

MESSAGE FROM PHYSICS

Physics has a great influence on the society in all fields. It reveals our nature and inherent characteristics. It conveys messages for us to follow, so that we can become a good human to work in harmony with nature.

Personalities are to be carved

Physics education is incomplete without solving the problems related to various physical situations. This problem solving character plays a major indirect role in carving one's personality. It helps to induce rational thinking and youth enthusiasm. The training that physics gives is so important for developing a good personality to lead a happy life.

Tension is essential for creativity

In physics tension is required for producing vibration in strings and other medium. There is a limit to bear the tension that varies from system to system. If one breaks the limit, breakdown occurs. Thus physics gives us a message that learn about your potential and bear the tension that can induce creativity, but at the same time it cautions not to be over stressed as it is dangerous and may lead to breakdown.

Conflicts are inevitable but can be resolved

The differences that are apparent in lower dimensional world disappear in the higher dimensional world. Think of a simple pendulum, it executes simple harmonic motion; it oscillates between two extreme opposite to each other. This simple harmonic motion is the motion in one-dimensional world. If the same motion is expressed in two-dimensional world, then it becomes a circular motion. Mathematical form remains the same but the apparent differences disappear. Our apparent differences and oppositeness too indicate that we actually live in lower dimensional emotional world. The difference will disappear, when we move to higher dimensional world as we get refined. Thus, message from physics is that we should give up narrow-mindedness to create a conflict-free world.

Time and location are always important

We are familiar with coulombic repulsion between protons. When the protons are confined in a nuclear region, they start attracting each other, a behavioural change appears as per the demand of the situation. The message for us is to remember that nothing is permanent for any person. Time and location decides our behaviour many a times.

Regularity is most important

Everyone knows that earth rotates around the sun. It does its work perfectly. Suppose the earth were to stop rotating for a second, then the whole world will be washed off from the surface of the earth which has not happened so far. This conveys that we must do our work regularly and regularity brings perfection in every walk of life.

Concentration

Light is a form of energy, it travels in all directions. If we make it to travel in same direction without diverging by some mechanism, then the beam becomes coherent and more intense. Such a beam is called laser, which can cut the thick sheets of metals. It tells us about the concentration power and confined energy. For example if a student concentrates his mind power on his subjects without any diversion, then he will succeed in any type of examination.

Don't turn suspicious

We know about the famous double slit experiment that has been performed to prove that light and material particle like electron possess wave nature. The photon or the electron passing through a "double slit" will exhibit interference, only when one doesn't try to know which slit the particle is using to pass through. If one tries to know that, then the capability of the electron of producing interference pattern is lost. This tells us, by remaining suspicious, one cannot exploit full potential of the situation.

S. Sudhagar & V. Thiyagarajan
I M.Sc. Physics

BIOGRAPHY OF MARIE CURIE

Marie Skłodowska (sklaw DAWF skah) was born on November 7, 1867 in Warsaw, Poland. She is famous for her research radioactivity, and was the first woman to win a Nobel prize.

Marie grew up in a family that valued education. as a young woman, she went to Paris to study Mathematics, Chemistry and Physics. She began studying at the Sorbonne in 1891, and was the first woman to teach there. She adopted the French spelling of her name (Marie) and also met Pierre Curie, who taught physics at University of Paris. Marie and Pierre soon married, and teamed up to conduct research on radioactive substances. They found that the Uranium ore, or Pitchblende, contained much more radioactivity that could be explained solely by the Uranium content.

The Curies began a search for the source of the radioactivity and discovered two highly radioactive elements, “radium” and “polonium”. The Curies won the 1903 Nobel prize for Physics for their discovery. They shared the award with another French physicist, Antoine Henri Becquerel, who discovered natural radioactivity. In 1906 Pierre, overworked and weakened by his prolonged exposure to radiation, died when he was run over by a horse drawn wagon.

Madame Curie continued her work on radioactive elements along with her daughter Irene Curie and won the 1911 Nobel prize in chemistry for isolating, radium and studying its chemical properties. In 1914 she established the Radium Institute in Paris, and was the Institute’s first director. When the first world war broke out, Madame Curie though X-rays would help locate bullets and facilitate surgery. It was also important not to move the wounded, so she invented X-ray vans and trained 150 female attendants.

On July 4, 1934, at the age of 67, Madame Curie died of Leukemia, thought to have been brought on by exposure to the high levels of radiation involved in her research. After her death the radium Institute was renamed as the Curie Institute in her honour.

**Where there is a will,
There is a way!**

- A. Praveen Kumar
III B.Sc. Physics

DISCOVERY OF MAGNETS

It is said that, there lived a shepherd named Magnes, who lived in Magnesia in Asia minor. He used to take his herd of sheep and goats to the near by mountain for grazing. He would take a stick with him to control his herd. This stick had a small piece of iron attached to one end.

One day he was suprised to find his stick got stick got strick to a rock and he had to pull hard to free his stick from the rock on the mountain side. It seemed as though the stick was be atracted by the rock. He thought that the rock was God. The rock was a natural magnet and it attracted the iron tip of the shepherds stick. It is said that this is how natural magnets were discovered.

People discovered that certain rocks have the property of attracting pieces of iron. When a magnet is freely suspended, it always comes to rest in North - South. In early days Chinese navigators used magnets, to find the direction. The magnetites are the natural magnets. That is why they are called as leading stones or load stones.

After the method of magnetisation of iron plate came in to practics, we started making different types of magnets.

N. Bhuvaneshwari
III B.Sc. Physics

IF I WERE AN ASTRONAUT

If I were an astronaut,
I would go exploring the surface of the moon
And have a look at the deep pits of the crater soon
I'll try to build flats on space with confidence and belief
Rather taking oxygen for health,
I would plant up trees to make it wealth.

I'll increase the life of humans there
And construct hospitals for their care.
I'll connect the earth with the moon
Also discover new planets and stars soon.
I'm sure! I'll meet with triumphs and disasters
For that I'll work hard with all my boosters.

If I were an astronaut,
I'll make the world turn to me
As the twinkling stars of the world
Wonder to be !
Wonder to be !!

K. Dilli Babu
I B.Sc Physics

A HERO FROM NORTH EAST INDIA

Prof. J.N. Goswami was born in 1950 in Assam and obtained his B.Sc and M.Sc degree in Physics from the Guwahati University, Assam, before joining the Tata Institute of Fundamental Research, Mumbai for his Ph.D work. His Ph.D work dealt with studies of Cosmic ray records in lunar sample and meteorites. He moved to the Physics Research Laboratory in 1973 and held different positions and currently the Director of the laboratory. He spent several years at the University of California, Berkeley and at San Diego for post doctoral research. Over the years he has visited Washington University, St. Louis, Vernadsky Institute, Moscow, Lunar and Planetary Institute, Houston and Max-Planck Institute, Mainz, for extended periods for conducting collaborative and independent research.

Prof. J.N. Goswami's research encompasses studies of the origin and early evolution of the solar system, solar stellar relationship, energetic particles in space, evolution of moon, asteroids and meteorites and geochronology. He was a co investigator of the Indian cosmic ray experiment conducted on board space shuttle spacelab 3 and is a principle investigator of lunar samples. He is currently shouldering the responsibility as Principal Scientist of the Chandrayaan - 1 mission and also contributing towards planning of future Indian planetary mission.

Prof. Goswami has received various awards and honours that include INSA young scientist awards, Young Associate of Indian Academy of sciences, the NASA group Achievement Award and Shanti Swarup Bhatnagar Award in earth and planetary sciences. He is currently a fellow of all the three science academies in India and also a council member of the Indian Academy of Sciences, Bangalore and national Academy of Sciences, Allahabad. He is an elected fellow of several international forms that includes Meteoritical Society, Geochemical society of U.S.A, European Association of Geochemistry and International Astronomical Academy. He has been elected as honorary fellow of the Royal Astronomical society in 2008. He is currently the President of Astronomical society of India and is a council member of several premier research institutes and organizations in India.

Timangshu Chetia
II B.Sc. Physics

UNSOLVED PROBLEMS IN PHYSICS

The following are some of the unsolved outstanding problems in physics. Some of the problems are theoretical and existing theories seem incapable of explaining some observed phenomenon or experimental results. Others are experimental, meaning that there is a difficulty in creating an experiment to test proposed theory or investigating the phenomenon in greater detail.

Accretion disc jets : Why do the accretion disc surrounding certain astronomical objects, such as the nuclei of active galaxies, emits radiation along the polar axes?

Amorphous solids : What is the nature of transition between a fluid or regular solid and a glassy phase? What are the microscopic qualities that are giving rise to the general properties of glasses?

Fusion power : Is it possible to construct a practical nuclear reactor that is powered by nuclear fusion rather than nuclear fission?

Galaxy rotation problem : Why do galaxies rotate at speed inconsistent with their apparent mass?

Gravitational waves : Is it possible to construct a device to detect the gravitational waves emitted by, for example a pair of inspiralling neutron stars? Such a device would be invaluable for observational astronomy.

High temperature superconductors : Why do certain materials exhibit super conductivity at temperatures much higher than 20,000K?

Magnetic monopoles : Are there any particles that carry “magnetic charge” and if so, why are they so difficult to detect?

Quantum computers : Is it possible to construct a practical computer that performs calculation on quantum bits (qubits)?

Turbulence : Is it possible to make a theoretical model to describe the behaviour of a turbulent fluid (in particular its internal structure)?

Supersymmetry : Is supersymmetry a symmetry of Nature? If so, how is supersymmetry broken, and why?

Time travel : Is it possible?

Even science is not able to explain or give the answer to the question - “**Why are we here?**”

Timangshu Chetia
II B.Sc. Physics

MARCH OF THE QUANTA

All black body radiations,
All atomic oscillations,
All the spectrum variations
Vary as $h\nu$
Ultraviolet vibrations,
X-and gamma-ray pulsations,
Ordinary light sensations,
All obey $h\nu$

Here's the right relation,
Governs radiation,
Here's the new, the only true
Never mind your d^2/dt^2
Bev or $1/2 mv^2$
If you watch the factor c^2
E Is equal to $h\nu$

R. Harsa Vardhini
I M.Sc. Physics

THE MILKY WAY

When watching the constellations in the night sky we can see a faint whitish band of light stretching across the sky in a generally north - south direction at certain times of the year. Although we may not realise it when we look at it with the unaided eye, the milky way is really made up of countless billions of stars. This was discovered by Galileo four hundred years back only with his humble telescope. We can make out the stars as tiny dots of light on looking through a pair of binoculars or a telescope.

In the night sky, the milky way appears to pass through a number of prominent constellations. From Cassiopeia in the north, it runs south through Persus, Auriga, Taurus and between Gemini and Orion towards the southern cross. Then it turns north, passing through Scorpians, Sagittarius, Aquila and Lygnur back to Cassiopeia. The outline of the milky way is irregular, its width varies widely along its length and its brightness changes from point to point, some split into two parallel streaks.

An interesting point here is that, 16 of the 21 check magnitude stars lie within or close to the milky way. But unfortunately, in cities the glass of light and pollution almost completely blots it out except when the sky is exceptionally clear, for instance after the monsoon rains or when there is a total power failure!

The best time to see the milky way is on an autumn or winter evening. Till then, people though this whitish band is the route to heaven a milky way that leads our mortal souls to Thee!! It is then highest in the sky and there fore its visibility is least affected by atmospheric haze. If we scan the length of the whitish band with a pair of binoculars we may be able to see some interesting objects. Apart from a general background of tiny dots of stars, we find gorgeous star clusters and hazy luminous patches many stars embedded. We find large, dark areas here and there which are thick clouds of interstellar dust which obscure the light coming from the stars behind. The dark area called coal sack, which can be seen just to the bottom left of cruse in the southern sky. The coal sky is by no means unique, some are less striking in appearance.

It is an enormous spiral galaxy within which our sun and the solar system are situated. The Galaxy has a general shape of a thin disc an estimated diameter of the outer most spiral of about 100,000 light - years. The sun and the solar system lie about two - thirds of the way from the centre of the outer rim of the Galaxy. It is because of the flatness of the spiral disc that, looking towards its edge from earth, we see it as an uneven band of stars. There are not many stars and so we can see the emptiness beyond the stars into the vast reaches of the universe.

D. Manju, II B.Sc. Physics

PHYSICS TRIVIA

Which physicist remarked : Got is subtle but he is not malicious ? Albert Einstein

Which M - word defines anything that occupies space? Matter

Which teenager began studying physics after he noticed a chandelier swinging during a 1581 earthquake? : Galileo

Which radioactive element is extracted from carbonite and pitchblende? Uranium

Which American physicist pioneered the theory of black holes in 1939? J.Robert Oppenheimer

What are the acronyms for “Weakly Interacting Massive Particles” and “Massive Compact Hollow objects” do physics use to explain dark matter? Wimps and Machos

What astronomical term is used to desote the grauitationally completely collapsed object? : Black Holes.

What’s a single unit of quanta called? Quantum

What did scientists build in a squad court under a football stadium at the University of Chicago in 1942? A nuclear reactor

A. Shika Kumari
III B.Sc. Physics

Brah Mos

Brahmos is a supersonic cruise missile that can be launched from submarine, ship, aircraft and land. The air-launched version is known as the BrahMos. These cruise missiles are designed to attack surface targets from a low altitude of 10 meters at a speed of Mach 2.8 from a range of 290km. The ship - launched and land-based missile has a 200 kg warhead and 1300 kg for the BrahMos. Primarily BrahMos is an anti-ship missile. It has the capability to engage land based targets also. The missile can be launched either in vertical or inclined position and covers 360 degrees. The BrahMos missile has identical configuration for land sea and sub sea platforms. The air launched version has a smaller booster and additional tail fins for stability during launch.

The missile was developed under a joint venture between The Defence Research & Development Organization (DRDO) from India and Federal state Military Enterprise NPO Mashinostroyenia (NPOM) from Russia.

BrahMos gets its name from two great rivers. Brahamaputra and Moskva. It is being jointly developed by India and Russia. It is the first supersonic land attack / anti - ship cruise missile in the world.

SCHROEDINGER'S CAT

I have been reading of Schroedinger's cat !
But none of my cats are at called like that !!
This unusual animal so it is said
It is simultaneous alive and dead !
What I don't understand is just why he!
Can't be one or other unquestionably?
My future now hangs in between eigenstates
In one I'm enlightened, the other I ain't
If you understand then show me the way
And rescue my Psyche from quantum decay
But if this queer thing has preplexed even you
Then I will and won't see you in Schroedinger's zoo.

A. Shika Kumari
III B.Sc. Physics

ALBERT EINSTEIN - FUN FACTS & INFORMATION

❖ The most famous and influential scientist of the 20th century was Albert Einstein. He was born in 1879 in which German City?

Ulm: He was born on 14th March 1879 at 135 Bahnhofstrasse, which was later destroyed by Allied bombing in 1944.

❖ He was educated in Munich and then Padua Italy. But in 1901 he claimed citizenship of which country? Switzerland.

❖ What gift did Albert receive from his father, when he was 8 years old?

A compass : Albert's father gave him a compass when he was sick in the bed with a cold.

❖ He received the Nobel prize in 1921 but with the later rise of Nascism he went to England. He lectured at Oxford and Cambridge before moving to the USA. He became visiting professor in which California city?

Pasadena at the California Institute of Technology in 1930. He also lectured at Princeton.

❖ In 1952 Einstein was offered to become President of a country as a result of his beliefs. Which country? Israel. He turned it down through.

❖ The order of the Universe was to him a proof that god existed.

❖ He was noted for his snowy white beard and wild hair. Do you know what his natural hair colour was? Black!

❖ Einstein died in 1955 at Princeton Hospital at the age of 76. His brain was removed and preserved in the laboratory of Dr. Thomas Harvey, formerly the chief pathologist of Princeton University.

❖ Einstein was actually born with an abnormally large head. Doctors were concerned that it could be a sign that he was mentally retarded !

❖ He entered Zurich's Federal Institute of Technology on his second attempt and studied to become a Physics and Maths Teacher.

A. Shika Kumari
III B.Sc. Physics

NOBEL PRIZE IN PHYSICS IN THE LAST DECADE

Year	Nobel Laureate	Recognized for
2001	Erick A. Comell Carl E. Wieman Wolfgang Ketterla	The achievement of Bose-Einstein condensation in dilute gases of alkali atoms and for early fundamental studies of the properties of the condensates
2002	Raymond Davis Jr., Masatoshi Koshiba, Riccardo Giacconi	Their research into cosmic neutrinos and his construction of instruments needed to investigate cosmic X-ray radiation which is absorbed in Earth's atmosphere.
2003	Alexei A. Abrikosov . Vitaly L. Ginsburg Anthony J. Leggett	Their work in quantum physics concerning superconducting and superfluidity
2004	David Gross H. David Politzer Frank Wilczek	A unified description of all forces of nature from the tiny distance within the atomic nucleus to the vast distance of the universe.
2005	Roy J. Glauber John L. Hall Theodor W. Hänsch	Their contribution to the development of laser-based precision spectroscopy including the optical frequency comb technique.
2006	John C. Mather George F. Smoot	For the discovery of the blackbody form and anisotropy of cosmic microwave background radiation.
2007	Albert Fert Peter Grunberg	Giant magnetoresistance
2008	Yoichiro Nambu Makoto Kobayashi Toshihide Maskawa	Mechanism of spontaneous broken symmetry in subatomic physics. The origin of broken symmetry which predicts the existence of at least three families of quarks in nature.

Year	Nobel Laureate	Recognized for
2009	Charles Kuo Kao Willard S. Boyle George E. Smith	For ground breaking achievement concerning the transmission of light in fibers for optical communication. The other of jointly to Willard S. Boyle and George Smith for the invention of an integrated semiconductor circuit.
2010	Andre Geim Konstantin Novoselov	For experiments with graphene, the thinnest and strongest material known to mankind.

D. Suguna & S. Pradeep Kumar
II B.Sc Physics I B.Sc. Physics

FLYING CARS TO BE ON ROAD !!!

An American company Tessafugia Transition, based near Boston, is set to unveil the dual purpose car cum plane vehicle called 'The Flying Car'. With a mere push of a button, the vehicle switches from a two-seat roadster to an aircraft in 15 seconds, which can let you fly if you wish to avoid the congested city traffic. And if you want to drive on the road, just touch the road, the vehicle will fold up itself into a car, its wings will be folded up within 30 seconds. It can be parked in ordinary car garage. Fitted with a fuel - efficient 100 horsepower engine, the Tessafugia Transition can fly a distance of 500 miles on a single tank of gas and at a speed upto 115mph.

The initial cost of the car is expected to be Rupees 1 crore.

P. Muthulakshmi
II B.Sc. Chemistry

DEATH OF A STAR, BIRTH OF A BLACK HOLE

Just like people, stars are born, live for a while (a long , long while!) and then die. How long a star lives and what happens to it when it dies depend on a few things.

Remember, stars are born in massive clouds of dust and gas. When these particles stick together, eventually they become so large and heavy that their own gravity captures still more dust and gas. This cloud collapses under it's own weight. It continues to contract, growing hotter and hotter. Finally it becomes so hot, that hydrogen atoms smash together and form helium. A lot of energy is released in this nuclear fusion reaction, some of which is radiated as light and heat sun light.

Heavy stars, ten or more times larger than the sun, have a more dramatic end in store. Their collapse triggers a massive explosion, a supernora that marks the death of star. For as little as a few days or weeks the supernora explodes with the brightness of 100 million suns.

Of course, not everything is blasted away with the supernova. The core particles left behind contract into a very dense and small neutron star, about the size of small town! But when a truly massive star collapses, its gravity is so powerful that all matter is crushed, nothing can escape - not even light. A black hole is created.!

So, what happens to the matter and energy crushed inside a black hole? We don't know, buy there have been interesting speculations. Perhaps the matter is inside a black hole is squirted into another part of universe. One day we might be able to use the warped space - time around the black hole to travel back into the past, or even to a parallel universe. Sounds like science fiction? A hundred years ago travelling to the moon was the greatest science fiction!

R. Damodaran
I B.Sc. Physics

MY TEACHERS

Leaving staff room thoughtfully
Arriving in the class room actively
Being welcomed by students warmly
Walking up to the board majestically
Holding the chalk artistically
Explaining sincerely
Lecturing impressively
Speaking language correctly
Asking question frequently
Correcting errors immediately
Guiding students to shine brightly
Understanding them lovingly
Treating one and all equally
Smiling at us naturally

C.S. Revathy
I B.Sc. Physics

A FEW FACTS !

- Closest galaxy to our milky way galaxy in Andromeda and when travelling at a speed of light, it would take two million years for us to reach it.
- The approximate age of the earth is said to be 5,000,000,000 year.
- The nearest star to us is the Sun. It is the only star which is visible to naked eyes in day time.
- Chatting endlessly in the cell phone can lead to an allergic reaction on the skin due to the nickel present in the phone.
- The planet which takes longer duration to spin around itself than to rotate around the Sun is Venus. So a Venusian day is longer than a Venusian year !!

P.V. Prabalini
II B.Sc. Physics

STOP LIGHT POLLUTION ! LET STARS TWINKLE !!!

Light pollution is caused by our ever expanding cities as people build and install lots of outdoor lighting. This prevents us from seeing the Milky way.

This human - caused glare from earth actually causes problems for professional astronomess as light travelling to earth from remote parts of other galaxies is lost even to high powered ground-based telescopes.

Light pollution is a waste energy and money which can be minimized by the following ways :

- ❖ Use night lighting only when you really need it.
- ❖ Turn off lights when they are not needed.
- ❖ Use light at times when you are away from home.
- ❖ Use motion detection lights when possible instead of leaving lights on all night.
- ❖ Keep light, directed towards the ground or exactly where it is needed.

P. Bharath Kiran

II B.Sc. Physics

UNKNOWN FACTS!

- * The world's most dense wood, Black Iron wood does not float on water.
- * The First ten feet of the ocean hold as much heat as the Earth's entire atmosphere.
- * Lighting strikes about 6000 times per minute on our planet.

E. Sadamussain

I B.Sc. Physics

HOMI BHABHA

Homi Jehangir, was the architect of Indian Atomic Energy programme. Tata Institute of Fundamental Research (TIFR) is the brainchild of this genius. He was first Chairman of India's Atomic Energy Commission. This visionary chaired of the first United Nations Conference on the peaceful uses of Atomic Energy, held in Geneva in 1955.

He was also responsible for establishing Bhabha Atomic Research Centre. After graduating from Elphinstone college and the Royal Institute of Science in Bombay, he went to Cambridge University. He received his Doctoral Degree in 1934. During this period he worked with Niels Bohr on the studies that led to quantum theory. He also worked on the cascade theory of electron showers, which was of great importance to understand the behaviour of cosmic radiation. He did significant work in identifying the subatomic particle meson. Let us pay our homage to this great physicist of our country and follow footprints to bring glory to our Mother India.

D. Gomathy
III B.Sc. Physics

PHYSICS IS GREAT!

The most basic of the sciences, physics, is all around us every day. Have you ever wondered what makes lightning, why milk boils and over flows, how ice you skid on oily floor, why waves crash on the beach, how that tiny computer can do complicated problems, or how balloon bursts creating noise?

Physicists like to ask questions. Physicists try to find answer for almost everything, from when the universe began to why soda fizzes. If you like to explore and figure out why things are the way they are you too will like physics.

Physics is one of the most important branches of Science. It can be defined as a study of motion, time, space, matter, energy, distance, every natural phenomenon. It is a Natural Science. Physics is great, everyone who is inquisitive is sure to love physics.

S. Mohan Raj
II B.Sc. Physics

MYSTERY OF BERMUDA TRIANGLE

There had been many reports regarding mysterious disappearances of ships and aeroplanes and reappearance of previously disappeared people in the region called Bermuda Triangle. This area is situated in the caribbean sea northeast of the Hawaii islands. It is reported that 20 ships and aircrafts have vanished from a particular spot.

The studies were conducted by Dr. Alan Judd of Sunderland university, Northeast England, along with a team of experts from other universities. The study was completed by March 2001. According to scientists, bursts of methane gas from under the sea may be the answer to the riddle of the disappearances. “Methane or natural gas bubbling to the surface at high volume, lowers the density of water to the point where most objects, including ships, can no longer float”.

Methane and Natural gas are produced from the organic matter deep in the seabed. Over thousands of years such material can generate methane which eventually bubbles up through the sediment towards the sea surface.

A vessel unfortunate enough to sail over a methane blow - out would sink in a matter of second. When methane reaches the surface, it continues to rise putting airplanes at risk by destroying their airworthiness and causing engines to catch fire.

S. Swathi
II B.Sc. Physics

PHYSICS TRIVIA

- * The mass of our entire atmosphere is estimated to be some 5.5 quadrillion tons (55 followed by 14 zeros).
- * The diameter of a proton is approximately 0.000000000001,mm (1 / 25, 000, 000, 000, 000 inch)
- * A solar panel 100 miles by 100 miles (161 x 161 km) in the Mojave desert (USA) could replace all the coal now burned to generate electricity in entire U.S.
- * Many physicists believe a blackhole (a "shortcut" through space and time) exists all around us but they are smaller than atoms.
- * If given the mass, our body would actually be hotter than the sun.
- * On average our bodies constantly resist an atmospheric pressure of about, kg per square cm.
- * Sun light can penetrate clean ocean water to a depth of 73 meter (240ft).
- * When glass breaks, the cracks travel at speed of more than 4,500 km/h (3,000 miles)
- * At the ocean deepest point, an iron ball would take more than an hour to sink to the ocean floor due to immense pressure.
- * On a clear day, a beam of sunlight can be reflected off a mirror and seen up to 40 km away.

Vijay Kumar Shukla
I B.Sc. Physics

KNOW THE UNKNOWN

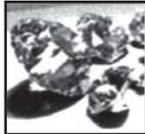


The lightning bolt is 3 times hotter than the sun.

The bark of the redwood tree is fireproof.



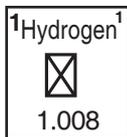
The effect of relativity made Astronaut Sergei Avdeyev a fraction of a second younger upon his return to Earth after 747 days in space.



You can convert graphite into diamond by applying a temperature of 3000 Celsius and pressure of 100,000 atm.



The only rock that floats in water is pumice.



When hydrogen burns in the air, water is formed.



If you yell for 8 years, 7 months and 6 days, you would have produced just enough sound energy to heat up one cup of coffee.

R. Varun Bharathwaj
I B.Sc. Physics

THE RELATION BETWEEN CHEMISTRY & PHYSICS

Physical Chemistry is mostly devoted to the effects of the microscopic world in the macroscopic world. Democritus, a Greek Philosopher, came up with the concept of the atom. He theorized that if you keep dividing matter into smaller and smaller pieces, you will reach a fundamental particle, that he called “**atomos**”, which means undivisible.

So Chemistry developed from this concept. We had to wait till the late 19th and early 20th century to learn that inside every atom there are even smaller **particles, neutrons, protons** and **electrons** and until the late 20th to find out that those particles are formed of quarks and other even smaller particles. Still, for a chemist, changes in the nature of matter is what is important, hence chemical reactions.

Physics started on observing the physical world, hence the name physics why light behaves the way it does, predicting the position of a planet or determining its orbit around the sun, what is gravity? Does are some of the fundamental questions of physics and since it deals with the macroscopic world is caused classical physics.

Chemistry, no doubt owes a lot to physics, because it was physicists. Who started asking questions about atoms. Classical Mechanics has its limitations. So a whole new field, quantum mechanics had to be developed to explain the structure

At any rate, at present, physics and chemistry are closely linked to each other.

The two disciplines are important, they allow you to see nature as a whole, Physics can not exist without Chemistry and vice versa. The world that we live on follows fundamental laws that can be explained by both physics and chemistry.

K. Gopi
II B.Sc. Chemistry

PHYSICS IS EVERYWHERE

Can you believe that we can apply $U = Q + W$ to architecture when it comes to a room's dimensions. Heat can travel in a compact space through a smaller room, heat will do more work; the molecules of air will collide more often and the temp of the room will rise. This is something an architect can keep in mind when designing a room. Windows also play a role, the more light that comes in the room, the warmer it gets. The more windows, the more light there is, which in the end means the room would be warmer. Believe me, **Physics** plays a role here with the Law of Thermodynamics.

Architects, plumbers, engineers and general contractors as well as other building professionals use physics when it comes to the designing a sewage system connected to bathrooms and other places that use running water. For example, in a bathroom sink, we have the pipes at a certain angles so that some water is retained in the middle so that gases and smells from the sewage don't rise up through the pipes and into the bathroom. This was Bernoulli's principle because different pipes have different diameters and different fluids have different viscosity and flow rates. Not only these, an engineer should know the quality of material he should use for construction, that physics only gives him. A shower, ventilator, exhaust fans, ordinary fans, floor quality, a latch, keyhole,

Physics is everywhere !

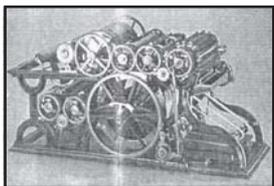
Physics impacts architecture in more ways. It is not only incorporated in the plumbing, the room design, but also in the way the structure affects the environment. So physics is there everywhere, it is we who are yet to notice it and realize it.

Enjoy Physics !

L.R. Jagannath
II B.Sc. Physics

THESE PEOPLE DIED INVENTING !!!

William Bullock



William Bullock was an American inventor whose 1863 invention of the rotary printing press helped revolutionise the printing industry due to its great speed and efficiency. Bullock died while trying to repair one of his printing presses, by getting his foot crushed under one of the machines, while trying to kick a pulley into place. His foot later became gangrenous, and Bullock died during an operation to amputate his foot.

Otto Lilienthal



Otto Lilienthal was a pioneer of human aviation who became known as the Glider King. He was the first person to make repeated successful gliding flights. Newspapers and magazines in many countries published photographs of Lilienthal gliding, favorably influencing public and scientific opinion about the possibility of flying machines becoming practical reality after ages of idle fantasy. On a flight on the 9th August 1896. Lilienthal fell from 17 meters, breaking his spine. He died the next day. His final words were, "Small sacrifices must be made!"

Marie Curie



Marie Curie was a French-Polish physicist and chemist who is famous for discovering Radium and Polonium, as well as the theory of radioactivity and the isolation of radioactive isotopes. She was the joint winner of the Nobel Prize in 1903 (along with her husband Pierre). She died on July 4, 1934, from **aplastic anaemia**, almost certainly contracted from exposure to radiation. The damaging effects of ionizing radiation were then not yet known, and much of her work had been carried out in a shed **without any safety measures**. She had carried test tubes containing radioactive isotopes in her pocket and stored them in her desk drawer, remarking on the pretty blue-green light that the substances gave off in the dark.

H. Deepak Kumar
II B.Sc. Physics

THE MAN WHO LIVED POOR AND DIED FAMOUS



Charles Goodyear, the inventor of Vulcanized Rubber, was born in 1800 in Connecticut, United States, son of Amasa Goodyear, who came up with the idea for the **steel pitchfork**.

It was in the early 1830s that Charles Goodyear became interested in the manufacture of rubber. Rubber used to melt up at hot temperatures and became very hard at cold temperatures. Goodyear, who was at that time already deep in debt, decided to try to find a way to make rubber stable so that it would last a long time, even under adverse conditions,

On 1839, Goodyear mixed the India rubber and sulphur onto a hot stove. He reasoned sulphur and heat were key, but in what proportions? Renewed in his research, his poverty continued to weigh on his family. Of the 12 Goodyear children, 6 died in infancy, one during this period. Unable to afford a funeral, Goodyear borrowed a cart to take his dead infant son to the graveyard.

The next five years Goodyear spent perfecting the vulcanization process, and discovered the exact recipe for making a completely stable, weatherproof form of rubber. Unfortunately Goodyear sent samples of his weatherproof rubber to British rubber plants before obtaining a foreign patent, and a man who had been trying to make weatherproof rubber for 20 years saw one of the samples. The Englishman's name was Thomas Hancock, he reinvented the weatherproofing process in 1843, four years after Goodyear. When Goodyear applied for a British patent, later he found Hancock had beaten him to it. Goodyear sued, but lost the case.

Goodyear died in debt in 1860. The multi-billion dollar Goodyear Tyre and Rubber Co., which is the largest rubber company in the world, is named in his honor, though there are no family connections.

H. Deepak Kumar
II B.Sc. Physics

DIGITAL CAMERAS

Digital Cameras gives a whole new meaning - the idea of painting by numbers. Unlike old-style film cameras, they capture and record images of the world around us using digital technology. In other world, they store photographs not as patterns of darkness and light but as long string of numbers.

How digital cameras work?

Digital cameras look very much like ordinary film cameras but they work in a completely different way. When you press the button to take a photograph with a digital camera, an aperture opens at the front of the camera and light stream in through the lens. There is no film in a digital camera. Instead there is a piece of electronic equipment that captures the incoming light rays and turns them into electrical signals. This light detector is called a charge - coupled device (CCD).

If you have ever looked at a television screen close up, you would have noticed that the picture is made up of a millions of tiny colored dots or squares called pixels. These pixels give out light and form image.

In a digital camera, exactly the opposite happens. Light from the thing you are photographing zooms into the camera lens. This incoming "picture" hits the CCD, which breaks it up into millions of pixels.

The CCD measures the color and brightness of each pixel and stores them as number. A beautiful picture in our mind is a string of binary numbers for a camera.

Compression is a mathematical trick, involves squeezing digital photos. So they can be stored with few numbers and less memory. One popular form of compression is called JPG, stands for joint photographic experts group.

A brief history of photography

* Late 1700s : Thomas Wedgwood (1771 - 1805) and Sir Humphry (1778 - 1829), two English scientists, carried out early experiments trying to record image on light sensitive paper. Their photos were not permanent. They turned back unless permanently stored in a dark place.

- * 1827 : French Joseph Nicephone Niepse (1765 - 1833) made the world's first photographs. His method was no good for taking portraits of people because the camera shutter had to be left open for eight hours.
- * 1839 : French opera - house painter Louis Daguerre (1787 - 1851) announced the invention of photos on silver plates called daguerreotypes.
- * 1839 : William Henry Fox Talbot (1800 - 1877) invented the photographic negative process.
- * 1851 : British artist and photographer Fredrick Scott. Archer (1813 - 1857) invented a way of taking pin-sharp photos onto wet glass plates.
- * 1870s : Britist physician Dr. Richard Maddox (1816 - 1902) developed a way of taking photos using dry plates and gelatin.
- * 1883 : American inventor George Eastman (1854 - 1932) invented the modern photographic film.
- * 1888 : George Eastman launched this easy to use Kodak Camera. His slogan was; "you push the button and let us do the rest."
- * 1947 : Edwin Land (1999 - 1991) invented the instant polaroid camera.
- * 1968 : Edwin Land invented the colour polaroid camera.
- * 2000 : Digital camera started to become popular.
- * 2010 : Even our phones carry camera !!

R. Udhaya Kumar
II B.Sc. Physics

SOME FACTS ABOUT THE MOON

DO YOU KNOW?

* ***How was the Moon formed?***

The Moon is 4.5 billion years old. There are various theories on the evolution of the earth and the moon.

Simultaneous Formation

The earth and the moon were formed , from the solar nebula seperately. but near each other. During or immediately following its formation, the moon began to orbit the earth. This theory explains why the earth and the moon rocks are similar, but cannot explain why the lunar soil is depleted of iron.

Fission

According to this hypothesis, originally there was no moon. The earth had no moon. The earth was spinning so very rapidly (one day was 2 hours long), that a large chunk of the earth split off (fissioned) from the main body. This large chunk then cooled and became the moon. This hypothesis justifies why the earth and the moon came from iron-poor parts of the earth. But this theory to unable o support the conservation of angular momentum.

* ***Surface features of the Moon***

The moon is covered with craters, because throughout its history, it has been bombarded by meteorites. The large craters on the moon is over 2100km across and is called the south pole **Aitken Basin**.

* ***What are mascons?***

Photographs of the moon's crust show regions with irregular gravitational "bumps" in the moon's gravitational field caused by dense material beneath the lunar seas. These areas of tightly packed matter were called mascons - short for "mass concentrations". The discovery of these gravitational anomalies have helped the safe landings of the Apollo astronauts on the moon.

* ***What is the temperature on the Moon?***

The moon undergoes extreme changes in temperature. It is scorching hot at 123°C during the day and freezing cold at -233°C during the night.

* ***Is there any life on the Moon?***

So far none of the lunar missions have detected any presence of life on the moon.

* ***Why do we see only one side of the Moon?***

As the moon orbits, it always presents the same side towards the earth. This is because the earth's gravity has slowed the moon's rotation so that it matches the time it takes to go around the earth. So, the moon takes the same time to revolve around the earth (27 days, seven hours, 43 minutes and 11.6 seconds), as it takes to rotate about its spin axis.

* ***Chandrayan - I***

Chandrayaan - I is a scientific investigation by space craft on the moon by India. 'Chandra' means 'moon' and 'yaan' means 'vehicle', implying Chandrayaan is a vehicle to moon.

Chandrayaan - I is the first Indian planetary science and exploration mission.

At the time of its launch, Chandrayaan - I weighed 1380kg. The weight of the space craft in lunar orbit was 550 kg, of which the weight of payloads was 80kg.

P. Gayathri
III B.Sc. Physics

SPACE TOURISM

Anybody planning your next holiday?

World's first spaceport begins construction. About 45,000 people from 120 countries are getting ready for space tour. Each of them will be charged 1 crore rupees per trip.

Space is the most fascinating aspect of the Universe. It is an unlimited expanse in which everything is located.

Space tourism is the recent phenomenon of individual tourists paying to visit space. Any passenger who visits the space above 118km from earth is a space tourist.

There are two types of space tours. One is orbital space tourism which takes the tourists to the International space station (ISS) which is an orbiting laboratory 450km above Earth's surface.

Suborbital tours take the passengers up to an altitude of 160km from earth's surface. Orbital space tourism opportunities are limited and expensive costing about Rs.75 crores and that for suborbital tourism is about Rs. one crore.

The spaceship will be connected to a specially designed carrier aircraft that will take it to about 50,000 feet according to Virgin Galactic.

Pioneer tourists to space :

On April 28, 2001, Dennis Tito became the first "fee paying" space tourist when he visited the International space station for seven days.

He was followed in 2002 by South African millionaire Mark Shuttleworth, then by Gregory Olsen in 2005.

The almost \$ 200 million project is funded by the New Mexican state government. Once completed, Richard Branson's Virgin Galactic will begin taking tourists to space from the facility. The aircraft will release the spaceship, which will then use rockets to propel itself into space.

P. Bharath Kiran
II B.Sc. Physics

PLASMA PHYSICS - FOURTH STATE OF MATTER

Plasma is a state of matter similar to gas in which the particles are ionized. Heating a gas dissociates its molecular bonds, rendering it into its constituent atoms. Further heating leads to ionization turning it into a plasma containing charged particles, positive ions and negative electrons.

The presence of a non-negligible number of charge carriers makes the plasma electrically conductive so that it responds strongly to electromagnetic fields. Plasma, therefore, has properties quite unlike those of solids, liquids or gases and is considered to be a distinct state of matter.

Plasma was first identified in a Crooke's tube, and so described by Sir William Crookes in 1879, and subsequently identified by British physicist Sir J.J. Thomson in 1897 and dubbed "Plasma" by Irving Langmuir in 1928, perhaps because it reminded him of a blood plasma.

Plasmas are by far the most common phase of matter in the Universe, both by mass and by volume. All the stars are made of plasma and even the space between the stars is filled with a plasma, albeit a very sparse one.

Careers in Plasma Physics

There are job opportunities for plasma experts at the Joint European Torus, the largest man-made magnetic confinement plasma physics experiment currently in operation. Another major project is the International Thermonuclear Experiment Reactor. These research/engineering projects have the goal of producing fusion power to replace fission and coal power generations.

Careers based on knowledge of plasma exist in the fabrication of semiconductor devices. Reactive ion etching (RIE) uses chemically reactive plasma to remove material deposited on wafers for micromanufacturing. Plasma-enhanced chemical vapour deposition (PECVD) and sputtering are similar manufacturing procedures, where physicists with expertise in plasma are needed.

R. Ramesh
III B.Sc. Physics

HOW THE MOON FORMED?

The moon contains the same materials that are found on Earth and this suggests that the moon and Earth formed together. But there is something odd; the minerals are in completely different proportions. The moon contains a lot of silica, but very little iron. It is also much less dense than earth.

Earlier astronomers believed that earth and the moon formed at the same time, or that young earth spun so rapidly that it flung off a chunk of material to form the moon. Others believed that the moon formed separately in a different part of solar system and was later captured by earth's gravity. But all these theories cannot explain the composition and similarities between the moon and earth.

Today, nearly all astronomers agree on a different theory, that the moon formed in a collision. At some point in the early history of earth, long before life had begun, our planet might have collided with other planet, about the size of Mars. The enormous explosion vapourized huge amount of both the planets and blasted debris into orbit around them. Lighter materials from their crusts and mantles ended up in orbits, while the iron cores of the two planets merged together.

In the aftermath of the collision, earth gradually healed and the materials left in orbit began to collide and stick together, eventually building up to form the moon.

The collision idea is the just theory to explain why earth and moon are so similar and yet so different. It explains the shortage of lunar iron and also the absence of certain materials and elements. These turned to gas in the explosion and boiled away into space. That's why probably moon has less mass!

V. Saranya
I B.Sc. Physics

PLANETS ROMAN AND ROMAN GODS !

In earlier days, throughout the world, philosophers and astronomers named the planets with the names of gods. As we've adopted European system of Modern Science, even in later days, we name the planets with the names of gods Roman and Greek mythology.

1. Mercury is the god of commerce, travel and thievery in Roman mythology. The planet probably received this name because it moves so quickly across the sky.
2. Venus is the Roman goddess of love and beauty. The planet is aptly named since it makes a beautiful sight in the sky, with only the Sun and the Moon being brighter, than venus.
3. Earth is the only planet whose English name does not derive from Greek Roman mythology.
4. Jupiter was the King of the gods in Roman mythology, because its the largest planet in our solar system.
5. Mars is the Roman god of War. The planet probably got this name due to its red colour.
6. Saturn is the Roman god of agriculture.
7. Uranus is the ancient Roman deity of the heavens, and the earliest Supreme god.
8. Neptune was the Roman god of the Sea, given the beautiful blue colour of this planet.

J. Jeyavinolini
I M.Sc. Physics

WHO AM I?

1. I am the first and last experiment to demonstrate the transverse nature of light?
Ans : Polarization
2. I am the first scientist to be awarded Nobel prize in physics for the discovery of X - rays? Ans : Roentgen.
3. I am a device which works opposite to Carnot's theorem and every modern home has me? Ans : Refridgerator.
4. I am the principle behind stethoscope and other modern data cables?
Ans : Total internal reflection.
5. I have path and many hair pin bends. But I don't have any road?
Ans : Diffraction
6. I am a gas of 5 spectral series but all classical theories fails because of me?
Ans : Hydrogen
7. I have three legs. But I'm unable to walk? Ans : Transistor
8. I am the first lady scientist to be awarded with Nobel prize for physics?
Ans : Marie curie
9. I have mustasche, even an atom bomb explosion can't able to destroy me?
Ans : Cockroch
10. The phenomenon of interference was first observed and demonstrated by me?
Ans : Thomas Young

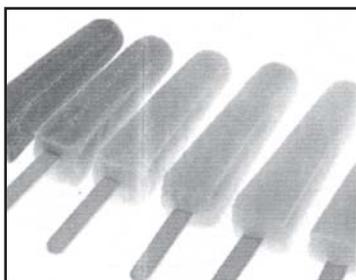
B. Santhosh Kumar
III B.Sc. Physics

DO YOU KNOW !

1. Among all the colours Blue light has more energy. It has shorter wavelength and a higher frequency than red.
2. The maximum speed with which rain drops can fall is around 18mph (miles per hour).
3. Because of thermal expansion, the Eiffel tower is 15 cm taller in summer.
4. Engineers at NASA claim to have made the Loudest noise ever of 210 decibels. This is so loud that it can make holes in solid materials.
5. One kilogram of butter stores as much energy, between its atoms as the same quantity of TNT.
6. The moon is gradually moving away from the earth and the tides are to blame. Every year the earth moon a further 3.82 cm from the earth.

B. Santhosh Kumar
III B.Sc. Physics

THE STORY OF A KID WHO HID HIS INVENTION FOR 18 YEARS ..



Frank Epperson, a eleven-year-old, invented the Popsicle and the invention was accidental. One day Frank mixed some soda powder and water, which was a popular drink in those days. He left the mixture on the back porch overnight with the stirring stick still in it. The temperature dropped to a record low that night and the next day Frank had a stick of frozen soda water to show his friends at school. Eighteen years later in 1923. Frank Epperson began a business producing

Epsicles in seven fruit flavors. The name was later changed to the Popsicle... He realized the commercial possibilities of his invention and applied for a patent, which was granted in 1924. By 1928. Epperson had earned royalties on more than 60 million Popsicle ice pops. One estimate says three million Popsicle frozen treats are sold each year. There are more than thirty different flavors to choose from, but Popsicle Industries says the general flavor favorite through the years has remained “taste-tingling orange”.

H. Deepak Kumar
II B.Sc. Physics

NANOTECHNOLOGY

Nanotechnology is the study of the controlling of matter on an atomic and molecular level. Generally nanotechnology deals with structures sized between 1 to 100 nanometer in at least one dimension, and involves developing materials or devices within that size. One nanometer is one thousandth of a micrometer! By the way, one micrometer is again one thousandth of a millimeter !!

Why the Nanotechnology ?

For any kind of studies PURPOSE is important. The question is what nanotechnology is? Why, how and where it is used. To explain these let us take some examples. We can't do massage or put ointment to an ant's leg if it gets hurt. We can't put hands in one's tissue and separate the cancer or cells if one gets affected with cancer and of course we can't repair a micro chip with our bare hands as it contains millions of circuits in it. So firstly we have to think of that level and go to that level of matters and devices. By this way only, this technology developed and keeps on developing.

How the Nanotechnology was discovered?

“THE PROPERTIES OF MATTER AT NANOSCALE IS DIFFERENT FROM ITS BULK FORM”. The properties of matters changes when its size reaches to nano level”. This was the reason how the nanotechnology was discovered. The advancement of SPECTROSCOPY took nanotechnology to a great level.

Where is Nanotechnology used?

Nanotechnology is used in various fields. It is a field which connects PHYSICS, CHEMISTRY and BIOLOGY. According to our need, it is used in these fields. But nanotechnology is a part of physics. A question may arise that why it is added particularly to PHYSICS. It can be explained by this example. Let us consider the reactions inside a human cell. Why are the reactions occurring? It can be answered by BIOLOGY. How are the reactions occurring? It can be answered by CHEMISTRY. But actually what is happening inside? PHYSICS can only answer this. That is why the field nanotechnology is added to PHYSICS.

K. Navaneetha Krishnan
II M.Sc. Physics

SPACE ACCIDENTS

1960 : 2 - 16 - Soriet 2 - stage rocket explodes in Tyuratom, on the launch pad killing the Chief and ground staff.

1966 : Gemini 8 - got out of control after clocking with orbiting space craft Agena, but Managed to return afloat.

1967 : Apollo 1 - three astronauts under going training in the Command Module were killed following a huge fire and asphyxiation. Soyuz 1 - Cosmonaut Vladimir Komarov while Existing his space failed mission crashed at the ground on high speed after both the parachutes failed to open.

1969 : SOYUZ - 5 While preparing for Earth re-entry the Equipment module not only failed but blocked the heat shield making it out of control. though it was a near - fatal landing volynor ejected out of the module.

1970 : Apollo - 13 suffered an oxygen tank Explosion using its main power supply while on moon mission. The crew was rescued using the lunar lander.

1971 : SoYUZ - 11 - These cosmonauts died while trying to separate the re-entry capsule and the space craft through an explosion while resulted in leakage of oxygen chamber.

1980 : A Rostok rocket exploded on the launch pad while refueling killing 50 at Plesetsk space center, Russia

1986 : Space shuttle Challenger with 6 astronauts including a high school teacher while in a fuel tank explosion.

2003 : Columbia space shuttle broke apart on re-entry killing 7 crew including, **Kalpana Chawala**

Vinodh
I B.Sc. Physics

SCIENTIST BEHIND THE UNITS

Name	Nationality	Quantity	SI unit
Andre - Marie Ampere	French	Electric current	Ampere (A)
William Thomson (Lord Kelvin)	British (Scottish)	Temperature	Kelvin(K)
Heinrich Rudolf Hertz	German	Frequency	Hertz (Hz)
Isaac Newton	British (English)	Force	Newton(N)
Blaise Pascal	French	Pressure	Pascal(Pa)
James Prescott Joule	British	Energy	Joule(J)
James Watt	British (Scottish)	Power	Watt(W)
Charles - Augustin de Coulomb	French	Electric charge	Coulomb (C)
Alessandro Volta	Italian	Electric Potential	Volt (V)
Michael Faraday	British (English)	Capacitance	Farad (F)
Joseph Henry	American	Inductance	Henry (H)
Georg Simon Ohm	German	Electrical resistance	Ohm(R)
Ernst Werner von Siemens	German	Conductance	Siemens (S)
Wilhelm Edward Weber	German	Magnetic flux	Weber (Wb)
Nikola Tesla	American	Magnetic Flux Density	Tesla (T)
Anders Celsius	Swedish	Temperature	Degree Celsius (°C)
Marie Curie	Polish	Radio activity	Curie (Ci)
Antoine Henri Becquerel	French	Radioactivity	Becquerel (Bq)
Louis Harold Gray	British (English)	Absorbed dose	Gray (Gy)
Rolf Maximilian Sievert	Swedish	Dose equivalent	Sievert (Sv)

R. Varun Bharathwaj
I B.Sc. Physics

APPLICATIONS OF SUPER CONDUCTORS

Magnetic Levitation

Super conductors possess perfect DIAMAGNETIC properties. It repels external magnetic field completely. If a piece of magnet is placed over a super conductor, it would float in air. Super conductor will repels the magnet. As a result of this levitation property, superconducting magnets are more useful than conventional electromagnets.

Electromagnets waste some electrical energy in the form of heat and they are physically larger than super conducting magnets. Therefore by using the advantage of superconductors, JAPAN started an organisation called MAGLEV in 1990. Its primary aim was to improve the transport facilities of the country by using the levitating property of superconductors.

Train like vehicles are levitated from their tracks using superconducting magnets and they travel without any friction. On December, 2003, they successfully tested the first train using the maglev technology, MLXOL and it travelled at record speed of 361 mph (581 kph) maximum.

Such fastest trains are more useful to connect remote locations at the cost of minimum energy. These trains are very well known as the BULLET trains !!!

Bio - Magnetism

It is a life - saving application of superconductors. By using a super conducting magnet, a strong magnetic field is impinged into the human body and the hydrogen atoms (in water and fats) are forced to accept the energy. Then they release the energy at frequencies that can be detected and displayed graphically by computers, this phenomenon is known as **Magnetic Resonance Imaging (MRI)** which was found in mid 1940's. First MRI test on a human being was experimented on 3, July, 1977. It took five 5 hours to produce a image. Present day computers can access more faster and the result is the greatest boon for medical sciences.

Squid (Superconducting Quantum Interference Device)

These devices are capable of sensing change in magnetic field over a billion times weaker force than the force that moves the needle in compass. By using this technology, human body can be probed to certain depths without strong magnetic fields involved in MRI's SQUIDs are especially used to study the brain of human body.

Generators

Generators with superconducting wires are far better than the conventional generators wound with copper wire. It is proved that super conducting generators have efficiency above 99%. On the other hand, the size of super conducting generators are half the size of conventional ones.

Therefore in future, superconducting generators will be used widely in energy storage systems and in high efficient motors.

Centenary Celebrations to Superconductivity during 2011 !

J. Pragadeesh
III B.Sc. Physics

MILE STONES IN SUPER CONDUCTORS (SC)

- 1911 - Heike Kamerlingh Onnes observed super conductivity in Mercury at 4.17K
- 1913 - He won Nobel for the discovery of Superconductivity
- 1933 - Walter Meissner and Robert Ochserfeld observed the “MEISSNER” Effect.
- 1948 - Fritz London published his paper, “On the problem of Molecular. Theory of super conductivity”. This paper started the trend of new theories in SC.
- 1956 - Leon Neil Cooper released his paper, “Bound Electron Pairs in a Degenerate Fermi Gas”. Birth of Cooper Pairs.
- 1957 - Very first microscopic theory of SC, “BCS” theory proposed by Bardeen, Cooper and Schrieffer.
- 1962 - First commercial super conducting wire was manufactured using the alloy of Niobidium and Titanium by Westinghouse.
(and)
Brian D. Josephson’s new discovery SQUID.
- 1972 - Nobel Prize for BCS theory
- 1977 - First ever MRI tested on human.
- 1986 - Revolution in super conductivity, Alex Muller and Georg Bednorz Made ceramic compounds to super conduct (BSCCO, YBCO, LBCO ETC).
B’s - were the ceramic compound which were made to superconduct.
- 1987 - Alex Muller & George won the Nobel prize

- 2003 - First bullet train clocked 361 mph (581 kph) by using superconductivity principle.
- 2008 - Kamihara from Japan observed super conductivity in an alloy that had Iron! [La OFe As]
- 2010 - The compound $[Tl_4 Ba] Ba_2 Mg Cu_8 O_{13+}$ turned into a SC at 265 k [nearing the 0^oc]
- 2010 - The compound [Tl4 Pb] $Ba_2 Mg Cu_8 O_{13+}$ turned into a SC at 3^oc [first ever compund to do so]
- 2011 - Hundred Years of SUPER CONDUCTIVITY !!!

Need of the hour :

A Theory to Explain high temperature Super Conductors. !!!

J. Pragadeesh
III B.Sc. Physics

Happy 100th Birth day Superconductivity !



RAPID FIRE

1. The light houses in outer space?
2. The only two scientists to have their names in elementary particles?
3. First super conducting wire is an alloy of?
4. John Bardeen won the Nobel Prize twice. One for the BCS theory, the other for?
5. SQUIDs uses his junctions, who is he?
6. BSCCO and YBCO. What are these two weird words?
7. The greater the quantum number, the closer quantum physics approaches classical physics. What principle is it?
8. 2 , 8 , 20 , 28 , 50 , 82 , 126 , 184.
These numbers are known as?
9. In 1987, a couple of IBM researchers won Nobel prize for discovering superconductivity in ceramics. Who are they?
10. It would have to pass over 100 light - years of solid iron on the average before interacting! What is it?

Answers :

1. Quasars
2. Enrico Fermi & SN Bose - Fermions & Bosons
3. Niobium & Titanium
4. Producing the 1st Transistor, along with Shockley, Walter Brattain in 1956
5. Brian - Josephson
6. BSCCO - Barium, Strontium, Calcium, Copper, Oxide
YBCO - Yttrium Barium Copper Oxide
Two famous ceramic family in super conductors.
7. Bohr's correspondence Principle.
8. Magic Numbers
9. Alex Muller and Georg Bednorz
10. A neutrino !!!

J. Pragadeesh
III B.Sc. Physics

CRYPTOGRAM

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It is a Macroscopic Quantum Phenomenon !!!
 @ α 5 / β 4

Answer :

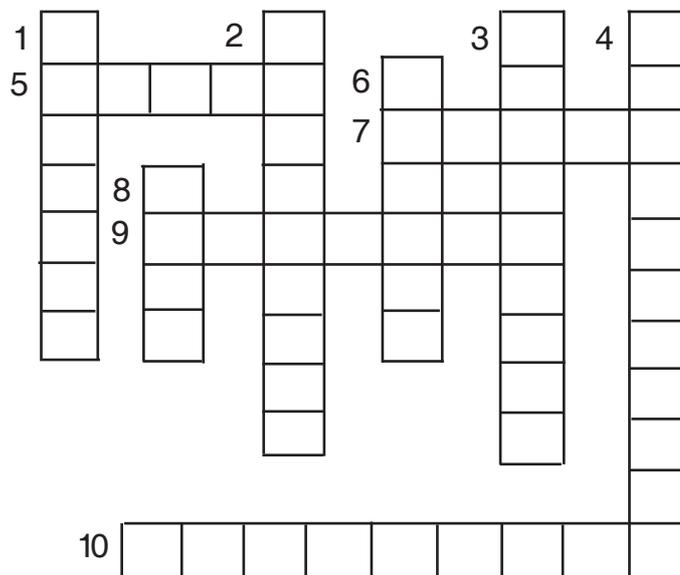
Super conductor is an element, inter - metallic alloy or compound that will conduct electricity without resistance below a certain temperature. Once set in motion, electrical current will flow forever in a closed loop of superconducting material and making it the closest thing to perpetual motion in nature. It is a macroscopic Quantum Phenomenon.

Key (resist yourself to use the key)

a c e h i l n o p r s t u w y
 % @ 4 β ^ ! ? * α \$ # / 5 : •

J. Pragadeesh
III B.Sc. Physics

CROSS WORD



QUESTIONS

Across

- 5. A negatively charged ion (5)
- 7. A positive electrode (5)
- 9. A common temperature scale (7)
- 10. An instrument for measuring atmospheric pressure (9)

Down

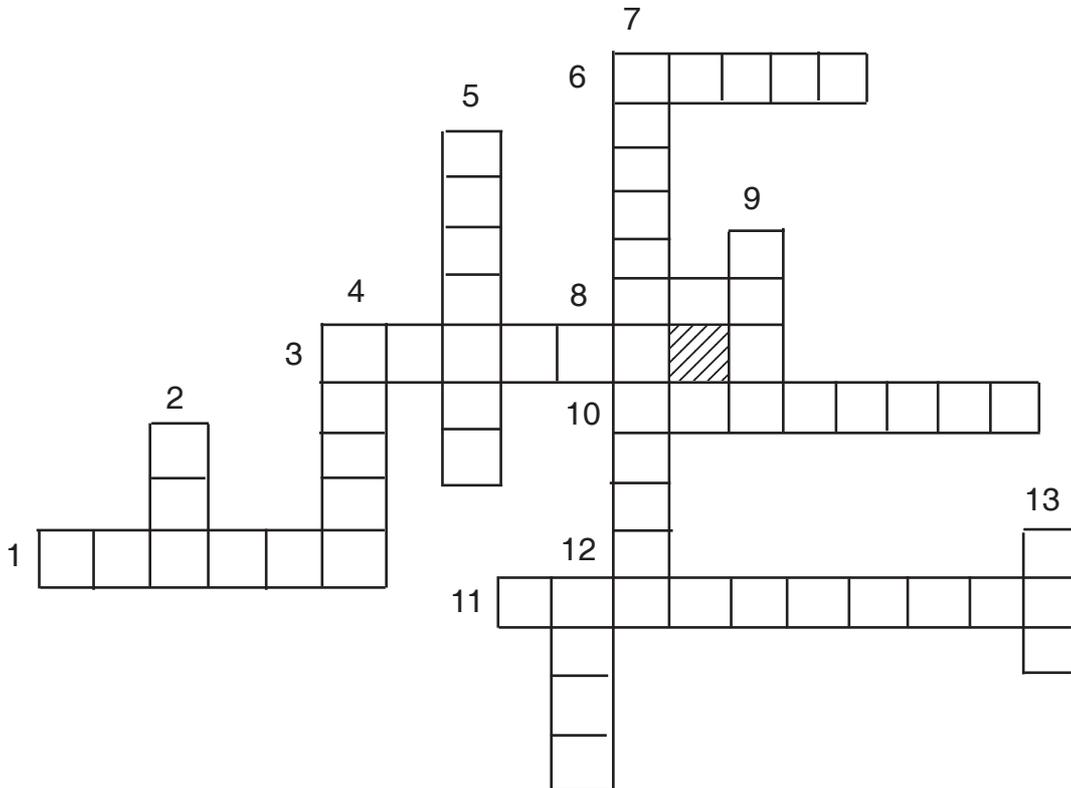
- 1. A negative electrode (7)
- 2. A non - conductor of sound, Heat & electricity (9)
- 3. Scientific study of sound (9)
- 4. An instrument for measuring the temperature (11)
- 6. A positively charged ion
- 8. Reflected sound (4)

Answer :

- | | |
|----------------|---------------|
| 1. Cathode | 6. Cation |
| 2. Insulator | 7. Anode |
| 3. Acoustics | 8. Echo |
| 4. Thermometer | 9. Celsius |
| 5. Anion | 10. Barometer |

T. Gokul
I B.Sc. Physics

PHYSICS PUZZLES



1. A net force of _____ N acting north on an object for 4s will produce an impulse of 48 kg m/s north.
2. A _____ kg mass changes speed from 2 m/s to 5 m/s. The change in the object's, momentum is 3kg m/s.
3. A _____ kg mass moving at a speed of 3 m/s is stopped by a constant force of 15N and the time of the force act on the mass to stop it is 4s.
4. Two carts on a frictionless surface are forced apart by a spring. One cart has a mass of 3kg, it will move to the right with a speed of 2 m/s. Other cart has a mass of 2kg and moves to the left at _____ m/s.
5. A constant force of friction acts on a _____ kg mass moving at 10 m/s. If the mass is brought to rest in 1.00s, and the magnitude of the force of friction is 150N.

6. If an object is moving with a velocity of 5m/s south, what is the direction of the objects momentum?
7. 2 cars are at rest with a coiled spring between them. One car is 100kg and another car is _____ kg. When the coiled spring between the carts is released the cars are pushed apart. If the _____ kg car attains a speed of 4m/s, the 100kg attains 3 m/s. What is the other car's mass?
8. A force of 10N acts on an object for 0.01s, what force acting on the object for 0.050s, would produce the same impulse?
9. An object traveling at 4 m/s has a momentum of 16kg m/s. What is the mass of the object?
10. A 2kg object travelling 3 m/s east has a perfectly elastic collision with a 12kg object travelling 4 m/s west. What is the total momentum after the collision?
11. A constant braking force of 5N, is applied for 5sec is used to stop a 10kg cart travelling at 25 m/s. The magnitude of the impulse applied to stop the cart is _____.
12. An 80kg skater and a 60kg skater stand at rest in the center of a skating disk. The two skaters push each other apart. The 60kg skater moves east at 10m/s. What is the direction of the 80kg skater? (neglect frictional effects)
_____.
13. A 5kg cart moving at a velocity of 4m/s. is brought to a stop in 2s. The magnitude of the average force used to stop the cart is _____.

Answers :

- | | | | | |
|----------------|----------------|-----------|----------|--------------|
| 1. Twelve | 2. One | 3. Twenty | 4. Three | 5. Fifteen |
| 6. South | 7. Seventyfive | 8. Two | 9. Four | 10. Fortytwo |
| 11. Twentyfive | 12. West | 13. Ten. | | |

K.M. Sareena
II B.Sc. Physics

நியான் விளக்கு

கடைகளின் பெயரை விளம்பரப்படுத்துவதற்காக நியான் விளக்குகள் உபயோகப்படுத்தப்படுகின்றன. 'ஜியார்ஜஸ் கிளாட்' என்கிற விஞ்ஞானி தான் இதைக்கண்டுபிடித்தார். இவர் பல்வேறு கண்டுபிடிப்புகளுக்கு சொந்தக்காரர் "பிரான்ஸ் நாட்டின் எடிசன்" என இவரை அழைத்தார்கள்.

1901 - ம் ஆண்டு காற்றில் இருந்து 'நியான்' என்ற அரிதான வாயுவைக் கண்டுபிடித்தார். கிளாட். நியானை மட்டும் கண்டுபிடித்த கிளாட் அதனால் என்ன பயன் கிடைக்கும் என்று அவருக்கு தெரியவில்லை. ஆனாலும், தன்னுடைய உதவியாளர்களுடன் நியானைக் கொண்டு பல்வேறு ஆராய்ச்சிகளில் ஈடுபட்டார். அப்போது தான் 'நியானுக்குள் மின்சாரத்தைப் பாய்ச்சினால் பிரகாசமாக ஒளிரும்' என்பதை கண்டுபிடித்தார்

இதைக்கொண்டு முற்றிலும் புதிய முறையில் ஒளியை உண்டாக்கினார் கிளாட். சாதாரண பல்பு போலவே நியான் விளக்கையும் வீடுகளில் பயன்படுத்த முடியும் என்று அறிவித்தார். ஆனால் சிவப்பு நிற ஒளி கொண்ட அந்த விளக்கை வீடுகளில் பயன்படுத்த மக்கள் விரும்பவில்லை.

உடனே, நியான் விளக்குகளை உஷ்ணப்படுத்தி வளைத்து எழுத்துக்களாக மாற்றினார். இவ்வாறு உருவாக்கப்பட்ட விளக்குகள் விளம்பரம் செய்வதற்காக பயன்படுத்தப்பட்டன. 1923-ம் ஆண்டு 'சிறிய பழைய நியூயார்க்' என்ற நாடகத்தை விட அதன் விளம்பரத்தால் தான் மக்கள் அதிகமாக ஈர்க்கப்பட்டனர். அன்று முதல் நியான் விளக்கு விளம்பரம் பிரபலமாகியது.

P.V. Prabalini
II B.Sc. Physics

கனவு காணுங்கள்

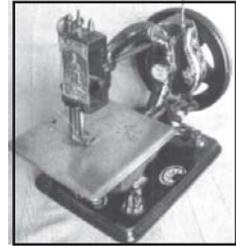


“கனவு காணுங்கள். உங்கள் கனவுகளைச் சிந்தனைகளாகவும் செயல்களாகவும் மாற்றுங்கள்” என்று நமது குடியரசுத் தலைவர் டாக்டர். அப்துல்கலாம், தான் செல்லுமிடமெல்லாம் இளைஞர்களுக்கு அறை கூவல் விடுத்து வருகிறார்.

நாம் கண்டு அதிசயிக்கும் வானளாவிய கட்டடங்கள், பிரமாண்டமான பாலங்கள், விண்ணில் சீறிப்பாயும் ராக்கெட்டுகள் போன்ற படைப்புகள் அனைத்துக்கும் பின்னணியில் இருப்பவை யாரோ ஒரு சிலரின் கனவுகள் தான்.

ஆக்க பூர்வக் கனவுகளின் பேராற்றலை விளக்கும் எத்தனையோ உதாரணங்கள் வரலாறு நெடுகிலும் பதிவாகியுள்ளன. அவற்றில் ஒன்று இதோ.

தையல் இயந்திரத்தை உருவாக்குவதற்காக அரும்பாடுபட்ட “எலியாஸ் ஹோவே” தையல் ஊசியை எவ்வாறு வடிவமைப்பது என்ற பிரச்சினையில் திணறிக் கொண்டிருந்தார். ஒரு நாள் இரவுத் தூக்கத்தின் போது அவருக்கு வந்த அதிர்ச்சி தரும் கனவில், நாடோடிகள் அவரை ஈட்டியால் தாக்க ஓடிவந்தனர். அந்த ஈட்டிகளின் கூரிய முன்பக்கத்தில் ஓட்டைகள் இருப்பதைப் பதிவு செய்த அவரது ஆழ்மனம் அவரைத் தட்டி எழுப்பியது. ஊசியின் முன் முனையில் நூலுக்கான துவாரம் அமைப்பது பற்றி அதுவரை சிந்தித்துப் பாத்திராத அவருக்குத் தீர்வு கிடைத்துவிட்டது. அதன் தொடர்ச்சியான பணிகளில் புகழ் பெற்ற தையல் இயந்திர மாதிரியை வடிவமைத்து அவர் பெரும் செல்வந்தராக உயர்ந்தார்.



மாணவர்களே! எனவே, உங்கள் கனவுகளை பயன் உள்ளதாக காணுங்கள், உங்கள் வாழ்வில் வளம் பெருங்கள்.

பா. சுகுமார்

பி.எஸ்.சி. இயற்பியல் (முதலாம் ஆண்டு)

இயற்பியலில் பொது அறிவு

1. புதிய அணுக் கொள்கையை வெளியிட்டவர் யார்?
2. வெப்ப ஆற்றலை இயந்திர ஆற்றலாக மாற்றும் எந்திரம்?
3. செல்சியஸ் என்ற அலகை உருவாக்கியவர்?
4. ஆற்றலைப் பற்றிய சமன்பாட்டை வெளியிட்டவர் யார்?
5. வெப்பக் கதிர்களின் வேகம் எவ்வளவு?
6. மின் கலங்களில் பயன்படும் அமிலம் எது?
7. மிக மெல்லிய கம்பிகளின் தடிமனைக் காண உதவுவது எது?
8. கலிலியோவின் முதல் கண்டுபிடிப்பு என்ன?
9. ஒவ்வொரு விசைக்கும் அதற்குச் சமமான எதிர்விசை உண்டு எனக் கண்டவர்?
10. எலக்ட்ரானின் மின்சமையை முதலில் கண்டறிந்தவர்?

விடைகள் :

1. நீல்ஸ்ஃபோர்
2. நீராவி சுழலி, நீராவி இயந்திரம்
3. ஆண்ட்ரூஸ் செல்சியஸ் (1724, ஸ்வீடன்)
4. ஐன்ஸ்டீன்
5. 1,86,000 மைல் / நொடி (ஒளியின் வேகத்திற்கு சமம்)
6. கந்தக அமிலம்
7. திருகு அளவி
8. தனி ஊசல்
9. நியூட்டன்
10. மில்லிகன்

J. Saranya
II B.Sc. Physics

வார்த்தை விளையாட்டு

த	அ	று	ரா	அ	தி	ர்	வு	லா	க
ல	ணு	ப	தே	ற்	று	ஆ	யா	லூ	ந
கா	ற்	று	ம	ண்	ட	ல	ம்	வே	ண்
எ	ழு	ப்	தா	ஊ	கு	று	க்	கீ	டு
ஒ	மு	யே	மீ	ள்	த	ன்	மை	ரு	அ
ளி	ணை	டு	நு	ண்	ணோ	க்	கி	பே	ல
யி	ப்	டோ	க்	ஏ	டு	க	ண்	து	கு
ய	ன்	று	த	க	வ	ல்	பே	ன்	டே
ல்	தே	ம்	லூ	வே	ம்	ச	டா	ணூ	ய்
கோ	ம்	த	ற்	பா	தி	சை	வே	க	ம்

மேலே உள்ள கட்டத்தில் ஒளிந்துள்ள இயற்பியல் பதங்களை கண்டுபிடியுங்கள்.

அதிர்வு, அலகு, காற்றுமண்டலம், குறுக்கீடு, ஒளியியல், திசைவேகம், நுண்ணோக்கி, மீள்தன்மை, முடுக்கம், அணு.

J. Saranya & D. Suguna
II B.Sc. Physics

ஐசக் நியூட்டனின் விஞ்ஞானம் உலகிற்கு உணர்த்தும் உண்மைகள்

பல்கலைக் கழகங்களில் கூட அறிவியல் சிந்தனை பரவலாக இல்லாத காலத்தில் வாழ்ந்தவர். ஐசக் நியூட்டன் இங்கிலாந்தில் வுல்ஸ் தோப் கிராமத்தில் 1642ல் டிசம்பர் 25 ஆம் தேதி பிறந்தார். ஐசக் ஒரு சிறந்த மாணவன். எதையும் நுணுக்கமாக யோசித்துப் பார்ப்பான்.

முயற்சி செய்தால் எதுவும் முடியும் என்ற உண்மையை உணர்ந்து கொண்டான். இதற்கு வேண்டியதெல்லாம் தன்னம்பிக்கை மட்டும்தான் சிறுவயதில், காற்று வீசும் திசையில் குதித்தால், காற்றின் வேகத்தை அளக்கலாம் என்ற புது முறையை கண்டுபிடித்தார்.

பிளேட்டோ, அரிஸ்டாட்டில், யூக்லிட் ஆகியோர் எழுதிய நூல்கள் ஐசக்கின் கணிதத்துறை ஆராய்ச்சிக்கு உதவியது. 1666ல் நுண்கணிதம் தொடர்பான கண்டுபிடிப்புக்கு, “மாறும் கணிதம்” என்று பெயரிட்டார். நியூட்டனின் மிகச் சிறந்த கொடையாகக் கருதப்படுவது, அவர் எழுதிய “பிரின்ஸிபியா” என்ற புத்தகம். இதில் நியூட்டனின் விதிகள், ஈர்ப்பு விசைத் தத்துவம், எல்லாம் குறிப்பிடப்பட்டுள்ளன.

நியூட்டனின் வரலாற்றை வாசிப்பது உலக அறிவியல் புரட்சியின் முக்கியமான பக்கங்களை வாசிப்பதற்குச் சமம். சிந்தித்தால்தான் எதுவும், செய்யமுடியும். தடங்கல்களைப் பெரிதுபடுத்தாமல், தயக்கமின்றி, எதையும் கூற வேண்டும் என்பதை உணர்ந்தால்,

உலகில் வாழும் ஒவ்வொருவரும், நியூட்டன் தான் !

D. Suguna

II B.Sc. Physics

எங்கும் இயற்பியல்

பனிச்சறுக்கு விளையாட்டில் அறிவியல்

நாம் பனிச்சறுக்கு விளையாட்டை தொலைக்காட்சி மூலமாகவோ அல்லது நேரடியாகவோ ஆர்வத்துடன் கண்டுகளிப்போம். அது பலருக்கு வியப்பாகவும், விந்தையாகவும் இருக்கும். ஆனால் இந்த சிறுவிளையாட்டிலும் இயற்பியல் விதிகள் பயன்படுகிறது. அதாவது “உருகி-இணைதல் விளைவு” எனப்படும். அதாவது முதலில் நீர் உருகி பின்னர் இணைந்து மீண்டும் பனிக்கட்டியாக மாறிவிடும். பனிச்சறுக்கு கட்டையின் முனை கூர்மையாக இருக்கும். இந்த கூர்மையான முனை பனிக்கட்டியை அழுத்தும். அவ்வாறு அழுத்தும் பொழுது பனிக்கட்டி உராய்வினால் உருகும். அந்த உருகிய நீரில் பனிச்சறுக்கு கட்டை எளிதில் செல்லும். உருகிய நீர், அங்கிருக்கும் குளிரினால் இணைந்து மறுபடியும் பனிக்கட்டியாக மாறிவிடும். தொடர்ந்து இப்படி நடை பெறுவதன் மூலம் பனிச்சறுக்கு வீரர்கள், எளிதில் பனிச்சறுக்கினை மேற்கொள்கின்றனர். இது ஓர் சிறிய, எளிய இயற்பியல் விளைவு தான். இயற்பியல் புரிந்தால் வாழக்கையே விளையாட்டுதான் !

ஆவியாதல் மூலம் குளிர்வடைதல்

மரங்கள் உள்ள இடம் குளிர்ச்சியாக இருப்பது ஏன்? நாம் பொதுவாக மரங்களுக்கு தண்ணீர் ஊற்றுவோம். இந்த தண்ணீர் வேரின் மூலம் எடுக்கப்பட்டு, நீர் இலைத்துளைகள் வழியே சூரியனின் வெப்பம் மூலம் ஆவியாக்கப்படும் ஆவியாவதனால் அங்கு குளிர்ச்சி ஏற்பட்டு சுற்றுப்புறம் குளிர்ச்சியாக காணப்படும்.

நாய்கள் கோடைகாலத்தில் நாக்கை தொங்கவிடுவதேன்? இதிலும் இயற்பியல் தத்துவம் உள்ளது. அதாவது நாய்கள் நாக்கை தொங்கவிடும் பொழுது நீர் நாக்கிலிருந்து வெளியேற்றப்படும். இந்த நீர் சூரிய வெப்பப்பத்தால் ஆவியாகும். ஆவியாவதால் அதன் உடல் குளிர்ச்சி ஏற்படும். இதனால், அதன் உடல் வெப்பம் மிக அதிகமாகாமல் இருக்கும், வெயிலில் இவ்வாறு தன்னைக் காத்துக் கொள்ளவே நாய் நாக்கைத் தொங்கவிடும்.

M. Ravindran
II B.Sc. Physics

REVERBERATION OF ACTIVITIES IN OUR DEPARTMENT (2010 - 2011)

* ***Meet Ur Alumni***

Our Alumni, Dr. M. Govind, Head, Dept. of Physics, SIVET College, Chennai who completed his M.Phil. programme in our college interacted with our students on 7th October, 2010. He shared his thought, warmth and encouragement he received in our Department as a teacher who was doing his research.

* ***Dr. S. Srinivasan, Memorial Science Lecture***

Dr. S. Srinivasan Memorial Science Lecture in memory of our former head, Dr.S. Srinivasan was organised by the Department of Physics. It was held on 25th, January, 2011. Dr.R. Sanjeevi, Scientist (Retd.) CLRI, Chennai delivered his lecture 'The History of Zero'.

* ***Dr. S.R. Govindarajan, Endowment Seminar in Basic Sciences***

Our Department organised Dr.S.R. Govindarajan endowment seminar in basic sciences on 28th February, 2011 to commemorate National Science Day.

* ***Dr. G. Thiagarajan, President, Madras Science***

Foundation and Former Director, CLRI, Chennai delivered a lecture "Can India become an innovation Nation?".

* ***Dr. Daniel Chellappa, head, Technical***

Co-ordination and Public Awareness, IGCAR, Kalpakkam, also delivered a lecture on Indian Nuclear Energy Programme.

* ***Prof. C.Vijayan, Dept. of Physics, IIT - Madras, Chennai*** delivered a lecture on Thinking differently : Why and How?

* The Department of Physics is planning to hold Night sky observation in collaboration with Amateur Astromer Association on 13th March 2011. This coincides with the 401 st year Celebration of Galileo's Publication "SIDERUS NUNICUS".

Workshops And Training Programmes Attended By Our Students

- * N. Saranya, II M.Sc. was selected and underwent 40 days Summer Training Programme STIP conducted by Nuclear Physics Department, University of Madras, Chennai.
- * Some motivated students of our department attended Awareness Campaign on “Nuclear Technology” conducted by Science City in collaboration with Indira Gandhi Centre for Atomic Research, Kalpakkam. This was held during 17th - 19th August, 2010. The Main objective was to give awareness about the power and non power applications of nuclear energy and particularly to motivate them into research in this field.
- * Seven of our PG students attended Awareness workshop on Nanoscience and Nano technology held from 24th to 27th August, 2010 at the science city. The workshop comprised of lecture sessions delivered by eminent scientists academicians from Anna University, Chennai, IIT Madras, Indira Gandhi Centre for Atomic Research, International Institute of Biotechnology and Toxicology (IIBAT) and University of Madras. Students also visited laboratories in Anna University, University of Madras and IIBAT.
- * J. Pragadeesh, III B.Sc., and K. Koushik, II B.Sc. selected to attend A workshop on Physics Education and Research held from 20th to 25th December, 2010 at IIT Madras. This residential programme was aimed to motivate them towards Physics Education and Research in Physics.
- * Three of our I M.Sc. students, K. Suresh, M. Nandhagopal, S. Suriya, participated in 13 days XXVI Refresher Course in Experimental Physics held during 18th January to 2nd February, 2011. This course was sponsored by Indian Academy of Sciences, Indian National Science Academy and Academy of Sciences of India and was organised by R.K.M. Vivekananda College, Chennai.
- * Four of our I M.Sc. Physics students took part in one-day workshop on “Frontiers in Materials Science” on 11th February, 2011 sponsored by the Royal Society of Chemistry - South India in association with Department of Physics and Department of Chemistry, RKM Vivekananda College, Chennai.
- * A group of II M.Sc. students participated in “Low Energy Nuclear Reaction” workshop organised by IIT Madras, Chennai on 12th February 2011.

* M.Delhibabu, and J.Pragadeesh of III B.Sc. enthusiastically participated in the workshop “Electronic Structure Calculations and their Applications” held at Science City, Chennai.

SEMINARS ATTENDED BY OUR STUDENTS

* Our final year student, J. Pragadeesh attended a lecture on “**Musics of the Primes**” given by Dr. Marcus Du Sacitoy, Prof. of Mathematics, University held at Institute of mathematical Sciences, Chennai.

* Students of III B.Sc. attended a lecture by Prof. Alladi krishnaswami, son of renowned mathematician Sri. Alladi Ramakrishnan held at Science City, Chennai on 18th June, 2010.

* Two of our B.Sc. students attended National Seminar on Astro Physics held during 16th to 18th September 2010 at meenakshi College of Women, Chennai. They had chance to interact with researchers in the field of Astrophysics and Astronomy.

* A few of our B.Sc. students attended a lecture on “Fun of Doing Science” by Dr. Balder Raj distinguished scientist and Director, IGCAR held on 30th January, 2011 at Chennai Science Festival, 2011, Science City, Chennai.

* Four of our IM.Sc. students, attended one day seminar on ‘50 years of lasers’ held at the Department of Physics, Vivekananda College, Chennai.

RESEARCH PAPER PRESENTATION :

* Five of our II M.Sc. students presented their 5 individual research papers at National Conference on Recent Advancements in Molecular Physics on 10th and 11th February, 2011 held at Queen Mary’s College, Chennai. These participants presented 5 poster presentation.

* R. Mahesh of II M.Sc. presented his research paper at National Conference on Materials. chemistry held during 9th february 2011 at Guru Nanak College, Chennai.

STUDENT PARTICIPATION

* 50 students of our Department, actively participated in the Science walk organised by Science City on 28th January, 2011.

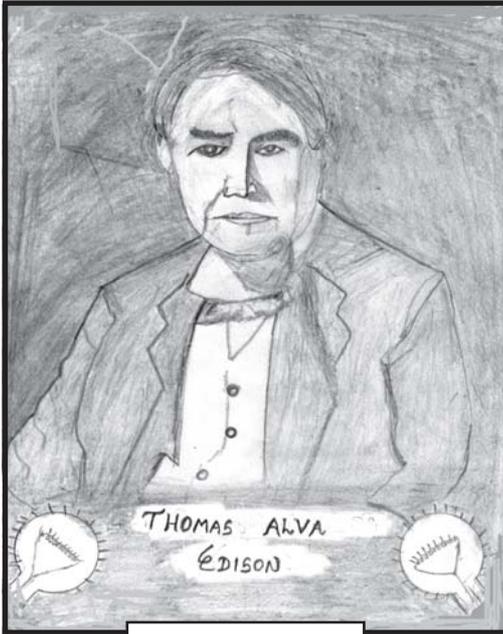
- * 18 students from our department actively volunteered at “Chennai Science Festival” during 29th January to 2nd February, 2011.
- * 18 students from our department actively volunteered at “Chennai Science Festival” during 29th January to 2nd February 2011.
- * Our students actively participated in various events in Ripples’ 10 conducted by Ethiraj College, Physica’ 10 by Loyola College.
- * Our students bagged prizes by participating in various competitions conducted by these colleges Spectr’ 11 by Madras Christian College, Electrofest 2010 - 11 by DRBCCC Hindu College, Electra’ 10 - 11 by Stella Maris College, Vaish Phyz’ 11 by SDNB Vaishnav College, Corona’ 11 by JBAS College.
- * Our students actively participated in various competitions and won prizes on the theme “Science in Everyday Life” and also won prizes on the topic “Save the Mother Earth” at “Chennai Science Festival”.
- * A few of our students volunteered in cleaning up activities to show their social commitment at Institute of Mental Health, Kilpauk.

PRIZES WON BY OUR STUDENTS

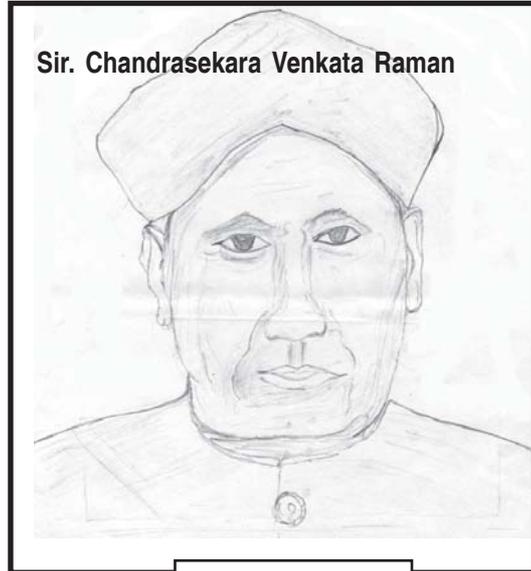
Our students participated in several events conducted by the various institutions in the city and brought laurels to the college.

- * N. Saranya of II M.Sc. won III prize in poster presentation category at National Conference on Recent Advancements in Molecular Physics at Queen Mary’s College.
- * Prizes won during Chennai Science Festival in various competition on the topic “Save the mother Earth”.
 - R. Udhaya Kumar, II B.Sc., won “Excellent” prize in Tamil Essay Competition.
 - J. Pragadeesh, III B.Sc., won “Very Good” and A. Shikha Kumari won “Good” prize under science based quiz competition.
 - A. Aashish, III B.Sc, won “Good” prize in English oratorical Competition.
 - J. Saranya, II B.Sc. physics won “Good” prize in English essay competition.

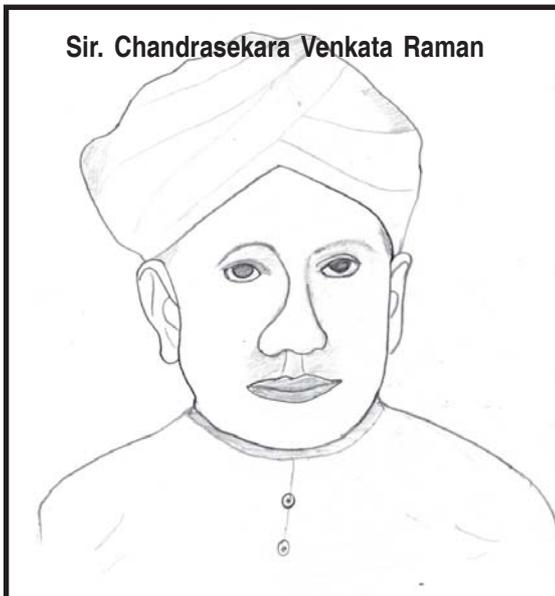
- * A Shikha Kumari, J. Pragadeesh, P.Arun Kumar of III B.Sc., and C. Dhanapal of II B.Sc. Physics won prizes at Electra, Stella Maris College.
- * M.Sasikumar, A. Aashish, A. Shikha Kumari, J. Pragadeesh of III B.Sc. and K.M. Saveena, S. Swathi of II B.Sc. won many prizes in most of the events held by Department of Physics, SDNB Vaishnav College.
- * A. Shikha Kumari and J.Pragadeesh won in Quiz conducted by DRBCCC, Hindu College.
- * P. Arun Kumar and A.Shikha Kumari won in Spectra' 11 at MCC.
- * D.Maju, K.M. Saveena, S.Swathi, J.Saranya of II B.Sc., won prizes in various events at JBAS college for women.



S. Giridharan
I B.Sc. Physics



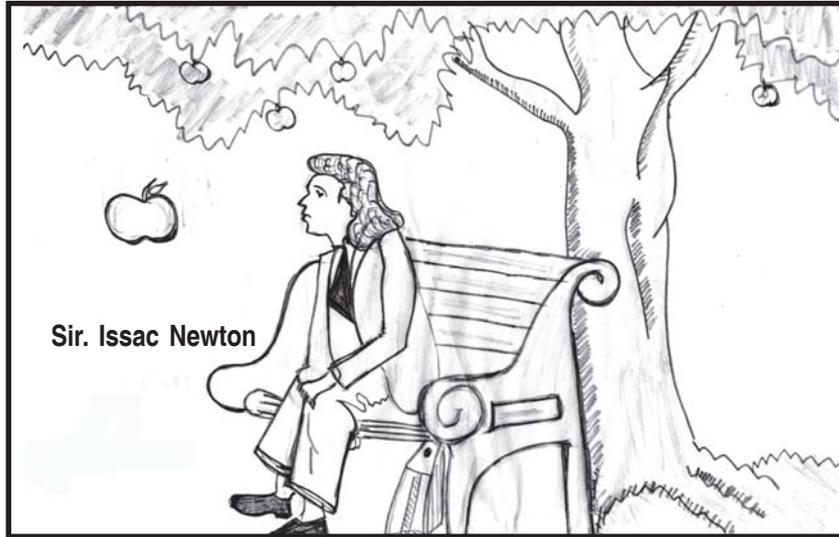
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II B.Sc. Physics



A. Thangam
I B.Sc. Physics

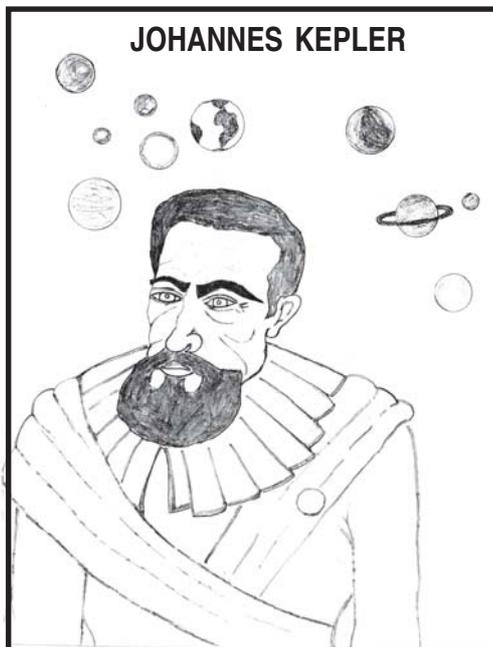


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I B.Sc. Physics

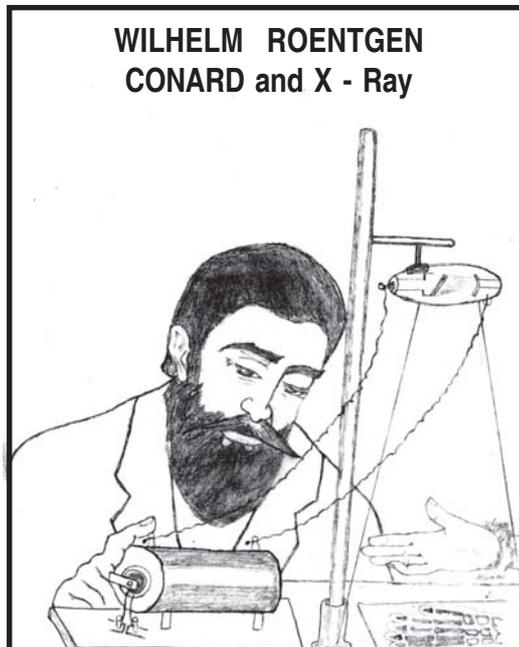


Sir. Issac Newton

M. Thirumal
II B.Sc. Physics



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III B.Sc. Physics

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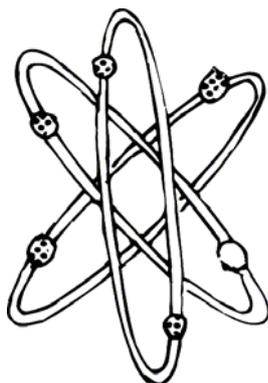
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EDITORIAL

“The secrets of Nature lay hidden in the night. Lord said, let Newton be and all was light” - these are the words etched on the epitaph of a man who had a colossal impact on the world we live in today. Science is a word which would be defined in umpteen ways by every person in question, yet it does not fail to incite a feeling of exhilaration and admiration among those who understand it. It all starts when one dares to question the ways of Nature.

Man have been questioning incessantly. Right from the stone age, Science has played an inevitable role in the betterment of mankind, from the invention of wheel, to the modern laptops and today’s GPS. It is obvious that our modern life style would be tedious without science and the efforts that mankind has put in to understand ways of nature. These efforts, call for a celebration, a celebration that asserts that science is no game, it is no child’s play, yet it is fun! Thereby, our team came up with the idea of Celebrating Science.

As Bacon puts it, “Science is the labour and handicraft of the mind”. The result of us enjoying this labour, is lying in your hands as “Reverberations’ 11”. This issue is a genuine effort to make the students voice their ideas and gives them a platform to share their ideas. The undarting spirit of science which makes it’s present felt in all walks of life is now going to be evident from the pages of this issue. We are proud to a part of the Centenary Celebration of Super Conductivity through articles like Applications of superconductors’ and ‘Milestones in superconductors’.

We are sure, every article in this magazine is certain to make impact in young learners. We hope the readers too enjoy Physics, as we do.

We thank all our faculty members for their guidance and motivation. We thank our Principal and our Management for their kind support in bringing out Reverberations’ 11.

- Editorial Board

Editorial Board

A. Shikha Kumari, III B.Sc.

A. Aashish, III B.Sc.

J. Pragadeesh, III B.Sc.

D. Narendran, III B.Sc.

K.M. Saveena, II B.Sc.

M. Deepak Kumar, II B.Sc.



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REVERBERATIONS '11

Celebrate Physics



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A note from the Principal's Desk...

It gives me immense pleasure to note that the Physics Association of our college is bringing out its annual magazine for this year, "Reverberations '11" for the second time in succession. This kind of activity provides the platform for the students to express their ideas, to showcase their hidden talents, to encourage creative thinking and explore new avenues. The students of the Department of Physics, under right guidance from the faculty have gone a step further by publishing the e-version of the magazine. I appreciate the Physics Association, Department of Physics and wish the good work continues for the years to come.

S. Narasimhan
22/2/11

Dr. S. Narasimhan

Principal

From the HOD's Desk...

Knowledge is an amalgamation of creativity, courage and righteousness. Following a righteous path will lead to harmony at home, harmony at home will lead to order in nation and order in the nation result in peace in the world, says our former President Dr. A.P.J. Abdul Kalam. This edition of our Department magazine, **Reverberations '11** brought out by Physics Association is certainly an outcome of the knowledge and creativity of our students.

Youth must be taught to understand the beauty of science, the pleasure of doing science, and the ultimate bliss when science makes us understand Nature. Physics being the study of nature and natural phenomenon, it has always made great contributions to improve the quality of life. I am happy that students could enjoy and explore various facets of Physics and unleash their creativity through this magazine.

I take this opportunity to thank the Management and our Principal for their unstinted support and encouragement. I sincerely appreciate the team spirit, planning and the hard work put in by the students and the motivation given by our faculty to bring out this issue, Reverberations '11.



Dr.D.Uthra

Head, Department of Physics
D.G.Vaishnav College, Chennai