

Newsletter, Department of Physics, Digboi College, Digboi

### Editorial board

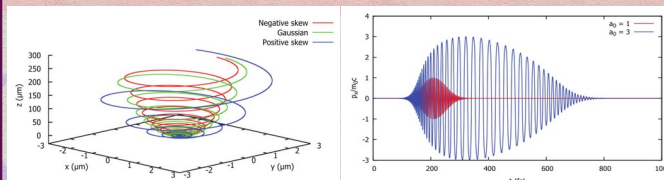
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### Electron acceleration tech.



Dr. Deep Kumar Kuri published a research article entitled “Role of laser pulse asymmetry in electron acceleration in vacuum in the presence of an axial magnetic field” in an international peer-reviewed journal named Physics of Plasmas under AIP publishing in December, 2020. The article depicts the role played by temporal asymmetry in a linearly polarized laser pulse on the acceleration of an electron in vacuum in the presence of an axial magnetic field. Ultrashort highly intense laser pulses can be used for electron acceleration which may be sought as an alternative to conventional particle accelerators. As reported by researchers, electron acceleration up to energy of several MeV has been observed experimentally. Temporal and radial profiling of laser pulses can have a significant impact on the acceleration process and is an emerging area of research in this field. -NDP

Ref: D. K. Kuri, Phys. Plasmas **27**, 123102 (2020)



### PhD degree to Dibyajyoti Kakoti



Dibyajyoti Kakoti, Assistant Professor of the Department of Physics, Digboi College (Ad. Hoc basis) was awarded the Degree of Doctor of Philosophy by Dibrugarh University on 1<sup>st</sup> July of 2021 for the thesis entitled “Spectroscopic Analysis of Some Rare Earth Based Sol-Gel Silica Matrices Semiconductor Nanoparticles”. He completed his Ph.D. under the supervision of Dr. Pankaj Dutta, Associate Professor of the Department of Physics, Dibrugarh University. Dr. Kakoti’s work will enhance the implication of display related technology, optical telecommunication, optical sensor, laser material development ect. Dr. Kakoti is also an alumnus of the Department of Physics, Digboi College. -

NDP

### Thought behind the cover image

Sometimes Physics can look like magic ! Whether it’s seemingly forming a tornado out of thin air or making a ball levitate, the laws of physics can make for a great show. Physics is even correlated with revolutionary movements in art . As observed by physicists , the fascinating paintings of Van Gogh closely mirror the turbulence we see in nature . The field of physics can thereby be envisioned as the intersection between magic and reality.

-Sangstitha Boruah

## Editorial

*"The information contained within the current moment is sufficient to determine every other moment -past or future"*

-Law of conservation of Information

Information can be regarded as the new currency. Information is a set of data that is processed, structured, or presented in a meaningful way according to certain requirements. However, we often confuse information with knowledge. Knowledge is a combination of information, experience, and insight that helps humankind in better understanding the world. Any information can be transferred very easily, however in order to transfer knowledge one needs to learn it. Somehow, consciousness and knowledge is intertwined. It is knowledge that gives us consciousness or the consciousness that transforms information into knowledge is highly debatable. Knowledge is the only entity that grows on sharing, it is not something to be withhold and sharing it leads to empowerment.

Prof. Yunus A. Çengel, published a peer reviewed article in 2021 entitled "On Entropy, Information, and Conservation of Information"; Entropy 2021, 23(6), 779 which interlinks entropy and information and their role in shaping the Universe in its current form. I would like to encourage our readers to go through this research paper which will give more insight to the conservation laws of nature.

This newsletter, DIGital PhyNix is a small step towards empowering our students and enriching the department by sharing information with each other. But, the goal of empowering will not be attained simply by sharing information. We need to transform it into knowledge through reshaping, experimenting, processing and finally making it a learning outcome.

I would like to extend my gratitude to our HOD for taking this initiative. It is entrusted that DIGital PhyNix will find it's place among readers, entrepreneurs, thinkers and most importantly young bright minds.

-Editor

## About the Logo and the Name



The logo of the newsletter, Department of Physics is designed keeping in mind the robustness of physical laws and the new computational advancement that is opening new doors and opportunities to understand the nature. The red sun on top depicts the source of energy without which we have no existence. The phoenix bird is indestructible, which rises from it's own ashes, just like energy transforming from one form to other. It symbolises the conservation laws of physics which governs the universe. The Mobius strip in middle is a topologically protected object which reflects the robust nature and universality of physical laws. The circle and the straight line on bottom shows the two binary number 0 and 1 which are the base of our computational advancement. The letters 'ix' on the word PhyNix is to showcase the complex and hidden nature of the Universe. The three colors red, green and blue are the three primary colors which can generate almost all the other colors on intermixing. It represents the interconnections among natural phenomena and oneness of the Universe. Finally, considering all these facts, the name of the logo and the newsletter is agreed to be DIGital PhyNix which also resembles **Digboi college Physics News**.

- Sanat Kumar Gogoi

## Department activities 2020

### Online Lecture Series

<p><b>Lecture - 1</b> Speaker <b>Prof. Prajval Shastri</b> Eminent Astrophysicist, Indian Institute of Astrophysics, Bengaluru (Retd.) Date: 20/07/2020 Time: 11.30 am (IST)</p> 	<p><b>Lecture - 2</b> Speaker <b>Prof. Arnab Bhattacharya</b> Tata Institute of Fundamental Research (TIFR), Mumbai Date: 21/07/2020 Time: 10.30 am (IST)</p> 
<p><b>Lecture - 3</b> Speaker <b>Prof. Dibyendu Nandi</b> Indian Institute of Science Education and Research (IISER), Kolkata Date: 23/07/2020 Time: 11.00 am (IST)</p> 	<p><b>Lecture - 4</b> Speaker <b>Prof. Ranjan Gupta</b> Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune Date: 24/07/2020 Time: 10.30 am (IST)</p> 
<p><b>Lecture - 5</b> Speaker <b>Prof. Patrick Das Gupta</b> Dept of Physics and Astrophysics, Delhi University Date: 27/07/2020 Time: 10.30 am (IST)</p> 	

The Department of Physics in association with IQAC, Digboi College has organised a week long online lecture series in Physics from 20<sup>th</sup> July to 27<sup>th</sup> July 2020 under DBT Star College Scheme. Prof. Prajval Shastri, ICTS, Bengaluru; Prof. Arnab Bhattacharya, TIFR, Mumbai; Prof. Dibyendu Nandi, IISER, Kolkata; Prof. Ranjan Gupta, IUCAA, Pune; and Prof. Patrick Das Gupta, Delhi University, Delhi have delivered their talk. Students of UG, PG and PhD candidates in physics have joined the lecture series and interacted with the speakers. Dr. Dip Saikia, Principal, Digboi College inaugurated the program. Talk by Prof. Prajval Shastri entitled "The Hunt for Black Holes" was praised by all. Questions like what is a black hole, how a black hole is formed and how big is a black hole, is there any danger due to black holes etc. were asked and discussed thoroughly. It was an immense success despite the hardship due to covid-19. -NDP

### Visualizing the Structure of a Star



Prof. Bhim Prasad Sharma, Tezpur University delivered a talk on Astrophysics describing the structure of a star in a webinar organised by the Department of Physics in association with IQAC, Digboi College on 4<sup>th</sup> July 2020 through *Google Meet* platform. In this talk he discussed about various techniques and underlying physics to understand these massive bodies floating around the universe. The UG and PG students interacted with the speaker and everyone is wishing for more such lectures in future. -NDP

### Extension Program: Digital Teaching For Elementary School Teachers



Dr. Rashmi Patowary, HOD, Dept. of Physics Digboi College, conceptualized, designed and coordinated an "ONLINE WORKSHOP ON DIGITAL TEACHING FOR ELEMENTARY SCHOOL TEACHERS" organized by Rotary Club of Digboi from 10<sup>th</sup> to 12<sup>th</sup> September 2020 so as to empower primary school teachers for successfully imparting of education in the online mode. It has been very difficult for most of the teachers in primary level to stay connected with the students due to the lockdown imposed due to covid-19. Most importantly, the education system has been thrashed heavily by the continuous covid-19 wave in the country. Schools have been closed for more than 2 years for primary students. The impact is very devastating in rural areas compared to urban areas because of the poor connectivity in internet connection and less penetration of the modern technology. In order to tackle these problems and compete with the fast moving world the above workshop is organised. The workshop was participated by 117 number of primary school teachers of government schools under Tinsukia District, Assam. Dr. Deep Kr. Kuri, Asst. Prof., Digboi College also acted as one of the resource persons for the above workshop. -NDP

### Workshop on Scilab and C/C++ Programming



Department of Physics and IQAC, Digboi College in association with Spoken Tutorial, IIT Bombay organised a week long training program/workshop for UG, PG and PhD candidates from 5<sup>th</sup> Oct. to 10<sup>th</sup> Oct. 2020. Dr. Kanchan Konwar and Dr. Deep Kr Kuri coordinated the program. The aim of the program was to enhance the computational skill set of students in dealing with practical problems. More than 30 students have joined the program and successfully completed it. E-certificates have been awarded to those students. Mr. Partha Goswami, coordinator, spoken tutorial, IIT Bombay also praised our student's enthusiasm in learning modern computational programming languages. Dr. Dip Saikia, Principal, Digboi College, Dr. Jayanta Handique, Coordinator, IQAC, Digboi College and Dr. Rashmi Patowary, HOD, Dept. of Physics were also present during the sessions. -NDP

## Department activities 2021

### National Level Online Seminar Presentation Competition



The Department of Physics in association with IQAC, Digboi College under the DBT Star College Scheme has organised a national level seminar presentation competition in three phases from 15<sup>th</sup> to 30<sup>th</sup> Jun 2021 among the UG level students having Honours/Major in Physics. In this competition top 8 (eight) contestants were awarded monetarily. Around 50 students have joined the competition from various institutions across the country. Prof. Bhim P. Sharma, Tezpur University, Prof. ATT Mostako, Dibrugarh University, Prof. Anup Nath, Cotton University and Dr. Soumen Chakraborty, St. Edmunds College, Shillong were present as judge for the viva voce program. Pragma Parasar, Cotton University were able to bag the first prize with a one time cash award of INR 7000. Shyamalee Bora, Dibrugarh University and Anirban Das, St. Edmunds College, Shillong have been awarded with the second and third prize consisting of INR 5000 and INR 3000 respectively. Niyar Prabhat Kalita, Abhishek Phukan Borah, Devanuj Bharali, Pryanishu Priyam and Tonmoyee Gogoi were awarded inspiration prizes of INR 1000 each. -NDP

### Lieutenant rank to Dr. Kanchan Konwar



Dr. Kanchan Konwar, Assistant Professor, Dept of Physics, successfully completed three months NCC Pre-commission (PRCN) training course, held at Officers Training Academy (OTA), Kamptee, Nagpur, Maharashtra, from 8<sup>th</sup> February to 8<sup>th</sup> May, 2021. Dr. Kanchan Konwar commissioned as Associate NCC Officer (ANO) in NCC and received the Lieutenant (Lt.) rank from NCC Army Wing (commission no. NCC/10110147), on 10<sup>th</sup> May, 2021. -NDP

### Result 2019-2020

Total No. of students appeared = 18  
 Total No. of students passed = 16  
 Total No. of students obtaining First Class = 16  
 Rank Holders from Physics Dept.:

(I) 5 <sup>th</sup> Rank	Diprojit Nath
(II) 6 <sup>th</sup> Rank	Supriya Borgohain
(III) 10 <sup>th</sup> Rank	Monisha Sharma

### Orientation Program for M. Sc. 1<sup>st</sup> Semester students

An orientation program for the M. Sc. 1<sup>st</sup> semester students is organised by the Dept. of Physics on 6<sup>th</sup> January 2021. On that occasion Prof. Bhim Prasad Sharma delivered a talk entitled "*Mathematical Physics: Some topics with physical meanings and significance*". -NDP

### Tribute to Prof. Vasant Natarajan



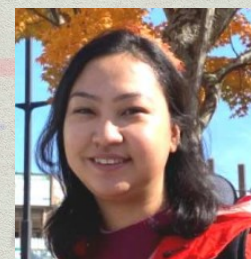
Department of Physics, Digboi College has paid tribute to Prof. Vasant Natarajan on 29<sup>th</sup> December 2021. He was born in 1965 and expired on 29<sup>th</sup> December 2021. He was a renowned physicist having more than 5 patents and over 100 publications in peer reviewed journals. He got his PhD from MIT, Cambridge, MA, USA in 1988 and Post Doctorate in AT & T Bell Labs, USA; RPI, NY, USA. He joined Department of Physics, IISc, Bengaluru in 1996 and was providing his services till his last breath. Sanat Kr. Gogoi, Asst. Prof., Dept of Physics, Digboi College has delivered a talk describing his educational carrier and research work and achievements. UG and PG students of the department along with all the faculty members were present during the event. -NDP

### Extension Program: Covid-19 Vaccination Drive

Dr. R. Patowary, HOD, Dept. of Physics has been offering her services as a volunteer in the Rotary club of Digboi Vaccination centre since 7<sup>th</sup> May 2021. A few NSS volunteers from the department have also been involved in this extension. -NDP

### Activity through Alumni Group

The Department of Physics has organised a webinar in association with the Alumni Group, Department of Physics and IQAC, Digboi College on 7<sup>th</sup> Jun 2021. Renown alumni of the department Dr. Mridusmita Buragohain, Post doc fellow, Tokyo University delivered a talk entitled "*Multiwavelength Universe*" on the Google Meet platform.



The Alumni group has been working with the department closely and in order spread its reach a LinkedIn page has been created on 12<sup>th</sup> July 2021. -NDP

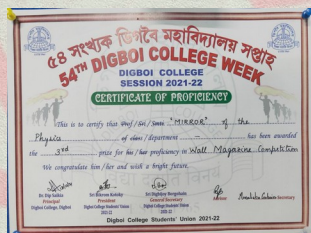
### Speech Competition

Digboi Sahitya Sewa Samiti organised a speech competition on 29<sup>th</sup> December 2021. Biswajit Hazarika, M. Sc. 3<sup>rd</sup> Semester, Department of Physics has won the 2<sup>nd</sup> prize in that competition. -NDP

## Department activities in College Week 2021

### MIRROR

#### Physics Department Wall Magazine



Department of Physics, Digboi College has published its 6<sup>th</sup> issue of the department wall magazine named "Mirror" on 11<sup>th</sup> December 2021 to participate in the 54<sup>th</sup> college week organised by Digboi College. The students of the department came up with the ideas of modeling the "Perseverance" landing on Mars in 3D and looking at it through an telescope from earth, which was the main theme of the magazine. Subhrajit Nath, B.Sc. 3<sup>rd</sup> semester edited the magazine with the help of his editorial board consisting Tapan Dahal, Bimal Ghimire, Dhritiman Debnath, Sidharta Buragohain, Gayatri Thapa, Bikram Gogoi, Barsha Kurmi, Sunita Sonowal, Purabi Sonowal and their friends. Sanat Kr. Gogoi and Dr. Kanchan Konwar were the advisor of the editorial board. Dr. Dip Saikia, Principal, Digboi College inaugurated the magazine. Dr. A. C. Dutta, Vice Principal, Digboi College and Dr. R. R. Tariang, HOD, Zoology Dept., Digboi college were also present during the ceremony. The magazine won the 3<sup>rd</sup> prize in the wall magazine competition among 20 other participants. The faculty members of the department commissioned the cost of the wall magazine. -NDP

### Cultural Procession



The students of Dept. of Physics participated in the cultural procession competition in the 54<sup>th</sup> college week held from 8<sup>th</sup> to 12<sup>th</sup> December 2021. The theme of the cultural procession was "The New Normal" showcasing the new challenges due to covid-19 and the way to overcome it. -NDP

### Individual Achievements



Jaydeep Sur, B. Sc. 3<sup>rd</sup> Semester, Dept. of Physics won the 1<sup>st</sup> prize in quiz competition at the 54<sup>th</sup> College week. -NDP



Barsha Kurmi, B.Sc. 3<sup>rd</sup> Semester, Department of Physics won the 2<sup>nd</sup> prize in Badminton doubles in the college week. -NDP



Priti Shah, B.Sc. 3<sup>rd</sup> Semester, Dept. of Physics has won the 3<sup>rd</sup> prize in the spot poem writing competition in the college week. She also played in the kho-kho competition(girls) and became winner. Sruti Sharma, 3<sup>rd</sup> Semester Dept. of Physics was also a member of the winning team. -NDP

### Strong Man Digboi College



Bhaskar Borah, 5<sup>th</sup> Semester, Dept. of Physics has been awarded with the title of "Strong Man Digboi College" for the year 2021-2022 in the 54<sup>th</sup> College week organised by Digboi College. He also won first prize in power lifting in the 64-75 kg category. -NDP



Rythm Dutta, 5<sup>th</sup> semester student of our Dept received prizes in the following 5 categories :  
1st prize: Bhajan and Ghazal,  
2nd prize: Rabha and Jayanta sangeet,  
3rd Prize: Modern Song in the 54<sup>th</sup> College week. -NDP