

“Not only is the Universe stranger than we think, it is stranger than we can think.”

— Werner Heisenberg

## Visionary Physicist

### FROM LEARNER TO LEADER: BINDU ANUBHA BAMBAH



Environmental influences play a crucial role in women’s participation in the sciences. The men and women who teach girls influence their perception about whether or not women can be successful in science. Bindu Anubha Bambah was amongst those few chosen girls, to whom science has selected for its service and was setting examples to inspire her towards science. The first example was of her science enthusiast teacher, who brought a pig’s heart into class to explain its working. Then, in 1969, the first moon landing occurred and they were taken to see the moon rocks. The world of outer space inspired her to study the physical aspects of nature and then her physics teacher introduced them to quantum mechanics, with all its scientific mystery.

Born at Amritsar, Punjab, Dr. Bindu Bambah did her schooling in Columbus Ohio , U.S.A and Chandigarh. She graduated from Panjab University , Chandigarh in Physics and participated in the National Science Foundation(U.S.A) Ross program in Mathematics as a counselor. Bindu Anubha Bambah work on the links between Particle Physics, Cosmology, Quantum Optics and Mathematics. She has joined the experimental collaboration for Neutrino Physics at FermiLab called Nova. Dr. Bambah was awarded the UNESCO, ROSTCA Young Scientists Award for South Asia in 1991. Since coming back to India , her aim in the next 6 years from 1986 -1992 was to get better understanding on the nature of the QCD vacuum and the physics of strongly interacting systems. In the field of "Multiplicity Distributions in High Energy Collisions", with Dr. M.V. Satyanarayana in Madras, she proposed a model of multiplicity distributions in high energy collisions based on squeezed coherent states. Her contribution was to intermittency studies and providing an interface to the heavy quark generator Tip-Top . Her work on theoretical Studies of the Quark Gluon Plasma, addressed the problem of thermalisation and stability of this plasma. The methods from dynamical systems theory have been use for establishing the process of equilibration in the formation of QGP. Since 2002, she is working on the interrelations between Particle physics, Plasma Physics Fluid Dynamics, Quantum Optics and Cosmology. In this context, she has used the squeezed state formalism for constructing models of such diverse phenomena as the Disoriented Chiral Condensate and Baryon Asymmetry in the early universe. She, along with her collaborators, has also developed formalism to investigate the dynamics of a relativistic hot fluid with a non-Abelian charges in terms of a model which unifies the Yang Mills field with the low field strength tensor. In addition to scientific contributions, Dr. Bambah has written articles and given seminars to Women's Study groups both in India and abroad to devise methods of inducting and training women to assume leadership roles in the physical sciences. She is one of the first practicing Indian physicists to collaborate with social scientists in investigating the gender gap question in science, including under-representation of women, subaltern status of women in science. In a conference, She emphasized that compromising on gender diversity is severely limiting excellence in physics, and that women intellectuals in India have been “pressing for progress” since ancient times as encapsulated. Presently she is working as Dean and Professor of Physics and Joint Professor of Women's Studies at the University of Hyderabad.

### A new technique could make some plastic trash compostable at home

A pinch of polymer-munching enzymes could make biodegradable plastic packaging and forks truly compostable. With moderate heat, enzyme-laced films of the plastic disintegrated in standard compost or plain tap water within days to weeks, Ting Xu and her colleagues report April 21 in Nature. Embedding polymer-chomping enzymes in biodegradable plastic should accelerate decomposition. But that process often inadvertently forms potentially harmful microplastics, which are showing up in ecosystems across the globe. The enzymes clump together and randomly snip plastics’ molecular chains, leading to an incomplete breakdown. Her team added individual enzymes into two biodegradable plastics, including polylactic acid, commonly used in food packaging. They inserted the enzymes along with another ingredient, a degradable additive Xu previously developed, which ensured the enzymes didn’t clump together and didn’t fall apart. The solitary enzymes grabbed the ends of the plastics’ molecular chains and ate as though they were slurping spaghetti, severing every chain link and preventing microplastic formation. Adding enzymes usually makes plastic expensive and compromises its properties. However, Xu’s enzymes make up as little as 0.02 percent of the plastic’s weight, and her plastics are as strong and flexible as one typically used in grocery bags. The technology doesn’t work on all plastics because their molecular structures vary, a limitation Xu’s team is working to overcome.

### The already tiny neutrino’s maximum possible mass has shrunk further

Neutrinos are so lightweight, they’re almost massless. They’re a tiny fraction of the mass of the next lightest particle, the electron. But scientists still don’t know exactly how slight the particles are. A new estimate from the KATRIN experiment, located in Karlsruhe, Germany, further shrinks the maximum possible mass neutrinos could have. The puny particles have masses of 0.8 electron volts or less, physicist Diana Parno reported April 19 at a virtual meeting of the American Physical Society. For comparison, electrons are more than 600,000 times as bulky, at about 511,000 electron volts. The KATRIN experiment studies tritium, a rare form of hydrogen that decays radioactively, emitting an electron and an antimatter mirror image of the neutrino, an antineutrino. Measuring the energies of the electrons can reveal the masses of the antineutrinos that flitted away. That’s because mass and energy are two sides of the same coin; a more massive neutrino would mean less energy could go to the electron in the decay. A previous estimate from KATRIN, using a smaller amount of data, found that the neutrino’s mass was less than 1.1 electron volts. In the coming years, additional data should further squeeze the neutrino’s maximum possible bulk. Scientists still don’t understand why neutrinos are abnormally light.

### Materials advances are key to development of quantum hardware

The study, published in the journal Science by an international team, surveyed the state of research on quantum computing hardware with the goal of illustrating the challenges and opportunities facing scientists and engineers. "There has been an explosion in developing quantum technologies over the last 20 years," said Nathalie de Leon, assistant professor of electrical and computer engineering at Princeton University and the lead author of the paper. Until recently, most of this work has aimed to demonstrate proof-of-principle quantum devices and processors, but now the field is poised to address real-world challenges. The paper is a call to scientists who study materials to turn to the challenge of developing hardware for quantum computing, said Hanhee Paik, corresponding author and a research staff member at IBM Quantum. The present study was to give the materials community a comprehensive overview of where we are in materials development in quantum computing with expert opinions from the field." The qubits can be made in various ways, with the leading technologies being superconducting qubits, qubits made from trapping ions with light, qubits made from the silicon materials found in today's computers, qubits captured in "color centers" in high-purity diamonds, and topologically protected qubits represented in exotic subatomic particles. The paper analyzed the chief technological challenges associated with materials and proposes strategies for tackling these problems.

### FIRST TO RECORD ‘BIRTH CRY’ OF BLACK HOLE: SANDIP CHAKRABARTI



Sandip Chakrabarti is one of India's noted astrophysicists. He completed his M.Sc degree from IIT-Kanpur and Ph.D. from the University of Chicago. He is famous for his research work in astrophysics and planetary motions. At the 3rd Huntsville, Alabama Conference on Gamma Ray Bursts in 1995, he became the first scientist to suggest that the Gamma Ray Bursts are the birth cry of black holes. Just like a baby, who cries after taking birth, a black hole, which forms when a sun or a star collapses, emits huge amounts of gamma radiation just after its formation. This is said to be a black hole’s ‘birth cry’. Indian scientist Sandip Kumar Chakrabarti and Italian scientist Remo Ruffin recorded the entire process of birth lasting 50 seconds after analysing data from Russian satellite Koronas Foton.

The satellite had detected the gamma radiation in June 2009. Their findings, which surfaced in October last year, have been reported in scientific journals in the US and Europe. He is also the first to suggest that the accretion disks in extreme mass ratio binaries could change the gravitational wave signals. Thick accretion discs are formed when the radiation emitted during accretion interacts with the accreting matter dynamically, resulting in puffing up of the disc. When some matter is distributed around a hole, the hole cannot be considered to be isolated. It becomes distorted due to the gravitating matter outside the horizon. Under the circumstances when the matter is static, and axially symmetrically distributed around a hole, it is possible to write down the metric of the region of the spacetime devoid of matter in terms of the so-called distorted hole metric. He has been felicitated with the Banga Ratna award by the Government of West Bengal. The main focus of the research area of Prof. Sandip Chakrabarti is the hydrodynamic and radiative properties of astrophysical flows around black holes and other compact objects. He developed a computer model to show how life on Earth could have originated in outer space. Born on 15 November 1958 at Malda, West Bengal (India), he had an interest in astrophysics since his childhood and used to perform all the experiments at a home-laboratory during his school days. His initial work was concentrated on black hole Astrophysics, Nucleosynthesis around black holes, and on the formation of shocks in transonic flows around black holes. Presently he is a professor at S N Bose National Centre for Basic Sciences. He was at NASA Goddard Space Flight Centre (1994-1995) as a Senior Associate selected by National Research Council. According to him the black hole astrophysics is basically the astrophysics of sub-Keplerian flows and CENBOL, the centrifugal pressure dominated boundary layer around black holes. The oft-cited work of Chakrabarti and Titarchuk (Astrophysical journal, 1995) brings out the concept of two-component flows. Indeed, more and more observational results, which include the spectral and timing properties of all the black hole candidates generally support his view that black holes also have a dissipative region around it which is non-Keplerian. Prof. Chakrabarti's interest took new turns with the foundation of a new Space Science related institute Indian Centre for Space Physics (ICSP) of which he is the founding General Secretary and also the head of all the Academic activities. There Prof. Chakrabarti is involved in research works in several topics which range from Very Low Frequency (VLF) studies of ionosphere, planetary ring dynamics, Astrobiology, X-ray data analysis, testing and evaluation of payloads and developments of detectors for X-ray astronomy.

### Fast-spinning black holes narrow the search for dark matter particles

Physicists at MIT's LIGO Laboratory have searched for ultralight bosons using black holes -- objects that are mind-bending orders of magnitude more massive than the particles themselves. According to the predictions of quantum theory, a black hole of a certain mass should pull in clouds of ultralight bosons, which in turn should collectively slow down a black hole's spin. If the particles exist, then all black holes of a particular mass should have relatively low spins. But the physicists have found that two previously detected black holes are spinning too fast to have been affected by any ultralight bosons. Because of their large spins, the black holes' existence rules out the existence of ultralight bosons with masses between 1.3x10<sup>-13</sup> eV and 2.7x10<sup>-13</sup> eV -- around a quintillionth the mass of an electron. The team's results, published today in Physical Review Letters, further narrow the search for axions and other ultralight bosons. The study is also the first to use the spins of black holes detected by LIGO and Virgo, and gravitational-wave data, to look for dark matter.

### Hands on Astronomy Workshop in KMV

A special programme organized by Vigyan Prasara, Department of Science and Technology, Govt. Of India on June 5, 2020 enlightened students of Kanya Maha Vidyalaya, Jalandhar about how to observe Solar Eclipse to be seen on June 21, 2020 without any need of special solar gadgets. The workshop comprised of three parts, in first part experts explained the making of apparatus to view solar eclipse at home. In this segment, students were taught very simple techniques viz. magic mirrors, pin hole method, ball mirrors to observe eclipse safely, which made KMViets very curious for this celestial event. In second part the experts demonstrated the activities and in third part asked club members to conduct variety of activities at local level and watch the eclipse safely by using filters or goggles and by maintaining social distancing norms. Students learnt a lot from this event and made various simple instruments to observe solar eclipse. The best part of this event was that all the material required for making simple instruments could be easily found at homes.





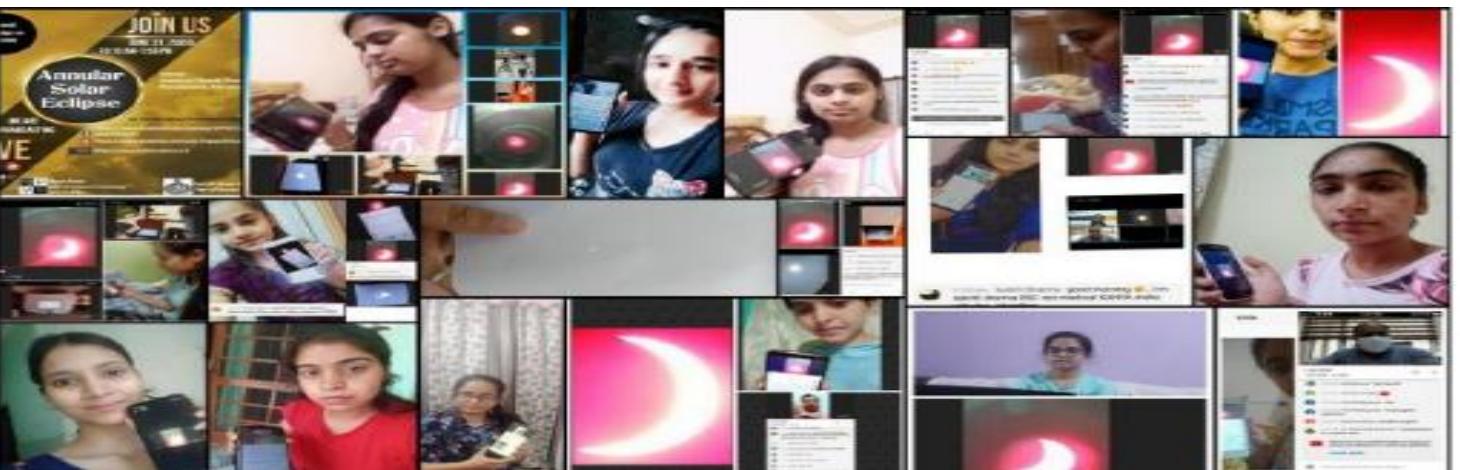
## Online quiz competition on Solar Eclipse by Vigyan Prasar

30 Students of science club members of Kanya Maha Vidyalaya, Jalandhar, participated in online quiz which was organized by Vigyan Prasar in collaboration with MyGov. The quiz consisted of 10 questions already explained in the Hands on Astronomy Workshop on held on June 5, 2020 and duration of quiz was 2 minutes. The quiz was based on questions such as what is solar eclipse, when and after how long solar eclipse happen? The other questions were based on how many lunar eclipses occur during calendar year. Overall this activity enhanced the curiosity of students to observe Solar Eclipse scientifically. This activity was not part of curriculum of students. So this helped students to enhance their knowledge. Students also received participation certificate generated online.



## One week Social Awareness Camp on Solar Eclipse

Students of Kanya Maha Vidyalaya, Jalandhar got so much inspired and motivated by Hands on Astronomy Workshop previously organized by VIPNET 19, 2020, that they organized a special one week social awareness camp from June 15, 2020 to June 21, 2020 for motivating other students as well as their own nears and dears to observe solar eclipse scientifically and not from superstitious point of view. In this programme KMViets demonstrated very easy methods to prepare instruments to be used as an aid. Students also shared video recordings of these demonstrations among all their contacts. Thus KMViets became team leaders of society discarding all the superstitions prevailing, despite being restricted to stay at their homes.



## Webinar series on Vast and diverse fields of Science and Technology were attended by KMViets



The Vigyan Prasar Network (VIPNET) of science Clubs have organised webinar series on Vast and Diverse fields of Science and Technology during June 21-September 22, 2020 which includes fourteen lectures on diversified topics. Many Science students and faculty members have participated in this webinar series and listen the resource persons' talks. Dr. O.P. Mishra explained the concept of earthquake, its causes and techniques to mitigate the risk of its after effects. He elaborated the concept of earthquake by sharing data of vulnerable cities of Asia. Dr. Vivek Polshettiwar, Associate Professor at Tata Institute of Fundamental Research, Mumbai highlighted the term nanotechnology and its importance to combat the climate change such as global warming etc. During the webinar speaker briefly explained the unusual properties of nanomaterials, various nanofabrication methods, electron microscopy techniques and use of nanomaterials in consumer products.

## “Udyami Utsav”-Har Ghar Ek Entrepreneur BY IIC Institute, Greater Noida attended by KMViets

Students and faculty members of Kanya Maha Vidyalaya, attended “Udyami Utsav” a global level online event. The Event started with a motivational talk by Dr. Anil Gupta on being self reliant. Prof. K.R. Chari encourage the students to reuse the waste and shared his personal encounters with waste recycling and developing useful products from bulk industrial waste. He applied his innovative ideas in manufacturing of bricks from waste material of the industry. After this, Sanil Sachar, a national best-selling author and founder of Gurgaon based incubator, Huddle, briefed the students about the importance of Huddle in the IT sector. Swapnil Tewari, a social entrepreneur and innovator, who embraced his ability of dyslexia and synaesthesia to serve the world and spread hope through alternative education, social innovation and love. Swasthik Padma, a National Award winner for his excellence in the field of innovation shared his idea of making eco-friendly and low-cost material from LDPE waste plastics and blast furnace slag. It was a four days event and many other great personalities from different fields made the students aware of the challenges faced by them to make their life successful and also inspired them to become job developers instead of being a job seeker, so that india can grow and develop at a faster rate.



## Students participated in National Anveshika Experimental Skill Test

To promote the experimental skills among students, National Anveshika Network of India (NANI), a unit of Indian Association of physics Teachers, organised a National Anveshika Experimental Skill Test based on Physics Experiments. The screening round of NAEST was attended by 70 science undergraduate students of KMV during 9th to 16th August 2020. In this round 8 to 10 short videos of some innovative experiments had been shown to the students and questions were asked to test their observation skills and basic understanding of the subject. Two KMV students, Anshuman of B.Sc Non Med 5th Sem and Gagandeep of B.Sc C.Sc 5th sem have qualified the first level of the Screening round and are recognised among top 1000 students of the nation. These students will appear next level i.e. the Preliminary round which will be conducted by the Anveshikas. This round focuses more on performing experiments and analysing the data by the participants.

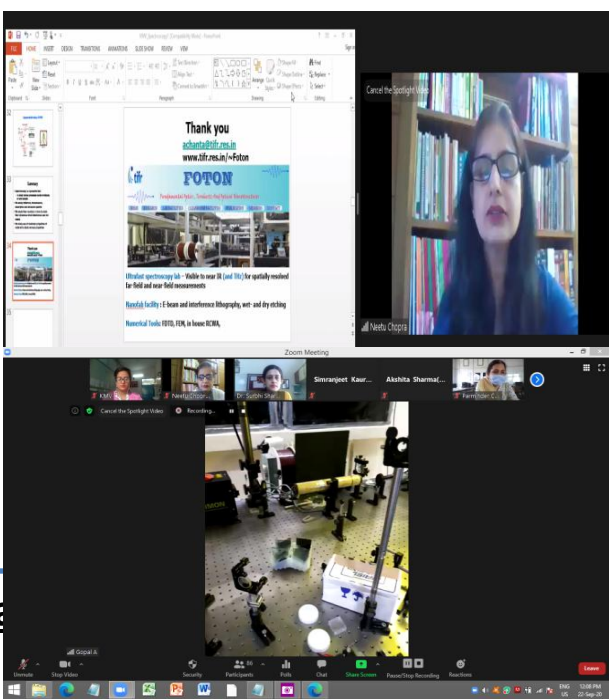
## Orientation Meeting on “Interest to Create in International Asteroid Search Campaign”

VIPNET team organized an Orientation meeting on 27th August 2020 to create an interest in International Asteroid Search Campaign (IASC). The session began with the address of Dr. Arvind C Ranade, VIPNET National coordinator who told students that the project brings a golden opportunity to all interested to participate in the International Asteroid Search Campaign IASC. It provides a platform for people around the world to make original astronomical discoveries and participate in the hands-on-astronomy. Arvind C, Ranade, further introduced Sh. Amritanshu Vajpayee from Farrukhabad, UP of Ignited Mind VIPNET Science Club as a coordinator of Ignited minds SKYAAC “Saptrishi India”. Sh. Amritanshu Vajpayee, delivered a talk on “Interest to create in -Asteroid Search Campaign under IASC from Oct 9, 2020 to Nov 6, 2020”. He started his talk by introducing terms - comet, asteroid and meteor. He explained that Asteroids are rocky worlds revolving around the sun that are too small to be called planets. There are millions of asteroids, ranging in size from hundreds of miles to several feet across. Sh. Amritanshu apprised the audience about various types of asteroids like Appolo, Trojan, Armor. He said that Trojans are mostly in two groups of asteroids that are in Jupiter’s orbit and their orbit is such that they stay in balanced gravitational field between Sun and Jupiter. Apollo and Amor are asteroids that are closer to earth. Sh. Amritanshu invited audience to get registered into the programme by assuring that selected registered participants will be trained to analyse as well as to interpret astronomical data. The session was formally closed by Ms. Nidhi Shrivastva

## Online DBT Orientation Program ANUBHOOTI 2020- A STUDENT MENTORING WORKSHOP. 3.

P.G. Department of Physics organized an innovative program “ANUBHOOTI” on September 12, 2020 for all science students. Under this program undergraduate science students were given a platform to present their concept based innovative experiments and projects that they have designed under DBT star college scheme. Department organizes this unique kind of workshop ANUBHOOTI annually. The main objective of this orientation program was to make our new comers aware about our institution as well as about different scientific activities being organized by science department periodically. “ANUBHOOTI” was also joined by faculty members of different other institutions. KMV is the only women institute of Punjab decorated with Star Status Grant. Further to motivate students to develop critical and analytic thinking, different innovative projects made by senior science students were shown. Students got encouraged by the work of their seniors and showed willingness to take initiatives for more creative projects and experiments.

## 2 days Virtual Visit of TIFR labs



P.G. Department of Physics organized 2 days Virtual Visit of TIFR labs on Sept. 21-22, 2020. The event was graced by the presence of Dr. Venu Gopal Achanta, Professor, Department of Condensed Matter Physics & Materials Science, TIFR, Mumbai. Event was joined by students and faculty members of different schools. On the first day of event Prof. (Dr.) Venu Gopal explained and elaborated theoretical concepts of Spectroscopic Techniques. Starting from the type of sources used to excite samples, he went through different measurement techniques which included differential reflection and differential transmission. Next day students got an opportunity to have a virtual visit to spectroscopic labs of TIFR, Mumbai. They witnessed so many sophisticated instruments under one roof and many lasers, and spectrometers. They also learnt various measurement techniques and functions of vacuum pumps.

## A tribute to Dr. APJ Abdul Kalam

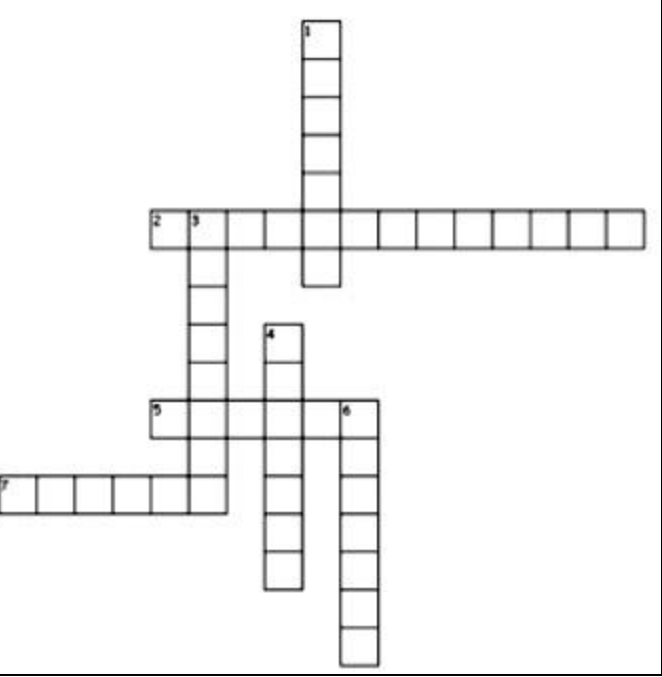
In order to pay tribute to our 11th President of India, P.G. Department of Physics, organized “A TRIBUTE TO Dr. APJ Abdul Kalam” to endeavor this initiative of remembering the “People President” on October 16, 2020 birth anniversary. Event was graced by the presence of Dr. Rajesh Grover, Director, Pushpa Gujral Science City, Kapurthala. Dr. Rajesh enlightened every student and teacher with his expert talk on innovation and creativity. He has given lot of inspiring and motivating examples of innovations; some of which are given by students of 4th and 5th class. He emphasized that there is an urgent need of practical implication of science and innovation especially in the agriculture sector. He gave numerous examples of ordinary people with extraordinary creativity and named it Jugad. He further invited students to come up with creative ideas and ensured that PGSC, Kapurthala will extend support. Further in this event, biography on Dr. APJ Abdul Kalam was presented by our student. She gave brief description of Dr. Kalam's life, birth, education, achievements and awards. A book review of “WINGS OF FIRE” was presented. Book was presented in very interesting way. Various prospective of Dr. Kalam’s life were described.

## 5 days Online Physics Workshop from 20-24, 2020

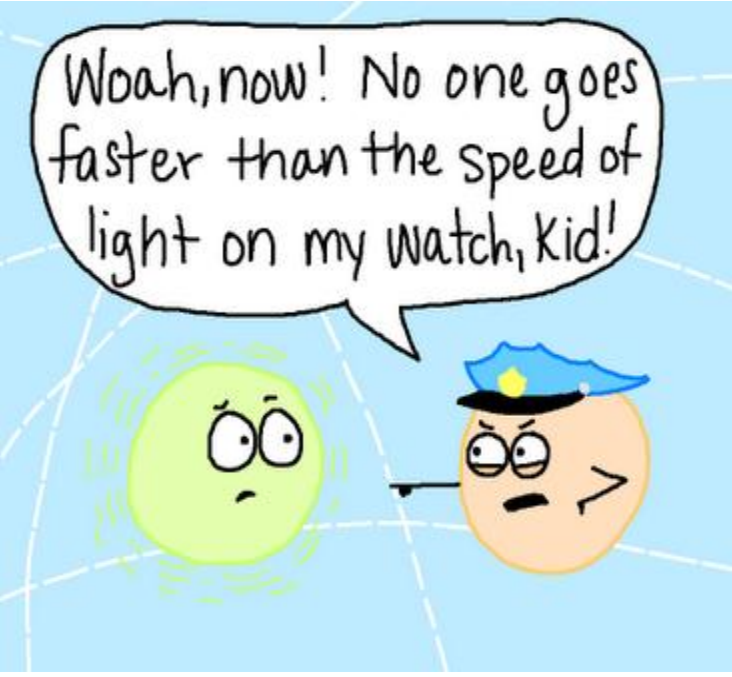
P.G. Department of Physics, organized 5 days Online Physics Workshop sponsored by Department of Biotechnology for under graduate science students. Workshop was conducted by Dr. Sarmistha Sahu, Coordinator, National Anveshika Network of India. The main aim behind organizing this workshop was to make students understand about some basic concepts of physics by providing hands on training by using material easily available at home. First day of the workshop was dedicated to the theme of “Multiple Reflection”. Dr. Sahu explained that size and colour of image of an object does not change in planar mirrors. By using pair of mirrors she made students to deduce formula of finding angle between mirrors without even using protractor. On the second day Dr. Sahu introduced a method to determine pi through simulations. Third day of the workshop was dedicated to the theme of “Radioactivity using dice”. Students were made to understand the basic concept of phenomenon of radioactivity, half life, decay constant of radioactive elements. Theme of fourth day of workshop was “Creative brain tickling technique”. Last day of the workshop was dedicated to “Demonstration on physical optics” theme.



## Science Crossword Puzzles



- Across**
- A chart that lists all the known elements in order of their atomic mass
  - A subatomic particle with a positive charge
  - This element has 6 protons
- Down**
- A subatomic particle with no charge
  - A subatomic particle with a negative charge.
  - This element has 3 protons
  - At the centre of the atom, contains the protons and neutrons



## Fun Times with Physics

### Two day National e-Conference on ‘COVID-19 Pandemic: Emerging Challenges and Future Strategies’

Two day National e-Conference on ‘COVID-19 Pandemic: Emerging Challenges and Future Strategies’ was organised on 27-28th November, 2020 by Faculty of Sciences to provide a platform to the students, research scholars and academicians for scientific discussion on the COVID – 19 Pandemic, which has brought the physical interaction at the campus of institution to a standstill. The conference received a whooping response of 362 participants from 17 states. Inauguration ceremony was head started by interactive session by erudite chief guest Dr. Garima Gupta, Scientist E and Programme Officer, DBT, where she shared her views regarding the effect of lockdown on the economy of the country. The keynote address was delivered by Prof. A. K. Bakhshi, Founder Vice-Chancellor, PDM University Haryana on the topic ‘Achieving Excellence in Science in India in the 21 st century: Challenges and Opportunities’. Technical session of Day 1 was conducted by Dr. K.K. Ramachandran Professor, Government Engineering College, Thrissur, Kerala on the topic ‘Higher Education- Revolution in Teaching and Learning triggered by COVID19’. Day 2 was chaired by Dr. Subarna Roy Scientist F / Deputy Director (Senior Grade) ICMR-National Institute of Epidemiology, Dept. of Health Research, Govt of India, Ayapakkam, Chennai. On topic ‘&#39;Anatomy of an Outbreak’. The Poster session began with the valuable feedback by the judges on the posters. The judges of the poster session were Dr. Pooja Ohri, Associate Professor, Department of Zoology, Guru Nanak Dev University, Amritsar, Dr. Rohit Mehra, Associate Professor, NIT, Jalandhar and Dr. Meenu, Assistant Professor, Department of Applied Chemistry, Maharaja Ranjit Singh PTU, Bathinda. All the judges applauded the efforts of the participants in making the effective poster presentation on the theme of the conference..

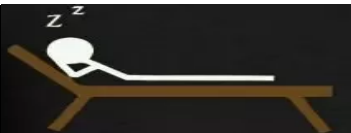


## There Will Come Soft Rains Story time

The dog was gone. In the cellar, the incinerator glowed suddenly and a whirl of sparks leaped up the chimney. Two thirty-five. Bridge tables sprouted from patio walls. Playing cards fluttered onto pads in a shower of pips. Martinis manifested on an oaken bench with egg-salad sandwiches. Music played. But the tables were silent and the cards untouched. At four o'clock the tables folded like great butterflies back through the paneled walls. Four-thirty. The nursery walls glowed. Animals took shape: yellow giraffes, blue lions, pink antelopes, lilac panthers cavorting in crystal substance. The walls were glass. They looked out upon color and fantasy. Hidden films clocked through well-oiled sprockets, and the walls lived. The nursery floor was woven to resemble a crisp, cereal meadow. Over this ran aluminum roaches and iron crickets, and in the hot still air butterflies of delicate red tissue wavered among the sharp aroma of animal spoors! There was the sound like a great matted yellow hive of bees within a dark bellows, the lazy bumble of a purring lion. And there was the patter of okapi feet and the murmur of a fresh jungle rain, like other hoofs, falling upon the summer-starched grass. Now the walls dissolved into distances of parched grass, mile on mile, and warm endless sky. The animals drew away into thorn brakes and water holes. It was the children's hour. Five o'clock. The bath filled with clear hot water. Six, seven, eight o'clock. The dinner dishes manipulated like magic tricks, and in the study a click. In the metal stand opposite the hearth where a fire now blazed up warmly, a cigar popped out, half an inch of soft gray ash on it, smoking, waiting. Nine o'clock. The beds warmed their hidden circuits, for nights were cool here. Nine-five. A voice spoke from the study ceiling: "Mrs. McClellan, which poem would you like this evening?" The house was silent. The voice said at last, "Since you express no preference, I shall select a poem at random." Quiet music rose to back the voice. "Sara Teasdale. As I recall, your favourite... There will come soft rains and the smell of the ground, And swallows circling with their shimmering sound; And frogs in the pools singing at night, And wild plum trees in tremulous white; Robins will wear their feathery fire, Whistling their whims on a low fence-wire; And not one will know of the war, not one Will care at last when it is done. Not one would mind, neither bird nor tree, If mankind perished utterly; And Spring herself, when she woke at dawn Would scarcely know that we were gone." The fire burned on the stone hearth and the cigar fell away into a mound of quiet ash on its tray. The empty chairs faced each other between the silent walls, and the music played. At ten o'clock the house began to die. The wind blew. A falling tree bough crashed through the kitchen window. Cleaning solvent, bottled, shattered over the stove. The room was ablaze in an instant! "Fire!" screamed a voice. The house lights flashed, water pumps shot water from the ceilings. But the solvent spread on the linoleum, licking, eating, under the kitchen door, while the voices took it up in chorus: "Fire, fire, fire!" The house tried to save itself. Doors sprang tightly shut, but the windows were broken by the heat and the wind blew and sucked upon the fire. The house gave ground as the fire in ten billion angry sparks moved with flaming ease from room to room and then up the stairs. While scurrying water rats squeaked from the walls, pistoled their water, and ran for more. And the walls sprays let down showers of mechanical rain. But too late. Somewhere, sighing, a pump shrugged to a stop. The quenching rain ceased. The reserve water supply which had filled baths and washed dishes for many quiet days was gone. The fire crackled up the stairs. It fed upon Picassos and Matisse in the upper halls, like delicacies, baking off the oily flesh, tenderly crisping the canvases into black shavings. Now the fire lay in beds, stood in windows, changed the colors of drapes! And then, reinforcements. From attic trapdoors, blind robot faces peered down with faucet mouths gushing green chemical. The fire backed off, as even an elephant must at the sight of a dead snake. Now there were twenty snakes whipping over the floor, killing the fire with a clear cold venom of green froth. But the fire was clever. It had sent flame outside the house, up through the attic to the pumps there. An explosion! The attic brain which directed the pumps was shattered into bronze shrapnel on the beams. The fire rushed back into every closet and felt of the clothes hung there. The house shuddered, oak bone on bone, its bared skeleton cringing from the heat, its wire, its nerves revealed as if a surgeon had torn the skin off to let the red veins and capillaries quiver in the scalded air. Help, help! Fire! Run, run! Heat snapped mirrors like the first brittle winter ice. And the voices wailed. Fire, fire, run, run, like a tragic nursery rhyme, a dozen voices, high, low, like children dying in a forest, alone, alone. And the voices fading as the wires popped their sheathings like hot chestnuts. One, two, three, four, five voices died. In the nursery the jungle burned. Blue lions roared, purple giraffes bounded off. The panthers ran in circles, changing color, and ten million animals, running before the fire, vanished off toward a distant steaming river... Ten more voices died.

Continue...

A Body at rest, stays at rest until mother scolds her to come out of bed.



### Workshop on Problem solving and Ideation

P.G. Department of Physics organized Workshop on Problem solving and Ideation on December 9, 2020. Workshop was conducted by Er. Vishal Sharma, Project Scientist cum Chief Mentor Innovation Hub, Pushpa Gujral Science City, Kapurthala. He elaborated the characteristics of creative persons and hence motivated students to think creatively and out of the box. For which they should try to identify the problem and bring out solutions with determination and persistence. He inspired students by giving the example of Bajaj Autos DTS-i- technology and Samsung android technology versus conventional Nokia technology. Overall the workshop was very interesting and informative. Students were highly motivated to think logically.

### Aatam Nirbhar Bharat-Innovation and Entrepreneurship

An online event titled *Aatam Nirbhar Bharat-Innovation and Entrepreneurship* was organized on 18th December 2020. Dr Swarandeeep Singh Hundal, Professor, Department of Zoology, Punjab Agriculture University, Ludhiana and Dr Kuldeep Singh Nagla, Associate Professor, Instrumentation and Control Engineering were invited guests for the event. During the exhibition, students gave presentation on Buy Bamboo products, say no to plastics, Air filtering buses, Indian Pottery, Treating cancer with bacteria, Herbal cosmetics. Experts joined panel discussion along with students and discussed practical concerns for each concept and assessed student's preparation and knowledge for specific concept. They also enriched students with their updated knowledge at the end of each presentation. Experts of the event addressing the students lauded their creative & innovative ideas. Principal Prof. (Dr.) Atima Sharma Dwivedi appreciated efforts of Department of Sciences and KMV IIC team for taking such initiatives and preparing students for their future entrepreneurship ventures. She also thanked experts for gracing the occasion and enlightening and motivating students.

### KMV student shines in India International Science Festival 2020

Ministry of Science and Technology organised Science Education in India as a part of India International Science Festival 2020 from December 22-25, 2020. A number of events were organized in a span of 4 days, including Agricultural Scientist Meet, Biodiversity Conclave, Clean Air, Cultural Program, Guinness Book of World Records, History of Indian Science, International Science Film Festival, International Science Literature Fest – “VIGYANIKA”, Nav Bharat Nirman, Science Education on India, Waste management and Sanitation, Water Segment, Women Scientists & Entrepreneurs conclave, and many more. Under the Event “Science Education in India”, an Essay Writing Competition was organized, for which the topic was “How Science should be taught”. Ms Anshuman Saluja from KMV participated in the event and wrote an Essay of about 600 words and won second prize. She has also received cash prize of Rs 5000/-. Principal Prof. (Dr.) Atima Sharma Dwivedi congratulated and boosted Anshuman for her achievement.

### Orientation Session on “KMV-Innovation Hub”

P.G Department of Physics organized orientation Session on “Innovation Hub” on December 30, 2020. Session was conducted by Dr. Surbhi, Kanya Maha Vidyalaya, Jalandhar by explaining application of sciences in daily life and examples of simple innovations. Through this orientation session various apparatuses and basic principles behind them were elaborated to students. In order to enhance the creativity and skill in Education of Basic Physics, some experiments like circular pendulum, anharmonic oscillator, Transmission line, Black hole, Air cannon, Doppler Effect, rotational Motion, Motion in inclined plane, energy transfer in spring etc., were demonstrated to the students to make it easier for them to understand the concepts in a practical

**SPEED OF DARKNESS:** Since darkness is absence of light, hence speed of darkness is equal to that of light.

**THE CONFOUNDED TACKLE:** You can't construct it. Any attempt to build it (honestly) causes its collapse. Of course, you can use deception to make constructions that *appear to be* fool's tackles, and can even make ones that seem to "work".

**LIGHT AS FEATHER:** Snow

**Can you be an astronaut: Visit at:** <https://sketchfab.com/3d-models/the-astronaut-test-animated-and-visualized-582baf3b02574d4eabbca5ea288098de>

#### Science Crossword Puzzles

##### Across

- Spectru
- Opaque
- Transparent
- Electromagnetic waves
- Prism
- Concave
- Translucent
- Ear
- Rarefaction
- Compression

##### Down

- Refraction
- Sound Waves
- Vibration
- Mechanical Waves
- Medium
- Echo