LANDMARK DISCOVERY

Scientists confirm existence of Einstein's gravitational waves

The study will offer scientists greater insights into the origin of the universe and how planets are created

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NEW DELHI

Scientists on Thursday announced the detection of gravitational waves, throwing open a new window to the cosmos and to human understanding of space and time, 100 years after their existence was predicted by Albert Einstein.

The discovery comes after decades of instrument research and development, and the collaborative efforts of around 1,000 scientists, 90 institutions and 15 countries, including India.

The discovery, possibly the biggest scientific breakthrough of the century so far, radically expands the ways in which the cosmos can now be observed and understood.

What scientists detected was the sound of gravitational waves from the merger of two black holes—an event that took place more than a billion years ago. The study of these waves will offer scientists greater insights into the origin of the universe and how planets are created.

"This is the first time a Binary Black Hole system has been directly observed. Up until now, we have been deaf to the universe. Today, we are able to hear gravitational waves for the first time," said David Reitze, executive director, Laser Interferome-

MATT HEINTZE/CALTECH/MIT/LIGO LAB/AFP

Global cooperation: *The discovery comes after decades of instrument research and development, and the collaborative efforts of around 1,000 scientists, 90 institutions and 15 countries, including India.*

ter Gravitational-Wave Observatory (LIGO), said in Washington.

LIGO is a system of two identical detectors located in Livingstone, Lousiana, and Hanford, Washington, which were constructed to detect tiny vibrations from passing gravitational waves.

The instruments were designed and operated by the California Institute of Technology (Caltech) and the Massachusetts Institute of Technology (MIT), with funding from the National Science Foundation.

Reitze explained that the signal had a very specific characteristic—that as time went forward, the frequency of the signal went

up. "And what was amazing about this signal was that it is exactly what you would expect that Einstein's theory of general relativity would project for two big mass of objects like black holes spiralling and merging together," he said.

This first detection came as a result of the gravitational waves produced during the final fraction of a second of the merger of two black holes to produce a single, larger spinning black hole—the Binary Black Hole.

"This collision of two black holes had been predicted but never observed," said an LIGO statement.

"Three solar masses of energy

were emitted in gravitational waves. This merger happened 1.3 billion years ago," said Gaby González, LIGO spokesperson.

Gravitational waves are ripples in the fabric of space-time which can only be caused by massive astronomical events such as neutron stars or black holes orbiting each other so that these waves would finally radiate from them.

These waves, if detected, will carry signatures of their origin, explaining much about the nature of gravity and the origin of the universe.

However, despite the attempts of ground-based experiments to detect them directly, gravitational waves so far had remained elusive.

"This is not just about the detection of gravitational waves. But what's really exciting is what comes next. Four hundred years ago, Galileo turned the telescope to the sky and opened the era of modern observational astronomy. I think we are doing something equally important here," said Reitze. "I think we are opening a window to the universe, the window of gravitational wave astronomy."

"Gravitational wave is a completely different fundamental force. There are many objects in the universe that do not emit light, such as black holes, dark matter, but they are around and they emit waves. Detecting gravitational waves will open many new branches of science and many more avenues," said Tarun Souradeep, senior professor at Pune-based Inter-University Centre for Astronomy and Astrophysics, one of the Indian institutes involved in the research.

IIT-M calls on corporates, seeks more funds from CSR arms

Targets an amount of ₹24 cr next year

TE RAJA SIMHAN
Chennai, February 11

With the Indian Institute of Technology-Madras turning in to a research-oriented institute and developing solutions to solve societal challenges, it seeks more funds from companies' Corporate Social Responsibility (CSR) arms to support research activities.

The Centre has mandated companies to spend 2 per cent of their earnings on CSR. This has provided one more avenue for IIT-M to tap funds, said R Nagarajan, Dean, International & Alumni Relations, IIT Madras.

Last year, the institute got ₹10-12 crore from companies like Nokia, TNPL, Cholamandalam Finance, and Titan. The target is to double the amount next year. Companies can support faculty projects, or contribute to incubators, to be in turn given to start-ups, he said.

The institute is in touch with nearly 70 companies for funds. Of this, ten may fructify during the year, said Joseph Thomas, Vice-President, Development Office, IIT Madras Alumni Charitable Trust.

Tax benefit

Research and studies are allowed under CSR, and donations to IIT Madras are eligible for tax exemptions of 100 per cent, 175 per cent and 200 per cent on a case-to-case basis.

Nagarajan said research can be classified into three categories. For fundamental research, funds are available in the form of government grants; for translational research, there is industry support; and for transformational research, it is not confined to just one project, but involves many for the society at large. It is for transformational research that large funds are required, he said.

For instance, the institute developed Inverterless, solar-DC solution to light up homes. Here, the power line and appliances are based on DC (Direct Current), and the (Alternating Current) AC/DC conversions are non-existent, resulting in loss minimisation.

This solution reduces the size of solar pane and battery required, thus bringing down system costs considerably, he said.

IIT-M proposes to power nearly 1 lakh houses across India with this solution, through Central government subsidy and part payments from homeowners would account for around half the cost. The balance ₹135 crore is proposed to be financed through funding from CSR activities, said Nagarajan.

Funds could be anywhere from ₹1 lakh to ₹10 crore. "We request the industry for at least 10 per cent of CSR fund allocation. We don't want to redirect their funds that they would, otherwise, be giving for charitable purposes.

We are only saying that if they give funds to technology institutions, the effect would be of a higher magnitude," he said.

Research areas

IIT-M has 16 departments active in research. Every IIT has its centres of competence, expertise and excellence. IIT-M has the National Centre for Combustion Research and development, funded jointly at IIT Madras and IISc.

Health and medical technology is another area of strength. Brain research and data science are areas of focus, he said.

Why demonise what was good in ancient Indian science, asks Smriti Irani

Irani stressed the importance of applicability of research and its utility for industry. Says statue of Aryabhatta to be installed at UNESCO in April.

http://indianexpress.com/article/cities/mumbai/why-demonise-what-was-good-in-ancient-indian-science-asks-smriti-irani/

Listing various steps taken by the Narendra Modi government, Irani spoke about a national portal that will make available online syllabuses and curriculum for all educational institutions. She said over the next few years, material for research will be made available in 100 Indian languages. "One of the major problems faced by Indian institutes in the international-ranking process is that material in Indian languages is not considered for evaluation. So, the Centre has set up the National Institution Ranking Framework to institutionalise norms for ranking of educational and other institutions and over 3,500 institutions have shared their data on activities and research so far," Irani said.

Irani stressed the importance of applicability of research and its utility for industry.

Maharashtra Chief Minister Devendra Fadnavis announced on the occasion that his government will set up 'model laboratories' on the lines of the one developed by students of IIT-Bombay in all districts of the state. "I was told about the IIT lab by Smriti Irani and I decided that we will set up such labs in each districts of the state. We will bring up Maharashtra as an innovative state over the next three years," he said. Fadnavis also hoped that the three-day conference will help provide ideas for development of science and technology in a sustainable manner.

Seeking to clarify that the conference is not aimed at flying "Pushpak" plane mentioned in ancient Indian texts, Aniruddh Deshpande, senior educationist and a patron of the conference, said, "Resurgence does not mean sticking to old prescriptions. It has to be a product of actualisation (anubhuti). We have to ensure that research

should be suitable for the development of our country. This is not an attempt to fly Pushpak plane, but a conscious effort to re-look the whole perspective of research for betterment of mankind."

Next Education buys IIT-B incubated InOpen for computer science product

Next Education will include Computer Masti - e-books to teach computer science in schools - in its in-house product NextBooks

http://www.business-standard.com/article/companies/next-education-buys-iit-b-incubated-inopen-for-computer-science-product-116021100153_1.html

Hyderabad-based Next Education has acquired Indian Institute of Technology, Bombay (IIT-B)-incubated startup InOpen Technologies for its K-12 computer science product Computer Masti, in an all-cash deal.

Computer Masti, created jointly by IIT-B and InOpen, is a series of e-books to teach computer science in schools.

The company plans to enhance computer learning through the computer science curriculum which will be available across multiple platforms.

Rupesh Kumar Shah, CEO of InOpen said that the acquisition by Next Education will scale up Computer Masti and approximately three million students will use CS 101 (basics of computer science and programming) by July 2017.

Post the acquisition, all InOpen employees will move to Next Education. Shah is planning to take a break and may look at mentoring startups.

InOpen was incubated in Society for Innovation and Entrepreneurship (SINE), IIT Bombay in 2009 and was co-founded by Prof. Sridhar Iyer and Rupesh Kumar Shah. It started with a seed capital of Rs 25 lakh and received a boost after State Bank of India lent Rs 50 lakh without any collateral in August 2010. Meanwhile, VenturEast invested $500,000 later.

Beas Dev Ralhan, co-founder and CEO of Next Education said, "Computer Masti adds to our portfolio and enables us to maintain our position as India's most innovative education products company."

Through this strategic move, Next Education aims to ensure better integration between NextBooks and computer science. As part of this deal, InOpen's talent pool will also merge into Next Education's 2,000-strong team.

Computer Masti is a core computer science curriculum developed after intense research. It focuses on building life skills through computer science by emphasizing underlying concepts and not merely software-specific skills.

Next Education will include Computer Masti books in its in-house product NextBooks to cater to schools for their computer science curriculum. NextBooks is a series of curriculum books for the pre-primary and primary school years.

These are integrated with the TeachNext (a digital learning ecosystem) learning platform and use different learning styles, namely audio, visual and kinesthetic, in order to enhance student's understanding of concepts.

All programmes and content are presented in a narrative format where colourful pictures, worksheets and interactive lessons are an inherent part of the textbook for each level. The lessons are based on free and open source software.

Founded in 2007, Next Education has catered to more than 7,000,000 students studying in their 7,000-plus partner schools. It is a technology-driven company creating products for the education sector aimed at making learning and teaching easier, more fun, and more effective.

They have 10,000 learning modules that account for more than 1,000 hours of classroom teaching at school and junior college levels to our credit.

"Next Education has an awesome team as well as the largest reach in the country and this deal will accelerate our efforts in computer science education. We have had some really awesome people and institutions, like IIT Bombay who invested in us and backed us each and every time we needed them," he explained.

InOpen shareholders included Shridhar Shukla of GS Labs, Ventureast, Japanese education giant Benesse and Society of Entrepreneurship India's most prestigious incubator SINE IIT Bombay.

Kamath Raveendranath, CFO and Co-founder, Next Education explained that computer science is much sought after, and Computer Masti, being the best in the business, made it a perfect fit for them.

Within three years of operation, it had achieved profits and had also seen a good jump in revenues every year. InOpen had also acquired a science content called Small Science' from the Homi Bhabha Centre for Science Education. However, this will not be continued under Next Education.

Follow govt rules while procuring jammers: UGC to varsities

http://www.business-standard.com/article/pti-stories/follow-govt-rules-while-procuring-jammers-ugc-to-varsities-116021001230_1.html

The University Grants Commission (UGC) has asked all colleges and Universities that wish to install jammers to curb unfair means in exams to not procure them from "unauthorised manufacturers" .

After concerns were expressed by the Union Cabinet secretariat about procurement of these devices through open tender, the commission in a letter to VCs said that Electronics Corporation of India Limited (ECIL) and Bharat Electronics Limited (BEL) are the two entities from which jammers can be procured.

Statutory examination conducting bodies have been permitted to deploy low powered jammers to prevent unfair means used through radio frequency based devices by examinees, the UGC said in its letter.

It, however, added that "inviting open tender from unauthorised manufacturers is a violation of the policy of Government of India in this regard."

Asking Universities to follow norms ahead of the approaching exam season, the UGC also said that prior approval of Secretary (security), Union Cabinet Secretariat is necessary regarding the deployment and procurement of jammers.

Last month, the Union Cabinet Secretariat had written to UGC that "proliferation of jammers is a serious security concern and inviting open tenders for procurement of jammers from unauthorised sources is a violation of the policy."

UGC has also asked Universities to provide details of examinations and deployment of jammers to ECIL and BEL so that a realistic assessment of number of jammers required can be made.

The government had worked on its jammer policy last year to curb unfair means in important exams. The jammer policy does not require the examination conducting bodies to purchase them and instead allows them to hire 'low frequency jammer' on rent after seeking approval of the cabinet secretariat.

Last year, upset at the irregularities in the All India Pre-Medical Test (AIPMT), which was later cancelled, the Supreme Court had asked Centre to install phone jammers at exam centres to prevent paper leaks and other malpractices.

Former JNU prof Yogesh Tyagi in HRD list for DU vice chancellor's job

Hindustan Times (Delhi)

THE APPOINTMENT OF DU V-C HAS BEEN PENDING FOR THREE MONTHS AFTER DINESH SINGH LEFT OFFICE. THE UNION HRD MINISTRY HAS SENT THE NAMES OF THREE PROBABLE CANDIDATES TO THE PRESIDENT.

NEW DELHI: The Union HRD ministry has sent a list of names of prospective candidates for the post of Delhi University (DU) vice chancellor to the President for selection.

The dean of law faculty at South Asian University and former JNU professor Yogesh Kumar Tyagi is the frontrunner but his name needs President Pranab Mukherjee's consent.

Mukherjee is the visitor to the University.

A search-cum-selection committee had shortlisted four names for the high profile post, including that of Tyagi. Rameshwar Nath Kaul Bamezai, former IIT professor and UPSC member, Hemchand Gupta and DU professor in Political Science department Bidyuth Chakraborty were the other people in contention for the job.

Sources said only three out of these four names have now been sent to the President.

The appointment of the DU V-C has been pending for three months after Dinesh Singh left office on October 28 last year.

The search-cum-selection committee, comprising UGC chairman V ed Praka sh, former CAG Vinod Rai and former chairman of the Union Public Service Commission D P Agrawal, had in a meeting in December shortlisted four names.

Recently, HRD minister Smriti Irani had reportedly met the President amid reports of conflicts in certain matters, including that of the choice of candidate for Jawaharlal University vice chancellor.

IT Guwahati recycles all waste paper to gold, kind of

http://www.pagalguy.com/articles/iit-guwahati-recycles-all-waste-paper-to-gold-kind-of-39948894

List the number of things you can do with your used answer sheet. IIT Guwahati can give you ten and that too, palpable worthwhile stuff. To name a few, classy envelopes and gorgeous writing pads.

Dr Ramgopal Uppaluri who teaches in the Department of Chemical Engineering at IIT Guwahati is the brain behind IIT Guwahati's rather sui generis initiative to recycle all its paper. "It was disheartening to see so much of waste paper in our institute. Am certain all educational institutes generate a lot of it. But something had to be done I felt and rather strongly too," the professor told PaGaLGuY.

When the idea to recycle first crossed Dr Uppaluri's mind, it seemed outrageous because the institute generates more than 8 tonnes of waste paper annually. The task seemed too gigantic to take on.

Dr Ramgopal Uppaluri

But then, another rather idiosyncratic drift around the institute that Dr Uppaluri had been witnessing for some time, cemented his decision to go ahead with the recycling. "I noticed that people at IIT Guwahati generally love envelopes. Even in the age of e-communications, envelopes are a big hit and in demand all the time. So I decided I would recycle waste and make envelopes, besides of course other stuff."

So, all the used A4 papers, used answer scripts, discarded as per the rules of the institute were put into huge trucks and packed off to a recycling plant late last year. Oil paint papers were not sent as it is not possible to recycle them and get products such as envelopes and note pads.

Dr Uppaluri recycled some 7-8 tonnes of paper and got a tonne worth of reusable 'goodies' back. That means, lots of writing paper and envelopes. Since the recycled stationery that came back was in a smart off-white colour, strewed with tiny self-coloured spots and slightly thicker to feel, staff took to it immediately. According to PaGaLGuY, the reused paper actually looks and better than hand-made paper.

At the moment, the institute only uses recycle stationery much to the delight of Dr Uppaluri. Currently, though, the costs of recycling is the same as buying new stationery but, as they say, it is the thought that counts.

If not anything else, the recycling venture has spurred a series of similar ideas in Dr Uppaluri's mind. From converting food waste to biogas and finding ways to put plastic to better use, the recycling bug has caught Dr Uppaluri real tight. The food recycling idea is in paper and proposal form and with the state government for a go-ahead, but the need to do convert waste plastic to something more utilitarian has been nagging the professor

for a while now. "Recycling plastic is cumbersome, best is to avoid its usage. Use jute instead and help make the environment a better place," Prof Uppaluri urges PaGaLGuY readers.

IIT-G students' bid to create awareness

http://www.assamtribune.com/scripts/detailsnew.asp?id=feb1216/city052

 GUWAHATI, Feb 11 - In a bid to create awareness among citizens about voting rights, students of IIT Guwahati have undertaken a campaign aimed at enlightening citizens about their right to vote and how they could exercise that right.

The campaign – 'Wake Up and Vote' – launched by the students of IIT-Guwahati in the city – is part of the institute's techno-management festival 'Techniche'.

The right to vote campaign is aimed at spreading awareness that voting builds a healthier nation and strengthens democracy. The 18th edition of 'Techniche' will be organised from September 1 to 4, 2016.

"Techniche has always been a torchbearer when it comes to rights and duties of the citizens of India. Backed with an enormous success in 2014 where Techniche successfully had thousands of people taking a pledge to vote throughout the country, this year the team Techniche is back with full force for the Assam elections. In this respect, the team is helping the Election Commission to get voter ID cards of hundreds of people in Guwahati who do not have a photograph on the cards," Rajat, an organising committee member of Techniche 2016, said.

On February 6, team Techniche reached about 20 villages where they generated awareness over elections and successfully collected 200 registrations for Voter IDs.

"It was a great experience working with the students of IIT Guwahati. The team effort was brilliant. This is the first time any student community has stepped in to help people correct their errors in the voter ID cards and formulation of new ones. People with the errors in voter ID face many problems for verification process and this effort from Techniche just before the Assam elections is worth applauding," Golapi Das, booth level officer of the Hajo constituency, said.

"We have many events and campaigns lined up to educate the people on the need to vote. 'Wake Up and Vote' is what the State needs right now," Rajat added.