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It's easy to get swept up in the swirling starry arms of this intermediate spiral galaxy, NGC 4654, in the constellation Virgo. The galaxy has a bright center and is labeled “intermediate” because it has characteristics of both unbarred and barred spirals. NGC 4654 is just north of the celestial equator, making it visible from the northern hemisphere and most of the southern hemisphere. The galaxy is around 55 million light-years from Earth.

NGC 4654 is one of many Virgo Cluster galaxies that have an asymmetric distribution of stars and of neutral hydrogen gas. Astronomers reason that NGC 4654 may be experiencing a process called “ram pressure stripping,” where the gravitational pull of the Virgo galaxy cluster puts pressure on NGC 4654 as it moves through a superheated plasma made largely of hydrogen called the “intracluster medium.” This pressure feels like a gust of wind – think of a biker feeling wind even on a still day – that strips NGC 4654 of its gas. This process produced a long, thin tail of hydrogen gas on the galaxy's southeastern side. Most galaxies that experienced ram pressure stripping hold very little cold gas, halting the galaxy's ability to form new stars, since stars generate from dense gas. However, NGC 4654 has star formation rates consistent with other galaxies of its size.

Scientists study galaxies like NGC 4654 to examine the connection between young stars and the cold gas from which they form. NASA's Hubble Space Telescope took this image in visible, ultraviolet, and infrared light

(Link :https://www.nasa.gov/image-article/hubble-views-a-vibrant-virgo-cluster-galaxy)

37th ANNUAL CONVENTION: UNVEILING THE WONDERS OF PHYSICS IN JAIPUR

The 37th Annual IAPT Convention held at Jaipur was a resounding success, bringing together the brightest minds in physics education and research. The event spanned from 8 -10, October – 2023; showcasing the significance of physics in education and fostering a community of passionate educators and researchers.

Pre- convention Workshop & Hand on Activities

Pre – convention workshop was included first time in the annual convention. The objective was to provide ample opportunities of interaction of students and faculties of UG & PG colleges with eminent scientists, experimentalists, inventors and innovators. Houseful session witnessed the interesting and interactive session contributed by Prof. O. S. K. S. Shastri, Dr. V.V.V. Satyanarayan. Dr. Jasvinder Singh & Dr. Amit Kumar Jana. They showcased interesting experiments and newly developed gadgets that have the potential to revolutionize physics teaching. Their demonstrations aimed to make physics more explorative and interesting, inspiring educators to adopt innovative teaching methods.

Inauguration Ceremony:

The convention commenced with a prestigious inauguration ceremony graced by esteemed dignitaries. Prof. A.C. Pandey, Director of IUAC (Inter-University Accelerator Centre, New Delhi), presided as the Chief Guest, and Prof. T. Kumar, Vice Chancellor of the Central University of Haryana, Mahendragarh, was the Guest of Honour. Their very presence added immense value and set the tone for a knowledge-filled event. Prof. Y. K. Vijay President IAPT RC06 welcomed the guests and emphasized the importance of experiments in Physics, Prof. Y. C. Sharma presented the overview of the convention, Prof. P. K. Ahluwalia highlighted the goals and achievements of IAPT, Dr. Rekha Ghorpade coordinated the IAPT award ceremony and Mr. R. K. Parashari presented vote of thanks of the inauguration ceremony.

Distinguished Invited Speakers:

The convention featured a lineup of distinguished invited speakers who shared their insights, research findings, and experiences. These sessions provided a platform for the exchange of ideas, fostering collaboration and innovation in the field of physics education. Prof. P. C. Deshmukh presented a talk on "Time-delay in Quantum Scattering and in Photoionization/Photo -detachment" & significance of otto-second physics; Prof. Vijay A Singh provided a brief account on "A Central Puzzle in Physics: Wave-Particle Duality and Prince Louis de Broglie and how his contributions provided comprehension to it"; Prof. H. C. Verma enthralled audience with his very well-knit thoughts on a topic much in need "Social responsibility – Training the trainers"; Dr. Neetu Verma discussed her finding on the same topic; Prof. Bhupati Chakravarty, Prof Ajit M Shrivastava shared the importance of research in physics education, Prof Rajesh Kumar, shared role of AI in education Prof. Mehnaz Hussain & Prof. Ashutosh Tiwari Presented their talk on Physics education research.

Numerous researchers presented their important contributions to the wealth of knowledge in the physics domain. The convention served as a nexus for researchers to share their findings, paving the way for advancements in the understanding and application of physics principles. These sessions provided a platform for the exchange of ideas, fostering collaboration and innovation in the field of physics education.

Awards, Certificates &Medals for Students& Teachers:

Recognizing and encouraging the budding talent in physics, the convention awarded students & teachers. This gesture not only celebrated academic excellence but also motivated students to pursue careers in physics with passion and dedication. Following are the details.

NGPE Medal Awards for Students:

National Graduate Physics Examination (NGPE) is conducted on similar lines as NSEP. S. N. Bose National Centre for Basic Sciences, Kolkata, allows direct admission to toppers in NGPE, after an interview, in their integrated Ph.D. programme. A number of scholarships (subject to a maximum of 5) have been instituted to encourage students to take-up physics as a career. Those who seek admission in M.Sc. (physics) after NGPE, are eligible for these scholarships.

Prof. B. P. Tyagi, Coordinator of the National Graduate Physics Examination awarded Certificate and Gold Medal to final six contestants

1.	Ms. Sharada from Delhi	Gold Medal
2.	Ms. Rinku from Chandigarh	Gold Medal
3.	Mr. Heerak Sharma from Pune	Gold Medal
4.	Mr. Vivek Gurunath from Pune	Gold Medal
5.	Mr. Anubhav Srivastava from Bangalore	Gold Medal
6.	Mr. Panchanantala from Bangalore	Gold Medal

NCEWP Medal Awards for Students:

National Competition on Essay Writing in Physics, NCEWP – 2023 is one of the three national competitions being held by the IAPT every year. The competition CEWP is open for participants in the following two categories.

The aim of this competition is to promote comprehensive writing, by elaborating various aspects of a given topic in Physics. Essay writing is becoming a forgotten art and skill today in the age of MCQs. Writing makes one perfect, essay writing more so, and hence the competition offers a challenge and an opportunity for teachers and students in the categories as above.

Prof. S. K. Joshi, Coordinator of the NCEWP (full form) certificates to final seven contestant

1. Mr. Anmol Setia from Panjab University, Chandigarh First Prizer
2. Mr. Aditya Kumar from Ramjas College, Delhi Second Prize
3. Ms. Kavita Asawara from IPS Academy - Indore, Third Prize
4. Mr. Rahul Vishwakarma, Department Of Physics, Marwari College – Ranchi Third Prize
5. Mizan Alvi, SMS Dutta Memorial School, Khatima Incentive Award
6. Akshay Shankar, COIS- Ahmedabad Incentive Award
7. Mannit Goyal, DAV Public School, Ludhiana Incentive Award

NCICP Awards for Students:

National Competition for Innovation in Computational Physics (NCICP) is open for students and teachers of both School and college. These participants display their experimental skills using mathematical modelling, sensors/ actuators interfaced with microprocessors/ PC and Android based applications.

DSM Award:

IAPT conferred Dr. **Uthra Dorairajan,** Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai the IAPT-DSM Award. It is in recognition of the passion you breathe into the classroom, igniting curiosity and problem-solving skills through a mix of pedagogy and innovation, using creative and unconventional platforms for conveying complex concepts in Physics among under-graduate students, your persistent and unmatched commitment to improve the quality of Physics education among the broader Physics educators, in English and Tamil languages, and the unprecedented dedication to get more women into STEM.

NAEST Medal Awards for Students:

National Anveshika Experimental Skill Test (NAEST) is a unique competition embodying the principles of NEP – joyful learning, experiential learning and competency-based assessment. NAEST is conducted every year by National Anveshika Network of India (NANI), a special platform of the Indian Association of Physics Teachers (IAPT) which guides 29 Anveshikas all over the country.

Prof. S. K. Joshi, Coordinator of the NCEWP certificates to final seven contestants.

National Winners College Level

1.	Amit Khokhar	First Prize
2.	Ajeet Ramesh Salunke	Second Prize

National Winners School Level

1.	Udayan Deopujari	First Prize
2.	Yashashwi Kumar	Second Prize
3.	Mahak Kumar	Third Prize

Prof. B.L. Saraf & Prof. H.S. Hans Memorial Medals

Both Prof. B. L. Saraf & Prof. H. S. Hans has been the inspirational figure for all of us. Their contributions to the experimental physics have been unparallel and has deep rooted impact on forthcoming generations as well. Prof. P. K. Ahluwalia, Mr. S, D. Saxena, Prof. R. K. Khanna, Prof. Y. K. Vijay& Prof. Y. S, Shisodia recollected their long-lived cherished memories.

Year 2023 Saraf Medal for Physics Education were presented to

1. Prof. Pradhan;
2. Prof. U. S. Kushwaha
3. Prof. P. K. Dube
4. Prof. M. G. Tarnekar
5. Prof. Y. K. Vijay

Year 2023 Hans Medal for Experimental Physics was presented to

1. Prof. Manjit Kaur

Stamp & Envelope Release in Memoryof Prof. B. L. Saraf& Prof. H. S. Hans

To commemorate the centenary year of Prof. B.L. Saraf and Prof. H. S. Hans, IAPT RC06 is proud to release special cover stamp in collaboration with Philatelic Society of Rajasthan. My Stamp Design of the cover and that of My Stamp is conceived by Mr. Yogesh Bhatnagar, executive Member of RC06 and President of Philatelic Society of Rajasthan**.**

Books Release

Physics Fraternity assembled at the 37th Annual Convention, Jaipur heartily congratulate you dear Prof. O.S.K.S. Shastri, Prof. Y.S. Shishidia & Prof. P. C. Deshmukh. Wishing you great success as your words

find their way in to the heart & minds of readers.

1. Computer Simulations In Quantum Physics

O.S.K.S. Shastri, Central University Himanchal Pradesh

2. Physics Through Experiments

Prof. Y. S. Sisodia

3. Quantum Mechanics: Formalism, Methodologies & Applications

Prof. P. C. Deshmukh

Networking Opportunities

Apart from the formal sessions, the convention provided ample networking opportunities. Attendees had the chance to interact with peers, exchange ideas, and establish connections that could potentially lead to collaborative research endeavours.

Conclusion:

The 37th Annual IAPT Convention at Jaipur was a resounding success, emphasizing the importance of physics education and research. The presence of distinguished guests, insightful speakers, and innovative demonstrations made the event a memorable experience for all participants. As we reflect on the convention, it is evident that the future of physics education holds great promise, with the potential to make learning more engaging and inspiring for students. The success of this convention lays a solid foundation for future endeavours in the dynamic field of physics education and research.Mr. R. K. Parashari, Treasure IAPT RC06 presented vote of thanks of the event.

Group Photo

Y. K. Vijay
Y. C. Sharma
Raj Kumar Parashari

ONE DAY 2nd NATIONAL SEMINAR ON "DISCOVERY & DETECTION OF GRAVITATIONAL WAVES" SEPTEMBER 15, 2023 AT JAIPUR NATIONAL UNIVERSITY

A one-day seminar on Discovery & Detection of Gravitational Waves was **organized by IQAC, School of Life and Basic Sciences and School of Engineering & Technology, Jaipur National University, Jaipur in association with Indian Association of Physics Teachers (IAPT RC-6), Rajasthan Chapter.**The participants of this workshop were Undergraduate and post graduate science students. An online quiz competition was conducted to select the participants from registered candidates. The eligible participants were 62 students of UG and PG programs from 125 registeredstudents.The prime objective of this seminar was to introduce and illustrate what are fundamentals of gravitational waves and needfor the detection of it.

The first one day seminar has been organized to commemorate the detection of Gravitational Waves on September 14, 2022 which validate Einstein's general theory of Relativity. This detection was possible at the Laser Interferometer Gravitational Wave Observatory (LIGO), USA. Main architects of this discovery R. Weiss, B.C. Barish, and K.S. Throne were honored with the Noble Prize in Physics in the year 2017 "for decisive contributions to the LIGO detector and the observation of gravitational waves". Lectures by eminent speakers in this seminar sensitized the young student and faculty members regarding the importance of Gravitational Waves and their detection in fundamental physics.

The second version of this seminarwas held on September 15, 2023 with inaugural function. The purpose of the seminar was introduced by **Prof. Y. C. Sharma**, Chair of this seminar, Vice President, IAPT-RC-6, Rajasthan and Director, Research & Academic Development, Jaipur National University. The seminar started with the inaugural lecture of the **Chief Guest of the seminar, Prof. P C Deshmukh**, IIT, Triputai. The seminarwas also addressed by presiding Guest **Prof. H. N. Verma, Pro-Chancellor**, and Guest of Honor **Prof. R. L. Raina, Vice Chancellor**, Jaipur National University, Jaipur who welcomed all the participants and the invited speakers. They emphasized on learning the new technologiesand concept of LIGO so that students could be prepared for the new age science. They further added that this seminar will be very useful for the participants in the enhancement of their knowledge.

In the series of lectures, the topics were waves, Interference, Michelson's interferometer, Michelson-Morley experiment and foundation for Einstein's Special

Theory of Relativity, Dark Energy, Gravitational Waves and General Theory of Relativity, Discovery of Gravitational Waves and its importance in the verification of General Theory of Relativity covered in two sessions by experts from various institutions.

The speakers of the first session included **Dr. Amruta Sadhu,** St. Xavier's College, Mumbai, **Prof. Anirvan Gupta,** JSPM University, Pune, **Prof. G. Venkatesh**, A.E.S. College, Gauribidanurand Former Chief

Coordinator Indian Association of Physics Teachers (IAPT), National Science Examination (NSE).

Second Sessionof the seminar started with the welcome address by Secretary of this seminar**Mr. Lokesh Lodha**, Associate Professor, Department of Electronics & Communication, School of Engineering and Technology. The speakers of this session included**Prof. R. K. Khanna**, National Executive Member, IAPT Rajasthan, Jaipur, **Prof. S. W. Anwane,** Shri Shivaji Education Society Amravati's Science College, Nagpur, **Dr. Vivek Vasant Bhide**, GogateJogalekar College Ratnagiri, Maharashtra.

The valedictory session was addressed by **Dr. Nitin Pratap Singh**, Professor, Department of Physics, School of Life and Basic Scienceswith thegratitude towards the nature which permits us to align our understanding with its working.Participants were discussed some queries with the experts in the discussion session. At the end of the seminar, a quiz was conducted based on lectures delivered by the experts. The participants were asked to share the feedback which was overwhelming.

Prof. Y C Sharma,
Vice President, IAPT (RC-6)

REPORT (RC-02)

One day workshop on Experiential Learning through Wonders of Physics and Miracles of Mathematics was organised by R.R. Bawa DAV College for Girls, Batala in association with IAPT RC-02 on 13th October, 2023.

Workshop was inaugurated by Sh Gurvinder Singh DM, Principal Dr Ekta Khosla; Dr Jaswinder Singh, President RC-02 and Dr Meenakshi Sayal, EC Member-Central IAPT.

575 students from different schools of Gurdaspur district enthusiastically participated in the workshop.

Principal Dr Ekta Khosla formally welcomed the guests with green planters and souvenirs. She apprised the audience that the Physics, being the basis of Modern Technology, is used in all types of Research & Development, so the experience of this workshop will be beneficial for all. Key note Speaker, Dr Jaswinder Singh explained basic principles of sound waves, surface tension, current electricity and Chandrayaan through experiments. He also provided the information about mathematical addition- subtraction techniques. Resource Person, Dr. Meenakshi Sayal, emphasised on the clarity of basic concepts of Archimede's Principle, Refraction and electromagnetic induction. She also shared her views on Time Management and how to sharpen the memory. Guest of Honour Sh Gurvinder Singh motivated the students and asked them to use technology in proper way. Finally, Program Coordinator, Mrs Ekta Bhandari expressed the formal vote of thanks. Enthusiastic response of students and accompanied faculty ensured the success of the workshop. At the end, Principal Dr Ekta Khosla appreciated the content of workshop and asked for such more workshops to be conducted in future.

Meenakshi Sayal
EC Member- IAPT

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Dr. Sanjay Kr. Sharma

Managing Editor

Flat No. 206, Adarsh Complex,

Awas Vikas-1, Keshavpuram, Kalyanpur, Kanpur-208017

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