



## **IMPORTANCE OF PHYSICS TO SOCIETY**

*A statement adopted by IUPAP, March 1999*

Physics - the study of matter, energy and their interactions - is an international enterprise, which plays a key role in the future progress of humankind. The vital need and support of physics education and research in all countries is important because:

★ Physics is an exciting intellectual adventure that inspires young people and expands the frontiers of our knowledge about Nature.

★ Physics generates fundamental knowledge needed for the future technological advances that will continue to drive the economic engines of the world.

★ Physics contributes to the technological infrastructure and provides trained personnel, needed to take advantage of scientific advances and discoveries.

★ Physics is an important element in the education of chemists, engineers and computer scientists, as well as practitioners of other physical and biomedical sciences.

★ Physics extends and enhances our understanding of other disciplines, such as the earth, agricultural, chemical, biological, and environmental sciences, plus astrophysics and cosmology - subjects of substantial importance to all people of the world.

★ Physics improves our quality of life by providing the basic understanding necessary for developing new instrumentation techniques.

Physics is an essential part of the educational system and of an advanced society. It acts as the soul for the physicists which motivates new thoughts and reveals the secret of nature. Its applications are noteworthy, unavoidable and acts as the backbone of the future human life .

1. I am a three letter word. When you reverse me I am reciprocal of myself. Who am I?



**V. Karthikeyan**

III B.Sc. Physics

Source : [www.iupap.com](http://www.iupap.com)



## **THE GREAT ATTRACTOR**

We know that our planet Earth is located in the solar system, and sun is a member of milky way galaxy. Milky Way galaxy is one of the members of the group called the local group which consists of other galaxies such as Andromeda, Megellanic cloud, and Sagittarius dwarf Galaxy. This local group and other set of groups are now accelerating at an average velocity of 600km/s. They are accelerating towards a huge cloud of mass called the great attractor. This great attractor is an intergalactic space within the range of Centaurus super cluster. It is a concentration of mass which weighs almost equal to thousands of galaxies. It is disturbing the neighboring galaxies and attracting everything in its way.

**J. Pragadeesh**  
II B.Sc. Physics

## **SOAP BUBBLE IN SPACE**

A nebula in space looks like a soap bubble, but it is about five long light years across and floating in deep space.

Three amateur astronomers in California found the beautiful planetary nebula a year ago, and they have now been officially recognized as its discoverers, (officially named a PNG 75.5+1.7). The “Soap Bubble Nebula”, is the remnant of a dying star that shed its outer shell about 22,000 years ago. It lies about 4,000 light years away in the constellation Cygnus.

Chemical engineer Dave Jurasewich was the first to see it in July 8 2008, at the Mount Wilson observatory near Pasadena, California. And nearly two weeks later on July 17 2008, medical professional Keith Quattrochi and Mel Helm, spotted it from their Sierra observatory situated in the high California mountain range.

2. When you weigh me I am nothing, when you count my charges there is nothing, but I can make earth as nothing, am a subatomic particle?



**D. Gayathri**  
II B.Sc. Physics



## **TOPPERS TALK**

The most common and basic assumption of an average scoring student about the class topper is that they have some very specific ways of studying. Every time the question arises that how much time do one need to spend per day for studying? Is learning a function of time or how much you understand. Some people understand concept much faster than other why? Consciously or unconsciously, they have hit upon the secret of learning. The conversation with toppers of II and III B.Sc. Physics throws light on then secret power of scoring.

Lets look at the views of our topper friends K.R.Aishwarya (III B.Sc.), M.Sivakumar (III B.Sc.), B.Santhosh Kumar (II B.Sc.), A.Shikha Kumari (II B.Sc.).

### **Aishwarya**

Aishwarya is of the opinion that one should approach the examination with confidence by effective time management, plan the course much ahead. She definitely feels that attending all the class test has contributed to her good performance in exams.

### **Siva Kumar**

Sivakumar schedule weekly reviews and updates. He reviews lecture material every day, avoids last minute preparation. He blocks study time of atleast three hour a day. He keeps himself away from the stressful situation.

### **Santosh Kumar**

He prefers alternative study place free from distractions. He takes a good sleep the night before the exam as lack of rest just aggravates stress. He never starve before the exam. He doesn't think about question paper once he enters the examination hall.

### **Shikha Kumari**

She follows specific strategies to study by giving equal priorities to every subject, scheduling weekly reviews and updates, revising and recalling. She has the habit of begining with most difficult task or subjects, avoids peer presure and fear of ridicule during exam days, plans a month before exam.

**When comes to the way of writing exam they have few specific methods like.**

- ❖ Time management by prioritising
- ❖ Proper and legible paper presentation.
- ❖ Neat hand writing.
- ❖ Continuity of points.
- ❖ Clear view of question paper.

We conclude that the secret of learning is, the right method and right thinking technique. The time you need to read through the material is exactly how much time it will take you to understand.

**- By K.Venkata Ramanan**  
III B.Sc. (Physics)



## *MOON LANDING - REEL OR REAL*

It has been almost forty years since the U.S astronaut Neil Armstrong, became the first human being to set his foot on the moon. Some people still insist that the Apollo moon landing was an elaborate hoax. But the crew member of Apollo 11 as well as the astronauts who followed the first moon trip defend moon landing.

“We’ve been to the moon, nine times. Why would we fake it nine times?”

The American flag appears to be flapping, as if “in a breeze” in videos and photographs supposedly taken from the airless lunar surface. How could the flag flutter in an airless moon?”

“The video you see where the flag is moving is because the astronaut just placed it there and the inertia from when they let go kept it moving. The astronauts also accidentally bent the horizontal rods holding the flag in place several times, creating the appearance of a rippling flag in photographs”

Only two astronauts walked on the moon at a time. Yet in photographs both are visible. There is no sign of camera so who took picture?

The cameras were mounted to the astronaut’s chests.

The landers descent should have been accompanied by a large dust cloud and would have formed a noticeable crater. Why are there not any of them?

The Landers engines were throttled back just before landing and it did not hover long enough to form a crater or kick up much dust.  
The mystery continues .....

**A. Shika Kumari**  
II B.Sc. Physics

Do You Know?  
Astronomers can grow taller if they are in space.

3. When you give me one at a time, I can give you seven at a time, am related to light?





## GOING BACK IN TIME?

Tim Whitwell is a research engineer, who works in Hong Kong. He uses his physics knowledge to tackle acoustics, electromagnetic designs and mechanics. He was a resident expert on Big Bang Blogs for a month, and school pupils had the chance to ask him a question: Could we ever go back in time? And the answer given by him:

“Time machines are commonly seen in science fiction films and books, but no one knows how to build one.”

However, it is possible to slow down time by travelling very fast relative to someone who is stationary. Einstein’s theory of relativity at the beginning of the 20th century, explicates this theory and has since then been proved many times. One of the best examples of this was demonstrated by placing a very accurate clock on-board of a passenger jet. Another identical clock was kept on the ground and this synchronized with the clock on the plane. After a number of long distance flights the two clocks were compared and the one that had been on the plane was running behind the clock that had stayed on the ground. The difference between the two clocks was exactly the difference predicted by the theory of relativity.

It is important to understand that this slowing down of time depends on the speed you are travelling relative to someone else. None of the passengers on the plane would have noticed anything strange. As far as they are concerned, time is passing as usual. It is only when they get off the plane and compare their watches with someone who has been stationary, that they begin to notice the vast difference.

Passenger jets fly at about 600 miles per hour which seems pretty fast. However, after the experiment described above, the difference in time between the two clocks was less than a billionth of a second, which is why very accurate clocks were needed.

If you could travel at speeds close to the speed of light (about 186,000 miles a second) time would slow down significantly, from the perspective of someone who is not moving. Unfortunately, we do not know how to build rockets that fast!

**Do You Know?**

The length of a plutonian year is equal to 248 years of one Earth year.

**R.Vivek**  
III B.Sc. Physics



## BEHIND INTELLIGENCE

Paul Dirac, a great British physicist, was the youngest theoretician to win the Nobel prize for his pioneering work in quantum electrodynamics. He was a truly brilliant and extremely confident scientist. But how many of us know that he was autistic? Graham Farmelo, in his book “The Strangest Man”, brings to light several little known facts about Dirac. Here are a few anecdotes from this book that reveal the humorous and quirky side of his character.

- ❖ After a meeting, a fellow guest alerted Dirac that a particular room was haunted and a ghost always appeared at midnight. Dirac asked, ‘is that Greenwich Mean Time, or daylight- saving time?’
- ❖ Classicist John Crook, standing with Dirac in the hall of St John’s college, Cambridge, asked him “Cold, isn’t it?” Dirac’s immediate reply was, “How cold?”.
- ❖ In another instance, during a summer garden party at the Buckingham Palace, a colleague asked Dirac how to make the most of the event. “ Get a large piece of cake and sit by the lake,” was what Dirac replied.
- ❖ Once during a lecture, the speaker had made a mistake. He said “Here is a minus where there should be a plus. I seem to have made an error of sign”. Dirac woke up from sleep and remarked “Or an odd number of mistakes”.

**K. Pavithra**  
I M.Sc. Physics

4. I love heat in conductors and I hate the same in semiconductors, I am practically determined by colours?



Do You Know?

The microwave oven was invented by accident, when Percy Spencer found that his chocolate bar had been melted by an experiment he was running on radar systems.



# AMEDEO AVOGADRO

Born - August 9, 1776 Turin, Italy  
 Died - July 9, 1856 (aged 79)  
 Field - Physics  
 Institutions - University of Turin  
 Known for - Avogadro's law,  
 Avagadro's Constant

**V.Karthikeyan**  
 III B.Sc. Physics

**R.Jaganathan**  
 III B.Sc. Physics

## TRACE THESE - I

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



Trace the physics words hidden in the jungle of words.

**K.M.Saveena & P.V. Prabalini**  
 I B.Sc. Physics

Do You Know?

The highest temperature ever recorded at the South Pole was minus 13 degrees centigrade.



## **The History of Physics**

The word “Physics” derived from the word Philosophy. Physics was originally referred to as “Natural Philosophy”, as it is a study concerned with “the working of nature”.

As early as 276-194 BC, Erastoshenes made an accurate estimation of the circumference of the earth. Seleucus proved heliocentric system, far before Copernicus via reasoning.

“Eureka!” fame Archimedes, and several other thinkers defined the concept of the centre of gravity and created the field of statics.

On the Indian side, Kanada of Vaisheshika school proposed the theory of atomism around first millennium BC. He was succeeded by Dharmakirti and Dignaga during first millennium, AD. Aryabhata proposed rotation of Earth during 499 AD, while Nilakanta Somayaji (1444-1544) proposed semi-heliocentric model, resembling the tychonic system.

At the turn of second millennium much emphasis was laid on the role of experimentation as a form of proof for scientific inquiry.

Iraqi physicist Ibn-al-Haytham study, “**On the light of the moon**” attempted to combine mathematical astronomy with physics, a field now known as ‘astrophysics’.

Galileo’s interest in the mechanical experimentation and mathematical description of motion established a new natural philosophical tradition focussed on experimentation. This was general trend followed in 17th Century.

Cartesian fame, the Frenchman, Rene Descartes (1596-1650) proposed “invisible sea of corpuscles” to gravity which was challenged by Cambridge University mathematician Sir Isaac Newton (1643-1727). Newton found calculus and used it in his philosophies. In mathematical principle of natural philosophy, he introduced, his three laws of motion and the law of gravitation. Gottfried Leibniz, another scientist of the same time formulated own calculus.

Later mathematician Daniel Bernoulli applied this to his work, Hydrodynamics (1738).

In the early 19th Century, the Royal Society and the French Academy of Sciences were the major centres encouraging the experimental scientists. John Dalton, Thomas young, Michael Faraday, belong to this school of tradition.

### **Do You Know?**

Cats can see clearly in one-sixth the amount of light we human would need. This is due to the special layer of cell behind their retinas.



The Glasgow physicist William Thomson and his different forms of energy and energy's overall conversation is still accepted as the "First law of thermodynamics". This paved the way for several scientific theories such as electromagnetic radiation and quantum physics. Tesla, Bose and Marconi conducted scientific experiments in this area.

Roentgen's amazing discoveries of X-ray in 1895, and the sensational 'radioactivity' (a term coined by Marie & Pierre Curie together), changed the contour of the medical field.

In the year 1920, quantum theory was accepted when Compton Effect established that light carries momentum and can scatter off particles, and when Louis de Broglie asserted wave particle duality of matter.

After the second world war, new theories of fundamental particles proliferated with the rise of the idea of the quantization of fields through "exchange forces" regulated by an exchange of short lived "virtual particle". The particle called "pion" was identified in the year 1947, but it was part of a slew of particle discoveries beginning with the 'neutron', the 'positron' and the 'muon' in the 1930s.

Nowadays, physics is also being defined much by techniques as by the search for universal principles and fundamental nature of matter. Field such as acoustics, geophysics, astrophysics, cryogenics, solid state physics, optics, fluid dynamic, super conductivity, biophysics, medical physics, photonics, nano-technology, nuclear physics, electromagnetism are areas of physics research.

In more recent decades physics has become a more international pursuit than at any time in its previous history and let us reap its rewards.

**K.R. Aishwarya**  
III B.Sc. Physics

5. I am friend of farmer,  
and foe to animals, am  
related to sound.





## CRYPTOGRAM

E \_ r \_ \_ ' s \_ \_ r \_ h m \_ g \_ e \_ i c  
 5 # @ 2 \* 1 3 # @ 2 4 5 1 @ 9

\_ o l e \_ s n o \_ f \_ x e d b u t  
 8 3 9 \* 13 @ 6 9 @

M \_ v e \_ \_ v e \_ t h e Y e \_ \_ s  
 4 3 \* 3 # @ 2 5 # \*

I n \_ h e l a s \_ 100 Y e \_ r \_  
 9 1 @ 2 5 \* @ 5 # \*

t h e n \_ \_ t \_ P \_ l e \_ a s  
 @ 2 1 3 # @ 2 8 3 2 5 \*

S h \_ \_ t e d b y m \_ \_ e t h \_ n  
 \* 2 9 6 @ 4 3 # @ 2 5 1

770 k \_ n o \_ \_ h w e \_ t f \_ o m  
 4 1 3 # @ 2 7 \* @ 6 # 3 4

i t s \_ r e \_ e n t P o \_ i \_ i o \_  
 9 @ \* 8 # \* 1 @ 8 3 \* 9 @ 9 3 1

**M. Sivakumar**  
 III B.Sc. (Physics)

**Do You Know?**

That the Olympus Mountains of Mars are the largest volcanic mountains in the solar system. It is 600km across and 27km high.

6. You are nil when I am nil, I am nil, when gravitation is nil?





## இரெனே லென்னேக்

19ம் நூற்றாண்டில் இதயம் சம்பந்தமான நோய்களைப்பற்றி அறிவது மிகவும் கடினமான ஒன்றாக இருந்தது, அதைப்பற்றியே பல ஆய்வுகள் பலரால் நடந்தப்பட்டது. இரெனே லென்னேக்கும் அத்தகைய சிந்தனையுடனே இருந்தார். இவர்தான் இன்றைய மருத்துவர்களுக்கு மிகவும் இன்றியமையாத கருவியான 'ஸ்டெதாஸ் கோப்பை' முதன் முதலில் கண்டுபிடித்தவர். இவரது தாய்நாடு பிரிட்டன்.

பெரிய சாதனைகள் பல உருவாவதற்கு சிறு நிகழ்ச்சியே மூலக்காரணமாக அமைகிறது என்பது லென்னேக் வாழ்விலும் உண்மையாயிற்று. சிறுவர்கள் சிலர் பூங்காவில் விளையாடிக் கொண்டிருந்தனர். அப்பொழுது ஒரு சிறுவன் 'சீசா' எனும் ஒரு வகையான மரப்பலகையின் ஒரு முனையில் குண்டுசியால் கீறிக்கொண்டிருந்தான். அதே பலகையின் மறுமுனையில் தன்னுடையக் காதைப் பொருத்தி ஒலியைக் கேட்டுக் கொண்டிருந்தான் மற்றொரு சிறுவன். பலகையின் ஒரு முனையில் குண்டுசியால் மெதுவாகக் கீறியபோது உண்டான ஒலி, மறுமுனையில் மிகத் தெளிவாகப் பொரியதாக ஒலித்ததைக் கேட்டதும் அச்சிறுவனுக்கு வியப்பும் மகிழ்ச்சியும் உண்டாயிற்று. அதைப்பார்த்துக் கொண்டிருந்த மருத்துவரான லென்னேக் மரம் போன்ற திடப்பொருட்கள் ஒலியைப் பெருக்கும் தன்மையுடையவை என்னும் உண்மையை அச்சிறுவர்களுக்கு விளக்கிக் கூறினார். அப்பொழுதுதான் இதயத்தின் ஒலியை ஒரு திடப்பொருளின் மூலம் ஏன் தெளிவாகக் கேட்க இயலாது என்ற எண்ணம் அவர் உள்ளத்தில் தோன்றியது.

உடனே மருத்துவமனைக்குச் சென்று, காகிதங்களை ஓர் உருளைவடிவமாகச் சுருட்டி நோயாளியின் மார்பின் மீது வைத்து, மறுமுனையில் தனது காதைவைத்துக் கேட்டபோது ஒலி மிகத்தெளிவாகக் கேட்டது. காகிதத்தைவிட மரஉருளையின் உதவியால் ஒலியை நன்கு கேட்கமுடியும் என்று எண்ணி தயாரிக்கப்பட்ட கருவிக்கு 'ஸ்டெதாஸ் கோப்' என்று பெயரிட்டார். பல்வேறு மக்களை சோதித்ததன் விளைவாக நோயின் தன்மைக்கேற்றவாறு இதய ஒலிகள் வேறுபடுவதை தன் அனுபவத்தின் மூலம் லென்னேக் அறிந்து அவற்றைத் தரம் பிரித்து ஒரு நூல் எழுதினார். நூலுடன் ஸ்டெதாஸ் கோப் வழங்கினார். ஆனால் அதை வாங்குவதற்கு யாரும் முன்வரவில்லை மாறாக எதிர்ப்புகளே மேலெழுந்தது. எந்த சிறந்த படைப்பையும் உலகம் எளிதில் ஏற்றுக்கொண்டதில்லை. அதுபோலவே அவரது படைப்பையும் உலகம் ஏளனம் செய்தது. பலத்த கண்டனத்திற்கும் உள்ளாக்கிற்று. ஆனால் இன்று, மருத்துவ விஞ்ஞான உலகத்திற்கு லென்னேக் அளித்த விலைமதிக்க முடியாத பரிசாக 'ஸ்டெதாஸ் கோப்' கருதப்படுகிறது.

வி. சரஸ்வதி

முதலாம் ஆண்டு முதுநிலை (இயற்பியல்)



## FAMOUS ASTRONOMERS

### ❖ GALILEO GALILEI(1564-1642)

He constructed a refractor telescope to view craters on the moon, the phases of Venus and the rings of Saturn. He discovered four moons revolving around Jupiter.

### ❖ NICOLAUS COPERNICUS(1473-1543)

Copernicus wrote a treaty on the solar system that suggested the Sun was more likely to be in the centre than the Earth .It is named as the “Revolutions of the Heavenly Bodies”.

### ❖ JOHANNES KEPLER(1571-1630)

He was a German mathematician, astronomer and astrologer. He is best known for his Kepler’s law of planetary motion.

### ❖ GIOVANNI DOMENICO CASSINI(1625-1712)

Cassini was the first to observe four of Saturn’s moons. He was the first to observe differential rotation within the Jupiter’s atmosphere.

### ❖ CHRISTIAN HUYGENS(1629-1695)

Huygens proposed that Saturn was surrounded by a solid ring, a thin flat ring nowhere touching and inclined to the elliptic. Huygens also discovered the first of Saturn’s moon, Titan.

### ❖ EDMOND HALLEY(1656-1742)

He catalogued 341 southern hemisphere stars and discovered a star cluster in Centaurus. He worked out a theory of orbits of comets.

### ❖ FREDERICK WILLIAM HERSCHEL(1738-1822)

He discovered infra red radiation and made many other discoveries in astronomy.

### ❖ JOHN HERSCHEL(1792-1871)

He made many contributions to the science of photography and investigated colour blindness and the chemical power of ultraviolet rays.

### ❖ EDWIN HUBBLE(1889-1953)

Hubble’s law explains how the galaxies are receding away from each other. This movement suggested that the universe is getting bigger, that means it use to be smaller. This discovery led astronomers to the Big bang theory.

Do You Know?

That the sun alone makes up a shocking 99.86% of the Solar system’s mass.

V.S.Deenadayalan  
I B.Sc. Physics



## TRACE THESE - II

Some physicists are hiding in the boxes. Can you find them ?

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

**J.Saranya & D.Suguna**  
I B.Sc. Physics

7. You may have legs,  
but unable to walk  
without me?





## **BLACK HOLES**

Black holes are the places where the gravity is so strong that it sucks everything including light. It is formed when a star or galaxy gets so dense that it collapses under the pull of its own gravity. Gravity shrinks a black hole to an unimaginably small point called a “singularity”. Around the singularity, the gravity is so intense that the space-time is bent into a funnel. Black hole is torn apart and glows, so Universe-Quasars, the swirling gases around the black hole turn into an electrical generator, making it spout jets of electricity, billions of kilometers out into space.

**D.Gayathri**  
II B.Sc. Physics

## **MECHANICAL ADVANTAGE JUST HOW MUCH?**

Generally, more mechanical advantage is better than less, but it is possible to overdo it. Consider a bicycle. There is a direct trade-off between how much force you get and how far the parts travel. The more mechanical advantage you have, the closer the brake shoes will be to the rim at their rest position. This is not a problem with a perfectly true wheel, but can cause the brake shoes to rub too easily on rim that could have seen better days.

There is a case to be made for less than maximum advantage on the front brakes of bikes that are aimed at less experienced riders, in case they lock up the front wheel and hurt themselves.

**G.Rajesh**  
II B.Sc. Physics

Do You Know?

That just a pinhead of the sun's raw material could lift someone up to 160km away



## PUZZLES

1. The scientist who has his father's name.
2. The person who told that God doesn't play dice.
3. The scientist dealing with cats
4. Father of Heliocentric theory
5. Man of buoyancy
6. The man who combined both the nature of light in one equation
7. Black hole gets evaporated by emitting this radiation
8. Discoverer of nucleus
9. The man owning the smallest physical constant
10. Uncertain person

**J.Pragadeesh**  
II B.Sc. Physics

**VIKRAM SARA BHAI**



**P.Pradeep**  
III B.Sc. Physics

**BENJAMIN FRANKLIN**



**R.Sivaraman**  
I B.Sc. Physics

Do You Know?  
A lightning bolt is 3 times hotter than sun.



## WHEN IS A 'PLANET' NOT A 'PLANET'?

Discovered in 1930, and once known as the ninth planet of the solar system, Pluto is the smallest, coldest, and most distant 'planet' from the Sun in recent times. In 1978, the American astronomers, James Christy and Robert Harrington, discovered that Pluto has a satellite, which they named Charon. Charon is almost half the size of Pluto and shares the same orbit. Pluto and Charon, are thus essentially a double planet. Two additional moons, Hydra and Nix, were discovered in 2005. Pluto's origin and identity have long puzzled astronomers. In the 1950s, it was suggested that Pluto was an escaped moon of Neptune, knocked out of orbit by its largest moon, Triton. However, this theory has been extensively criticized, because Pluto never actually comes near Neptune.

In 1992, astronomers began to discover a large population of small icy objects beyond Neptune that were similar to Pluto, not only in orbit, but also in size and composition. This belt, known as the Kuiper belt, is believed to be the source of many comets. Astronomers now believe Pluto to be the largest of the known Kuiper belt objects (KBOs). Like other KBOs, Pluto shares features with comets, like the fact that the solar wind is gradually blowing Pluto's surface into space, in the manner of a comet.

The discovery of the Kuiper belt and Pluto's relation to it led many to question whether Pluto could be considered separately from others in its population. In short – 'was Pluto really a planet'? One of the criteria, for being classified as a planet, is that an object must have "cleared the neighborhood around its orbit." The Earth's mass is 1.7 million times the mass of other objects in its orbit. Unfortunately, Pluto's mass is only 0.07 times the mass of other orbiting objects. Because of this, on September 13 2006, Pluto was officially demoted to a 'dwarf planet.'

8. When you move 10m North, East, South and West respectively, I am still the same?



**R. Vivek**  
III B.Sc. Physics



### Answers to the riddles:

1. Ohm
2. Neutrino
3. Prism
4. Resistance
5. Ultrasonic
6. Weight
7. Friction
8. Displacement

### Answers to Puzzles:

1. Issac Newton
2. Albert Einstein
3. Schrodinger
4. Nicholas Copernicus
5. Archimedes
6. de Broglie
7. Hawking
8. Rutherford
9. Planck
10. Heisenberg.

### Answers to Trace these:

I: Alpha, Decay, Diode, Dipole, Convex, Viscosity, Light, Elastic, Work, Force

II: Curie, Einstein, Galileo, Rankine, Fahrenheit, Pitot, Boyle, Richardson, Maxwell, Raman, Hooke, Aryabhata.

## ANSWER TO CRYPTOGRAM

Earth's north magnetic pole is not fixed, but moves over the years. In the last 100 years the North Pole has shifted by more than 770 km northwest from its present position.

**“Do You Know”, “Riddles” are the contributions of:**

\*B.Santhosh, II B.Sc. Physics

\*P. ArunKumar, II B.Sc. Physics

\*G. Ganapathy Ram I M.Sc. Physics

\*M. Siva Kumar, III B.Sc. Physics



## **REFLECTION OF ACTIVITIES IN OUR DEPARTMENT (2009 - 2010)**

### **MEET YOUR ALUMNI**

Our Silver Jubilee alumni, Mr. K.P. Vasudevan, General Secretary, LIC Development Officer's Association, spoke on self - motivation and goal setting. He recalled his moments in our college twenty five years back (1984 batch).

### **LAURELS BROUGHT BY OUR STUDENTS**

Our students participated in several events conducted by various institutions.

★ They participated and won prizes in **Physica'09** conducted by Loyola College, in **Ripples'09** by Ethiraj College, **Electra'10** by Stella Maris College, **Reverberations'10** by CTTE College, **Spectra'10** by MCC, Chennai.

★ Students enthusiastically displayed science models in the Science Exhibition on the occasion of inaugural function of the Dr. A.L. Mudaliar Centre for Development of Basic Science field at Madras University on 20th December 2009.

★ Our college students volunteered at Chennai Science Festival 2010 at Science City, Chennai and also participated in various events conducted during the festival. Our college students won prizes in essay competition held during this festival.

★ II B.Sc students participated in Telugu essay competition on the occasion of late Potti Sriramulu's birthday.

### **LECTURES AND SEMINARS**

★ A group of students attended a lecture on 'Solid State physics - Super conductivity' in the month of August by Prof. R. Asokamani at Science City.

★ A few students of our Department attended a talk by Dr. A.P.J. Abdul Kalam at Institute of Mathematical Science on "PURA", which focused on the development of India and about India 2020.

★ Students of our department attended a seminar on 'Solid State Physics' at MCC on 8/12/09 by Dr. C.S. Sundar distinguished scientist IGCAR, Karpakkam.

★ Our PG students attended a one day work shop on 22/9/09 at Institute of Mathematical Science, which intended to encourage students to think about research in Physics as a career and discuss career options.

★ Our PG students attended a seminar at Science City on 14th, December, 2009 on 'Nanotechnology in Quantum and Classical Physics'.



### **SHORT TERM COURSES ATTENDED**

- ★ Some motivated students attended a short term course at Science City from 27/7/09 to 30/7/09 on 'Disaster Mitigation' where they gained knowledge on how to face crisis.
- ★ PG students of our Department attended a 4 day awareness programme on 'Nanotechnology' from 5th to 8th October, 2007, at Science City for pursuing any discipline of Science studying in TN.
- ★ They visited International Biotechnology Laboratory at Padappai and Nano Lab at Anna University and Madras University.

### **STUDENT REVIEWERS**

- ★ II B.Sc. student Ms. D.Gayathri wrote review on a book "Aazhndu Yosikalama", Prodigy publication in a tamil magazine "Methai", Vol. 16, 2009.
- ★ II B.Sc. student Mr . J. Pragadeeshi wrote review on book "Einstein", Prodigy publication in a tamil magazine "Methai", Vol. 17, 2009.
- ★ II B.Sc. student Ms.D. Gomathi, reviewed the book "Padippadhu Sugame" by V.Iraiyambu, I.A.S., New Century Book House Publication in the magazine "Ungal Noolagam".

### **DEPARTMENT ACTIVITIES**

- ★ A photography contest 'Reach Out, Reason Out' was conducted by the Department of Physics in Aug'09. It was aimed to encourage the talent in students to look at everyday happening with a photographer's eye and with a physicist's perception. More than hundred entries were received within a short period. Photographs related to various topics in Physics along with an explanatory note brought out the hidden talents of students. Dr.P.Iyamperumal, Vice Chairman, Science City, Chennai was more than willing to judge the best entries and added his valuable comments. He was of the opinion that activities of this kind would certainly motivate and mould the scientists of tomorrow.
- ★ During the Eye Donation Week, more than 100 Physics students (both major and allied), volunteered to pledge their eyes with C.U. Shah Eye Bank, Shankara Nethralaya, Chennai.
- ★ Our Department students visited Birla planetarium to have a glimpse of the solar eclipse, on July 22, 2009.
- ★ I B.Sc. students have come out with a glossary on basic physics terms.
- ★ Post graduate student, Ms. Suriya's project work has been published as a research paper in the peer reviewed Asian Journal of Chemistry, Vol.22, No.1 (2010), 657-660.

\*\*\*\*\*



## **RECOLLECTIONS... (2008-2009)**

### **MEET YOUR ALUMNI**

*The department organized a series of lecture programs as an interface of the students and alumni who lead an exemplary life .*

*An alumni Mr. Shankar Raman, Infosys Technologies Chennai, enthused the students to set and pursue significant personal goal on 27/06/08.*

*Mr. Srikanth Ravichandran,SRF, International Centre for Genetic Engineering and Biotechnology, an alumni of our department addressed the students on 14/08/08. He detailed on frontier institutes in India and abroad to pursue further studies and research.*

*As a third successive programme in this series, the renowned carnatic vocalist Shri. Neyveli Santhana Gopalan an alumni of the Physics Department addressed the student gathering on 20th February 2009. Shri Neyveli Santhana Gopalan recollected the wonderful times he spent in this college as a student. He gratefully remembered the support and encouragement given by his teachers to pursue his musical career.*

### **QUINTESSENCE '09**

*A lecture program Quintessence'09 in commemoration with International Year of Astronomy and National Science day, was conducted by our department on 25/02/2009. Dr. S.R. Ramanan, Director, Area Cyclone Warning Centre, Chennai, delivered the inaugural address Dr. P. Iyam Perumal Executive Director, Tamilnadu Science and Technology Centre Chennai delivered Dr. S. Srinivasan Memorial Science Lecture 'Celestial Events'. Shri K. Sampath, Senior scientist (Retd.) DRDO opened up the frontiers in science.*

### **STUDENT PARTICIPATION**

★ *Our Department students bagged the overall trophy in Electrofest 08 - 09 conducted by Hindu College, Pattabiram, Chennai.*

★ *Our students participated in many events and won prizes in Physics 2008 conducted by Loyola College, Electrafest by Stella Maris College and Ripples 08 by Ethiraj College, Chennai.*

★ *Institute of Mathematical Sciences, Chennai, organised a quiz competition in commemoration with International Year of Astronomy and National Science day on 28th February 2009. (Our B.Sc. Physics students won the cash award for Rs.2000/-)*

★ *B.Sc Physics students participated in the One day Lecture Program in commemoration with International Year of Astronomy and National Science Day conducted by Institute of Mathematics Sciences, Chennai.*



★ Dr. Naresh Dadich, Director, IUCAA, the only Indian Representative to the IYA - 2009 sent his compliments to the Department for the active participation of students in the events organised by Institute of Mathematical Sciences, Chennai.

★ PG students attended lecture series on the "400th Year of Invention of Telescope" organised by Tamil Nadu Science and Technology Centre, Chennai, on 25th September 2008.

★ PG students interacted with Dr. Itchmura, Japan, in the topic of solar cell, on 25th January 2009 organized by Tamil Nadu Science and Technology Centre.

★ Our PG students attended "Popular lectures in Physics" a two day lecture series organized by Stella Maris College, Chennai, on 29, 30 January 2009.

★ PG students attended lecture at India Meteorological Department, on "Better tomorrow" by Dr. R.V. Sharma, Deputy Director General of Meteorology, Regional Meteorological Centre, Chennai.

★ For knowing the working and importance of Doppler RADAR, PG students took, up an Educational trip to Port Trust, Chennai and Aerodrome Meteorology Office, Meenambakkam, Chennai.

★ Six students participated in "National Science Day" Celebration on 27th February at IMD conducted by Indian Meteorological Society, Chennai.

★ Ten students presented papers in the "National Seminar in advanced Material Science" held in Voorhees College, Vellore, during 5 - 7th March 2008. In this seminar our M.Sc (II) student Ms. S. Kavitha won the award for the best poster presentation.

★ 15 students participated and presented papers in the "State Level Technical Seminar for PG and M.Phil students" held at Ethiraj College, Chennai, during 6, 7 March 2009.

### **ENVIRONMENTAL AWARENESS PROGRAMME**

Our II B.Sc. Physics Students took part in a tree walk to spread awareness about protecting our environment along with an NGO Nizhal Foundation on 17, August 2008.

### **GIFTS RECEIVED BY THE DEPARTMENT**

★ Dr. Revathy Srinivasan, Head (Retd.) SIET College, Chennai, donated 25 books related to Physics to the general library of our college.

★ Dr. Mohan Sundarajan, well known science communicator gifted two books (i) NANO - The next Revolution (ii) Enriya Vinveli (in Tamil)

★ Dr. P. Iyam Perumal, Vice Chairman, Science city, Chennai, gifted science activity kit in Astronomy.

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## ROAD TO THE CELEBRATION OF PHYSICS



Hi Friends,

Now, there is a reason in your hands to celebrate physics. The work for physics magazine started in Oct'09. It started off with title and logo contest. Entries were invited from students of our department. From all the entries, "REVERBERATIONS" was selected as the title. A wide range of articles for this magazine flooded our association mail inbox. We formed a editorial board to decide the articles and the board carefully reviewed each and every article and tried to accommodate most of them. Whether the article is published or not, we are sure that the students gained some experience and enjoyed writing the article. I thank our Principal and our Management for their support and encouragement for our work. I thank all the teachers for the encouragement and the support they gave us during this journey. I very much thank the Department of English for their guidance during this travel. I thank all the people who put in their efforts and support to our board in all our travel along the path because without them, "Reverberations' 10" would not have been possible. I also thank our association members as well as editorial board members, Mr. M. Deepak & Mr.K. Koushik from I B.Sc. Physics, Ms.A. Shika Kumari & Ms.D. Gayathri from II B.Sc. Physics and our asst. secretary Ms. K.R.Aishwarya III B.Sc. Physics who travelled along with me in the road to the celebration of physics.

**V.Karthikeyan**

Secretary, Physics Association  
D.G.Vaishnav College.



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**A note from the Principal's Desk...**

I am very happy to note, the Physics Association of our college is bringing out a magazine "Reverberations '10". This documented work is going to be of the students, for the students and by the students. Development in science and technology leads to better standards of life style. In tune with the vision of our college to empower students with wisdom and lead them towards nation building, we need to kindle scientific temper, develop analytical skills for which activities of this kind is necessary. Towards this, the students of Dept. of Physics under right guidance from the faculty have taken a step forward in the right direction. I congratulate the Physics Association and the Department for this worthy endeavor.

*S. Narasimhan*  
12/2/10

Gokul Bagh, No.833, Periyar E.V.R. Salai, Arumbakkam, Chennai - 600 106. (India)  
Phone : 044 - 2475 4349, 2475 6655 Fax : 044 - 2475 3008  
Website : [www.dgvaishnavcollege.com](http://www.dgvaishnavcollege.com) E-mail : [principal@dgvaishnavcollege.com](mailto:principal@dgvaishnavcollege.com)



*From the HOD's Desk...*

The Department of Physics has been a centre of vibrant activities producing students of high caliber. This year, the Physics Association has come out with the magazine **Reverberations '10**. It gives me immense pleasure to place on record the activities of Department of Physics to ensure quality education both at U.G and P.G level. Reverberations '10 provides a platform for fresh ideas, showcase innate talents of the students, encourages critical thinking, enabling them to explore and experiment with numerous possibilities.

The articles in this magazine have brought out the creativity of the students, inculcating team spirit and planning. The effort of the Physics Association in bringing out this magazine is commendable. I take this opportunity to thank the Management and the Principal for their unstinted support. I appreciate the enthusiasm shown by the students and the encouragement by the faculty in bringing out Reverberations '10.

**Dr. D. Uthra**

Head, Department of Physics

D. G. Vaishnav College



## CONTENTS

<b>Importance of Physics to Society</b>	-	1
<b>The Great Attractor</b>	-	2
<b>Soap Bubble in Space</b>	-	2
<b>Toppers Talk</b>	-	3
<b>Moon Landing - Reel or Real</b>	-	4
<b>Going Back in Time</b>	-	5
<b>Behind Intelligence</b>	-	6
<b>Amedeo Avogadro</b>	-	7
<b>Trace These - I</b>	-	7
<b>The History of Physics</b>	-	8
<b>Cryptogram</b>	-	10
<b>Rene Laennec [Tamil]</b>	-	11
<b>Famous Astronomers</b>	-	12
<b>Trace These - II</b>	-	13
<b>Black Holes</b>	-	14
<b>Mechanical Advantage</b>		
<b>Just How Much?</b>	-	14
<b>Puzzles</b>	-	15
<b>When is a 'Planet' not a 'Planet'?</b>	-	16
<b>Answers (Riddles, Puzzles, Trace These, Cryptogram)-</b>		17
<b>Reflection of Activities in our</b>		
<b>Department (2009 - 2010)</b>	-	18
<b>Recollections... (2008-2009)</b>	-	20
<b>Road to the Celebration of Physics</b>	-	22



## EDITORIAL

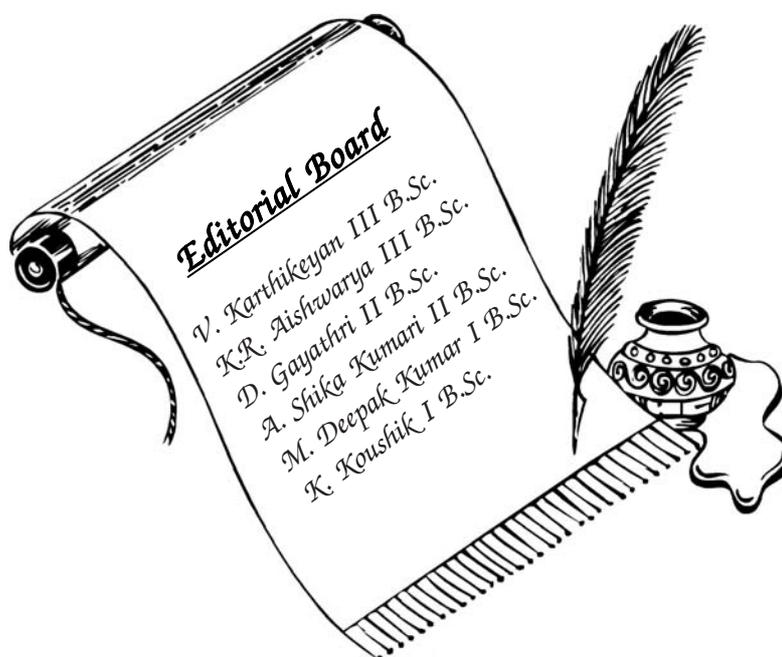
Science and human life are intertwined that without science a day in human life can never be completed. This is aptly put by Immanuel Kant, “Science is organized knowledge. Wisdom is organized life”. Science is essential in order to lead a successful life. And the derivation ends like this, **celebrating life = celebrating science**. This is the key factor reverberated in the minds of our board while selecting the byline and also the articles.

The articles like “Great attractor”, “Soap bubble in space” celebrates astronomy in the International year of astronomy 2009. “Could we ever go back in time” talks about the relativity and “Behind intelligence” says some interesting and odd moments in the life of a physicist. Every article will talk about advancement in technology and as you peruse this issue you will understand that without science there is no life.

We are sure that one will realize the essence of physics while going through this issue and we hope this turns into a truly enriching experience for all the readers.

We thank our Principal and our Management for their kind support and encouragement for bringing out this magazine.

**CELEBRATE LIFE!**  
**CELEBRATE PHYSICS!!** - Editorial Board





Echo - 1

Beat - 1

# REVERBERATIONS '10

*Celebrate Physics*



A Magazine from Physics Association,  
D.G.Vaishnav College (Autonomous),  
Chennai - 106

Department of Physics  
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