

Science is the outcome of human endeavor to find out about nature, to understand it, to search for the truth behind the existing reality. Unfettered by the social and religion dogmas, it has no boundaries of space and time. Science acts as a powerful dispeller of fear, superstition, fatalism and resignation. A strong scientific base and a scientific temper are the most powerful catalysts of both economic performance and social progress. We are on the threshold of 'A Knowledge Society' where information, knowledge and analysis shall increasingly occupy the forefronts of our lives. Creativity and innovation are vital ingredients for progress in present hi-tech dynamic milieu.

Use of science and technology as a powerful tool for the benefit of mankind has been clearly understood, but science should also be promoted as a pure thought. There is need to develop a scientific attitude so that scientific outlook becomes part and parcel of our way of life and culture. To accomplish this task common platforms are required to share our views and information is such a commodity; which required to share our views and information. Information is such a commodity; which multiplies when it is shared. KMVPHY-Spectrum, a physics news line is providing us an opportunity to share our knowledge and will act as an effective instrument to serve its cause.

Mrs. Parminder Kaur
Head, Department of Physics

Visionary Physicist

Physicists, from a fairly early age, are fascinated by the universe and its fantastic wonders. They want to be part of the romantic, exciting adventure to tease apart its mysteries and understand the nature of physical reality. The Physicists are more interested in black holes and the origin of the universe than with making tons of money and driving flashy cars. They also realize that physics forms the foundation for biology, chemistry, geology, etc. and the wealth of modern civilization. Physicists pioneered the pivotal discoveries of the 20th century which revolutionized the world. There is a first story of a Physicist who not only fulfilled his dreams but became a millionaire overnight due to his hard work.

OVERNIGHT MILLIONAIRE-ASHOKE SEN



Ashoke Sen, Theoretical physicist, a string theorist at Allahabad's Harish Chandra Research Institute, became a millionaire overnight as he is one of the nine winners of the first Yuri Milner Fundamental Physics Prize which at Rs 16.7 crore is the most lucrative academic prize in the world "for opening the path to the realization that all string theories are different limits of the same underlying theory". He also is the Morningstar Visiting professor at MIT and a distinguished professor at the Korea Institute for Advanced Study. In 1998 he won the fellowship of the Royal Society on being nominated by the theoretical physicist Stephen Hawking. He was honored with Padma Awards in 2013 in the field of Science and Technology and Dirac Medal in 2014. His main area of work is String Theory. His contributions include the entropy function formalism for extremal black holes and its applications to attractors.

He recently discussed the best possible future course of action for the humankind to prolong its life given two assumptions in an essay with the title 'Riding Gravity Away from Doomsday'. The assumptions are

- That our universe is not absolutely stable and could undergo a phase transition in the future, and
- That the accelerated expansion of the universe that we see today is due to a cosmological constant.

The first one is a theoretical possibility that has been discussed since 1970's by many people and current experimental knowledge could at best put an upper bound of one in ten billion per year to the probability of such an event. The second one is the most widely accepted interpretation of the observed expansion rate of the universe although there are certainly alternative proposals. Both assumptions are natural in string theory, but can be discussed independently of string theory.

Sen, born in Calcutta, is the elder son of Anil Kumar Sen, a professor of physics at Scottish Church College, and Gouri Sen, a homemaker. He was drawn to physics and graduated from Presidency College before moving to the Indian Institute of Technology, Kanpur, for a master's degree, a period during which he was drawn to elementary particle physics, a branch of physics that attempts to unravel the underlying rules that give rise to the myriad subatomic particles. Sen plunged into string theory in the mid-1980s, a time when the idea had gained credence as an attempt to explain the subatomic particles as multiple modes of vibrations of a single fundamental string. TIFR's Mukhi, who was a fellow PhD student at Stony Brook, says Sen's arguments in physics appear rock solid and seem to emerge from deep understanding of the subject's foundations. "He has this knack of putting together existing ideas and information and developing a new idea in a way that makes us wonder: why didn't I think of that?"

In an interview with Chandan Singh Dalawat, Sen quoted "I wanted to be a scientist since my childhood, but had no idea of what science meant. This desire remained with me, and as I went to college and then to IIT I slowly learned what science means." Since his work is primarily theoretical; the financial needs are very little. Sen says the research itself is the toughest challenge. The field of string theory also needs bright young minds, he adds. In another interview with THE HINDU he said String theory is a branch of physics which assumes that the elementary objects in the universe are not particles but one-dimensional objects, that is, strings. This theory automatically combines Quantum Theory and General Theory of Relativity. It also has the potential to explain the other known forces of nature – Weak, Strong and Electromagnetic.

INDIAN MISSILE WOMAN- TESSY THOMAS



Ask anyone to name an Indian scientist and you can probably bet that most names will be male. Karthik Ramaswamy, visiting scientist at the Indian Institute of Science (IISc) and a participant in the edit-a-thon, quoted to The Hindu that science in India has a 'diversity problem' with Indian women and minorities represented inadequately. The good news is that there is an increasing number of women receiving an education in the sciences in India. Working in science has not been easy for women, with its long hours, societal biases, and the need to get married and have children in between. Let's look at one of the women, often forgotten heroes, who have made great contributions to science and paved the way for others.

Having systematically broken gender barriers in the decidedly male preserve of strategic weapons and nuclear-capable ballistic missiles over the last two decades, Tessa Thomas, has stood out ever since she joined the DRDO in 1988. The charismatic scientist says she has never faced any anti-female bias at her workplace. She has taken a bow as 'Agni Putri', or the daughter of fire, proving as she has her mettle as the project director of the 3,500-km new-generation Agni-IV missile that was successfully tested on November 15, 2011. According to an article in *womenweb.in*, Thomas has been the mastermind behind designing for all the Agni series missile projects, which are the strongest weapons of the Indian defence. Her fascination for "rockets" began with the Apollo moon missions when in school at Alappuzha in Kerala. "Then, there were rockets being launched from Thumba. Ms Thomas, a Roman Catholic, was born to a small-businessman father and a homemaker mother in Alleppey in southern Kerala state. Tessa was born in April 1963 in Alappuzha, Kerala, to a small-businessman father and a homemaker mother. Her parents from Kerala named her after Anjezë Gonxhe Bojaxhiu, (Mother Teresa). After finishing school and B. Tech from Thrissur Engineering College, Kozhikode, she left the state for the first time at the age of 20 to pursue masters' degree in Technology from Pune-based Defense Institute of Advanced Technologies; she was selected for "a guided-weapon course" being offered by DRDO. Her missile saga began soon after. She could have been an IAS officer; she even wrote the exam. But the Defence Research and Development Organization (DRDO) interview happened the same day, and she got through. Kalam placed her in the Agni missile programme. Former scientific adviser to the defence minister and senior missile scientist V.S. Arunachalam puts into context the role she played in the success of the Agni programme. "In projects such as these, a consensus needs to be built up. A woman does not easily give up her point of view; she can be persuasive and irritatingly persistent. It must have helped to have a woman in charge," he says. Tessa Thomas was conferred the Lal Bahadur Shastri National Award for her outstanding contribution for making India self-reliant in the field of missile technology. In January 2012, Prime Minister Manmohan Singh told the Indian Science Congress that Mrs Thomas is an example of a "woman making her mark in a traditionally male bastion and decisively breaking the glass ceiling". What has been infinitely more difficult, she says, is juggling work and family. At times, she says, she is torn between her loyalties to the missile programme and her family responsibilities. Tessa Thomas serves as a role model and an inspiration for women scientists to achieve their dreams and have their feet planted in both worlds successfully.



Why science teachers should not be given playground duty.

THINK, THINK, THINK...

- Larry's Father has five sons named Ten, Twenty, Thirty, Forty. What would be the name of the fifth?
- What goes up and down but still remain in the same place?
- What is the name of the first atom bomb?
- Name a liquid that turns into solid on heating.

Mail your answers at: kmvphy@yahoo.co.in
Or

Wait for the next issue to confirm answers



PUT CAR ON NEUTRAL
WAIT 15-30 MIN

VEHICLE WILL MOVE ITSELF
AS EARTH KEEPS ITS USUAL
ROTATION

KMV Science students excelled in University Exam Results



Ms. Manpreet Kaur B.Sc. Sem VI
2nd in university



Ms. Gagandeep Kaur (B.Sc Sem VI)
24th in university



Ms. Daljit Kaur (B.Sc. sem II)
7th in university

Ms. Amanjot kaur of B.Sc. IV Sem Non Medical with electronics grabbed 1st position by scoring 690 marks out of 800. Another student Ms. Amandeep got 12th position. Ms. Prabhjot got 27th position. Ms. Manpreet Kaur and Ms. Gagandeep Kaur of B.Sc. Non Medical Sem VI secured 2nd and 24th position in university. From B.Sc. II Sem Comp. Sc., Ms. Daljit Kaur got 7th position by scoring 650 marks out of 800.



Ms. Amanjot kaur of B.Sc. IV Sem Non Medical with electronics grabbed 1st position

KMV M.Sc. Physics Girls excels in university exams



Amandeep
(4th in University)



Shivani
(7th in University)

Students of M.Sc. Physics Sem IV brought name and fame to college by securing various positions in the university exams. Ms. Shalini and Ms. Shivani grabbed 4th and 6th positions respectively.

Ms. Amandeep and Ms. Mandeep of M.Sc. Physics Sem III got 4th and 5th position respectively in University Exams and Ms. Shivani stood 7th by gaining 455 marks out of 600. Ms. Ranjit of M.Sc. Physics Sem I Sem stood 8th in university by scoring 451 out of 600 marks



Shalini
(4th in University)



Bepti
(12th in University)

KMVites accord warm welcome to new students



A Fresher's Party was organised by post graduate students of Physics department to welcome the new students. Ms. Ritika was selected as Ms. Fresher and the other two girls, Ms. Manpreet Kaur and Ms. Supreet Kaur were elected as Miss Charming and Miss Elegant for the year 2015.

KMV Science students attended workshop at Pushpa Gujral Science City

B.Sc 1st sem (N.Med & C.Sc) visited Pushpa Gujral Science City, Kapurthalla to attend "Training workshop for nature guide student volunteer's" to create awareness about wet land of Punjab. Students learnt about the sustainable maintenance of wetlands.



An educational trip is organized to IUAC, New Delhi



Department of Physics, KMV organised an educational trip to IUAC, New Delhi for the M.Sc IIIrd Sem students accompanying two teachers. The Students learnt about palatron tower, beam hall and laboratory complex. Dr. Praveen Kumar delivered a lecture to students about the low energy ion beam facility (LEIBF).

Post graduate Science Students Attended Lecture Series at GNDU, Amritsar

Students of M.Sc. Physics attended lecture series on "Recent research trends in physics" organized by Department of Physics, GNDU and IISER, Mohali at Department of Physics, GNDU, Amritsar. Lectures were delivered by Prof. Deepak Dhar (TIFR, Mumbai), Prof. Patrick Das Gupta (Delhi University), Prof. Arun Grover (PU, Chandigarh), Dr. Yogesh Singh, Dr. Paramdeep Singh and many other eminent scientists.



ACTIVITIES UNDER DBT STAR COLLEGE SCHEME

KMV in collaboration with IISER organized Science workshop



An experimental workshop in collaboration with Indian Institute of Science Education & Research (IISER) Mohali was organized for science students. The students of IISER performed various interesting experiments based on Physics, Chemistry & Biology. Main aim of the activity was to clarify the basic concepts of students and create interest in innovative experiments.

Experimental activities performed to learn basics of physics in classes



Extension lectures organized for the benefit of students

An extension lecture was delivered by Dr. Atul Khanna, Department of Physics, G.N.D.U., Amritsar on "special theory of relativity". He enlightened the students that how Albert Einstein changed the perception of world forever. He also gave the knowledge regarding the history of Michelson-Morley experiment which was the landmark experiment of Physics.



Dr. Simran Kaur, Department of Biological Sciences and Geology, Queensborough Community College, New York City, interacted with KMV science students and discussed about teaching and learning process. She felt that Students come to colleges with a poor sense about the benefits of a certain educational degree program and the career choices. Thus the college education should be the base of all work that students do in their personal and professional lives.

THE CELEBRATION TIMES

Teachers Day

Teachers day was celebrated on September 5 by the science students. On this occasion students gave a floral welcome to the teachers and shared their views and respect towards teachers. Some fun games were also played by the teachers. The teachers bestowed the students good luck and best wishes for their future.



Diwali



A day before Diwali was celebrated as a 'Shram Daan Day' at department to clean and embellish the department. All the staff members devoted an hour of their college time to bloom the department. The faculty also prayed for the flourished and prosperous future of the department.

Brain Teaser

At a Bar, there is a bucket containing ice, some of which has melted. A bar tender gets an ice cube weighing 20gms from the ice bucket and put it into an insulated cup containing 100gms of water at 20°C. Will the ice cube melt completely? What will be the final temperature of the water in the cup?

INSPIRE 2015

INSPIRE-an Internship program of DST, Govt of India was organized during December 1-5, 2015. Approximately 200 students from 32 schools of Punjab participated in the program. Many eminent mentors shared their experiences and motivated the students to opt sciences for their future.



The Bear

A bear walks south for one kilometer, then it walks west for one kilometer, then it walks North from one kilometer and ends up at the same point from which is started. What color was the bear?

