live chat Share Download Save

DGVC PHYSICS 251 subscribers

**Motivating team - NLP coach Mr.Ajith Lakshmanan interact with our students**  
123 views · 8 mo ago

GOAL SMART

12 Dislike Live chat Share Download Save

DGVC PHYSICS 211 subscribers

**Dr.C.Vijayan, Professor of Physics, IIT Madras**

**National Level Online Faculty Development Programme in Science Pedagogy**  
346 views · 8 mo ago

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DGVC PHYSICS 333 subscribers

# Student Progression



**Department of Medical Physics**  
Anna University, Chennai - 25



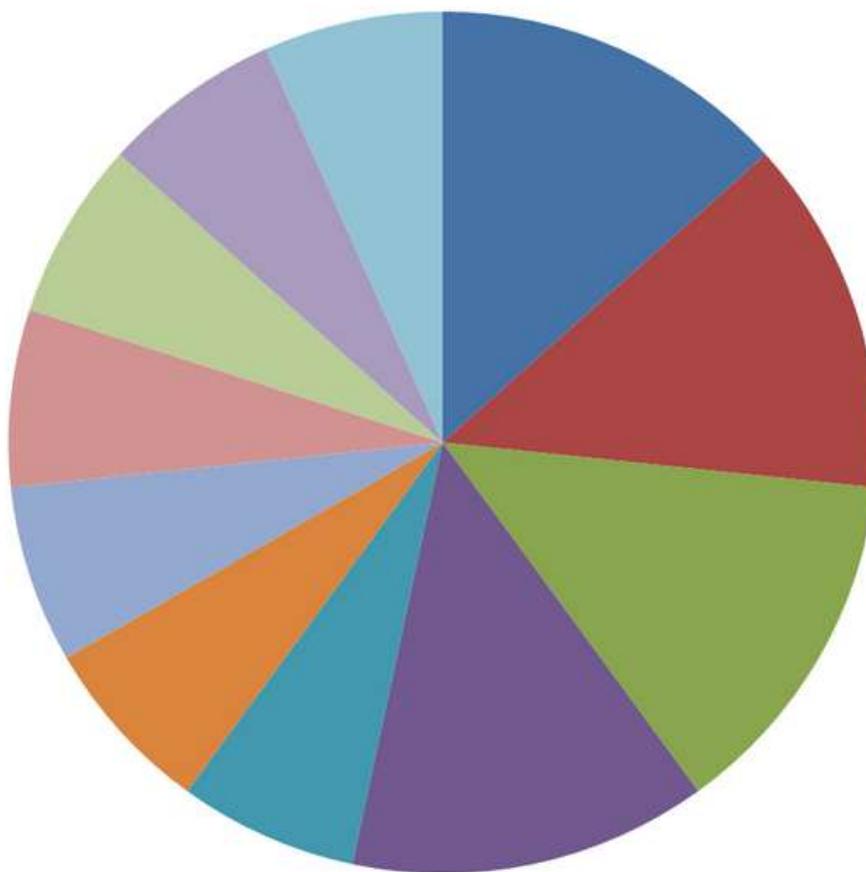
**ETHIRAJ COLLEGE FOR WOMEN**



**PSG College of Arts & Science**  
*An Epitome for Quality Learning*  
Since 1947

**Crescent**  
Institute of Science & Technology  
Deemed to be University act 3 of the UGC Act, 1956

# Student Progression 2018- 2021 Batch



- VIT, M.Sc. Physics
- University of Madras, M.Sc. Nanoscience and Nanotechnology
- Directorate of Technical Education, MBA
- University of Madras, M.Sc. Physics
- University of Madras, MBA
- Shri Krishnaswamy College for Women, M.A. HRM
- RGNID, M.S.W
- The Loganatha Narayanasamy Govt. College, M.Sc. Physics
- Ethiraj College, M.Sc. Physics
- Jaya Engineering College, M.C.A.
- Vel Tech, M.Sc. Data Analytics

## Campus Placements



**PRANEETH N**

Our students Praneeth N and Rishi Kesavan R got appointment in Fujitsu Consulting India Private Limited (FCIPL)



**RISHI KESAVAN R**



**BHOOMIKA V S**

Our student Bhoomika got placed at Infosys



**DHARANI S**

Our students Bharani S and Dharani S are placed in Sutherland Global Services.



**BHARANI S**



**VIGNESH R**

Our student Vignesh R has been appointed at GP Strategies.

# Knowledge Partners



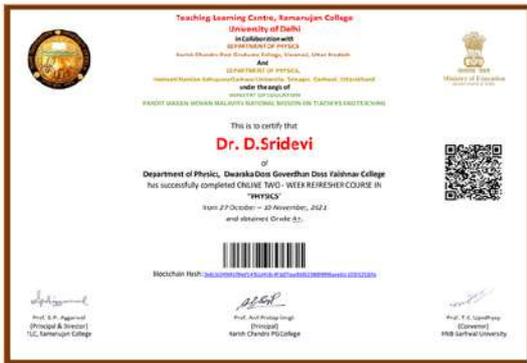
VIJNANA BHARTI



SMALL SCIENCE



# Capability building of teachers



## Science Posters - Content created by our Teachers as a part of Vigyan Sarvatra Pujyate Celebrations



Dr.D.Uthra and Dr.V.Renganayaki created content for posters as a part of Science spreading initiative by DST and TNSTC



## புத்தகங்கள்: பள்ளி வாழ்த்து

சென்னை வந்து உலக புத்தக நூல் நெறிவித்தல் மீதே நெடு கொண் டன்பாலின் தனது தகவர்கள், உண்மை காட்டி, ஒருவரை கொள்வோம், ஆழ பறிவிட்டுள்ளார்.



▲ சென்னை தரமணியில் உள்ள கணித அறிவியல் நிறுவனத்தில் உலகப் புத்தக தினத்தை முன்னிட்டு நேற்று நடைபெற்ற புதிய நூல்கள் வெளியீட்டு விழாவில் பங்கேற்ற ஒருங்கிணைந்த பள்ளிக் கல்வி மாநிலத் திட்ட இயக்குநர் ஆர்.சுதன், கணித அறிவியல் நிறுவன இயக்குநர் வேரணிநிர்ன், அறிவியல் இயக்க மாநிலப் பொதுச் செயலாளர் எஸ்.சுப்ரமணி உள்ளிட்டோர்.

## ஆசிரியர் - மாணவர் இடையேயான புரிதல் இடைவெளியை அகற்ற திட்டம்

● பள்ளிக் கல்வித் துறை அதிகாரி தகவல்

சென்னை வகுப்பறைகளில் ஆசிரியர்கள் - மாணவர்கள் இடையேயான புரிதல் இடைவெளியை அகற்றுவதற்கான புதிய திட்டங்கள் மேற்கொள்ளப்பட்டு வருவதாக ஒருங்கிணைந்த பள்ளிக் கல்வித் திட்ட இயக்குநர் ஆர்.சுதன் தெரிவித்தார்.

சென்னைபில் உள்ள கணித அறிவியல் நிறுவனம் மற்றும் தமிழ்நாடு அறிவியல் இயக்கம் சார்பில் உலக புத்தக தின விழா தரமணியில் நேற்று நடைபெற்றது. இவ் விழாவில் 7 கணித அறிவியல் நூல்களை வெளியிட்டு ஆர்.சுதன் பேசியதாவது:

நவீன அடித்தளம் செயல்படுத்தி வரும் 'இல்லம் தேடி கல்வி' திட்டம், பள்ளிக்கல்வி வரலாற்றில் புத்தொழுச்சியை ஏற்படுத்தியுள்ளது கல்வியை மக்கள் மயமாக்குவதற்கான திட்டத்தின் அறிந்தகட்டமாக, வகுப்பறை நடவடிக்கைகளை முழுமையாக ஐந்தாய்கப் படுத்த திட்டமிட்டுள்ளோம். இரண்டு பேர் உரையாடுய்ப்போது, அவர்கள் இருவருக்கும் இடையேயான புரிதல் சம-அளவில் இருந்தால் நான் அந்த உரையால் செழுமை பெறும். அந்நிலைவே, பள்ளி வகுப்பறைகளிலும் ஆசிரியர்கள் - மாண

வர்கள் இடையேயான புரிதலில் உள்ள இடைவெளி அகற்றப்பட வேண்டும்.

மாணவர்கள் வெறுப்பை தகவல்களை கேட்பவர்களாக அல்லாமல், பல்வேறு விதமான கேள்விகளை எழுப்புவதற்கான நிறைகள் வளர்க்கப்பட வேண்டும். மாணவர்கள் காதுகளால் மட்டும் தகவல்களைக் கேட்டு கற்காமல், எதையும் கைகளால் தொட்டு உணர்ந்து கற்கும் வகையில் திட்டங்கள் வகுக்கப்பட்டு வருகின்றன. இந்த கைய பணிகளில் தமிழ்நாடு அறிவியல் இயக்கம் உள்ளிட்ட அமைப்புகளுடன் இணைந்து பணியாற்ற பள்ளிக் கல்வித் துறை தயாராக உள்ளது.

இவ்வாறு அவர் பேசினார். விழாவுக்கு தலைமை வகித்த, கணித அறிவியல் நிறுவனத்தின் இயக்குநர் வேரணிநிர்ன் பேசும்போது, "சென்னை கணித அறிவியல் நிறுவனத்தின் 60-வது ஆண்டு விழாவின் ஒருபகுதியாக எளிய தமிழில் கணித, அறிவியல் நூல்களை வெளியிட்டு வருகிறோம்" என்றார்.

தமிழ்நாடு அறிவியல் இயக்கத்தின் மாநிலப் பொதுச்செயலாளர் எஸ்.சுப்ரமணி பேசும்போது, "1980-ல் தொடங்கப்பட்ட தமிழ்நாடு அறிவியல் இயக்கம், கடந்த 40 ஆண்டுகளாக மக்கள் மத்தியில்

அறிவியல் மனப்பான்மையை வளர்க்கும் விதத்தில் பல்வேறு பணிகளைச் செய்து வருகிறது. குறிப்பாக 500-க்கும் மேற்பட்ட அறிவியல் நூல்களை வெளியிட்டுள்ளோம். எளிய தமிழில் அறிவியல் கருத்து களைப்பாடும் 'துளிர் மாத இதழை லட்சக்கணக்கான மாணவர்களின் கைகளில் கொண்டு சேர்த்துள்ளோம்" என்றார்.

கணித அறிவியல் நிறுவனத்தின் ஒப்படி பெற்ற விஞ்ஞானி ஆர்.ராமாஜலம் பேசும் போது, "கணித அறிவியல் நிறுவனம் போன்ற மிகப்பெரும் ஆய்வு நிறுவனங்களும், மக்களிடையே கள்களவி ஆய்வும் அறிவியல் இயக்கம் போன்ற அமைப்புகளும் இணைந்து செயல்படும்போது, அறிவியல் பரப்பும் பணியில் பெரும் தாக்கத்தை ஏற்படுத்த முடியும்" என்றார்.

இவ்விழாவில் எம்.எஸ்.முசுமது பாதுஷா, சிராமலிங்கம், ஐயர், சுதாகர், மோகனா உள்ளிட்ட அறிவியல் இயக்க நிர்வாகிகள், எஸ்.விஸ்வநாத் உள்ளிட்ட கணித அறிவியல் நிறுவன விஞ்ஞானிகள் பங்கேற்றனர். முன்னதாக அறிவியல் இயக்க மாநிலச் செயலாளர் எம்.எஸ்.ஸ்வயம் நாதன் வரவேற்புரையாற்றினார். மாநிலச் செயலாளர் எஸ்.டி.பாலகிருஷ்ணன் நிதர்சனியை தொகுத்து வழங்கினார்.

## Appreciating our teaching staff for their achievements



Dr.V.Renganayaki and Dr.K.Selva Kothai Nachiyar were presented with medals for their outreach through science communication.



Felicitating our retired Senior Mechanic -  
Shri.V.G. Sathya Narayanan

## Recognizing our non teaching staff for completing their higher studies



Mr. J. Sathish Kumar obtained his MA Degree recently.



Dr. Leena completed her Ph.D. recently

## GIFT FROM OUR 1973 BATCH ALUMNI



# Stars of the Batch 2019-2022



**GOPINATH R**  
19D1128



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