

Departmental Annual Report - 3

Departmental Activities: Curriculum and Beyond

Department: Physics

Year: 2021 – 2022 (from 26.5.2021 to 30.4.2022)

Department Society and its Office Bearers:

President	Vice President	General Secretary	Joint Secretary	Treasurer
Gauri Patti	Hrudya Prasanth	Manidipa Banerjee	Ayushi Lenka	Athira C

Staff Advisors:

Dr. Abha Dev Habib Professor Monika Tomar Dr. Nisha Rani



Part B.1

Seminars/conferences/workshops conducted by the Department



A counselling session was conducted for the 1st year students in an online mode on 10th July, 2021. The session aimed at providing information regarding various options they could pursue as Generic Electives (GEs) in Semester 3 and 4.

The discussion was initiated by **Dr. Abha Dev Habib** who informed the students regarding the necessity of an interdisciplinary degree and her views on choosing different subjects as our GE.

The discussion began with introducing speakers for Computer Science as GE which was addressed by Ms. Prerna and Ms. Anjali who had opted for the same GE in their 2nd year. Then seniors who took Chemistry GE:

Ms. Sakshi and Ms. Eishita,

Mathematics GE: Ms. Roopal and Ms. Manasvi, Economics GE: Ms. Jagriti and Ms. Ujjwal Batham addressed us.

The discussion was then followed by queries of students on the particular GEs they wanted to inquire about and other general queries.





A webinar on Intellectual Property Rights (IPR) by Dr. Sanchita Chaudhary, Assistant general Manager, Biotech Consortium India Limited, Delhi was organized by Vidyut, The Physics Society, Miranda House on June 8, 2021. It was a live webinar conducted under the aegis of IQAC, Miranda House as an overview for Science Professionals on Intellectual Property Rights. The session was very informative and the speaker talked about the legal rights given to the inventor or creator to protect his invention or creation for a certain period of time. The students as well as professors interacted with the speaker and many doubts were cleared.

No. of participants: 40

A webinar on **MEMS Technology for miniaturized** sensors and impact of residual stress by **Dr. Shankar Dutta**, *Scientist MEMS Division*, *Solid State Physics laboratory*, *DRDO* was organized by Vidyut and DS Kothari Center, Physics Department of Miranda House on 22 July 2021.

The session was very informative and the speaker explained about MEMS being a process technology used to create tiny integrated devices or systems that combine mechanical and electrical components and how these devices (or systems) have the ability to sense, control and actuate on the micro scale, and generate effects on the macro scale.





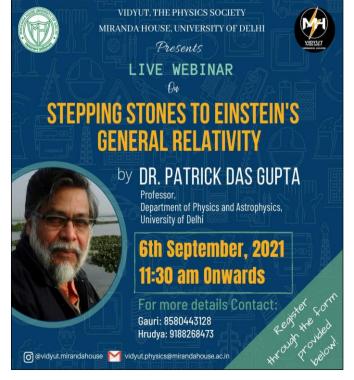


A webinar on **Material Properties from Quantum Mechanical Properties** was organized on 30th July, 2021.

The resource person for the seminar was **Dr. Pratibha Dev,** *Associate Professor, Department of Physics and Astronomy, Howard University, Washington DC.* She is an alumnus of Physics Department, Miranda House. She elucidated topics like Condensed Matter, how it is theoretical as well as experimental, how to explain and predict the properties of material using quantum theory, development of materials, 2D materials etc. *No. of participants: 75*

A seminar by **Prof. Patrick Das Gupta,** Department of Physics and Astrophysics, University of Delhi was organized on 6th September, 2021. The talk was on "Stepping Stones to Einstein's Relativity".

The participants found the webinar very informative and showed their active participation with a number of questions asked during the session which included concepts of electromagnetic radiations, different geometries, entangled state, etc.



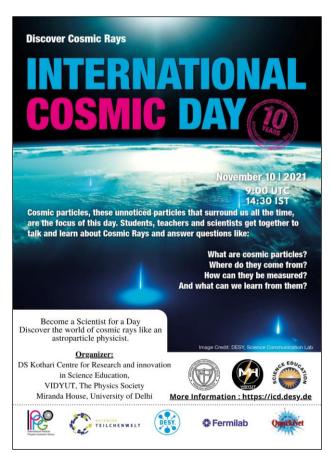


The Department of Physics, Miranda House organized a webinar on the topic **MEMS- Design and Fabrication** on 25 September 2021 from 3:00 PM onwards by **Mrs. Isha Yadav**, *Scientist E, Solid State Physics Laboratory*, *DRDO*.

The session started with the inquisitive question "What are MEMS?" and there by explaining about different types of MEMS sensors, and their various processes, criteria to be categorized as a MEMS device like one of the components used should have a mechanical functionality and about the importance of miniaturization with different instances leading to multifunctionality of devices. The session was very interactive with active participation of audience with different queries related to process.

No. of participants: 54





On **International Cosmic Day** ICD, more than *60* institutions such as schools, universities, and research institutes in over *13* countries participate to perform experiments on cosmic particles.

The D.S. Kothari Center for Research and Innovation in Science Education, Miranda House in collaboration with Vidyut, The Physics Society of Miranda House, University of Delhi provided the students with the opportunity to get involved in performing experiments on cosmic particles with the help of Quarknet and Cosmic Ray Muon Detector and the students from *Miranda House participated* in the video conference *organized by DESY*, *Germany* (10/11/2021, 6:30 PM onwards) on the occasion of International Cosmic Day Event and discussed the results of their experiments with other participants around the world.

Number of participants: 12





A webinar on "Cosmic Ray Muon Detector and Equilibrium Tidal Theory" was organized by Vidyut, The Physics Society, Miranda House on 19th November, 2021.

The resource person for the seminar was Ms. Shivani Yadav, Alumni of Miranda House (2020), pursuing post-graduation in JNU, Delhi. She elucidated the topics like Cosmic rays, how Earth's atmosphere affects the rate of muon flux, and various analyses regarding cosmic muon rate. After that she answered student's queries.

No. of participants: 100

A workshop on "Python Programming" was conducted by Ms. Rashmi Sarwal, 3rd year student, B.Sc. Physical science with computer science on 10.1.2022 and 15.1.2022.

The workshop was carried over a span of a month every weekend. The workshop helped students to get equipped with python packages of matplotlib, pandas and more.

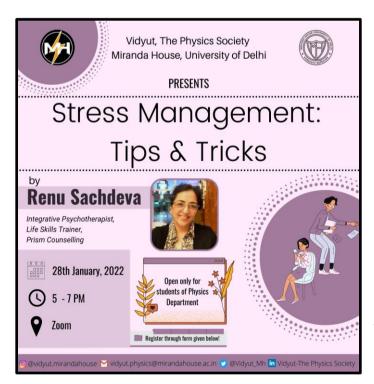






The webinar was conducted on 15th January, 2022 from 4 P.M. onwards. **Dr. Poornendu Chaturvedi**, *Scientist F, Solid State Physics Laboratory, DRDO* addressed us. He began by asking students what they interpreted by a second, time and other terms that we use in our day-to-day life. He made us understand the basic concepts of different time measurements and then he introduced us to the concepts of miniature clocks. He explained their embedded structure and how they are sandwiched. The concept was beautifully explained on how they are of importance to the army.

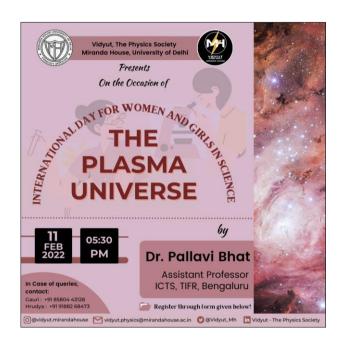
No. of participants: 58



A webinar on Stress Management was conducted on 28th January, 2022. The resource persons were: Mrs. Renu Sachdeva and Ms. Pompi Sharma (*Prism Counseling*).

They began by introducing the psychological meaning of stress and how they express it. Further, they told us 10 ways to cope with our stress. The session was very interactive and students actively participated and conveyed their feelings towards different methods they were asking students to perform.

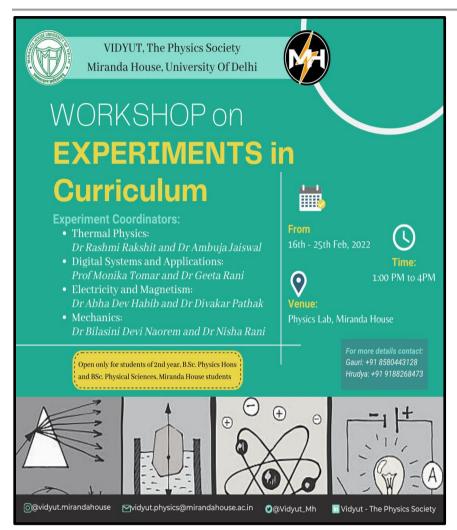






A webinar on "The Plasma Universe" was organized on the occasion of the International Day for Women and Girls in Science. Our keynote speaker was **Dr. Pallavi Bhat**, *Assistant Professor*, *ICTS*, *TIFR*, *Bengaluru*. She talked about the astrophysical concepts of plasma and about her current research work. In the end she introduced us to the forum she has established during the pandemic for women in plasma astrophysics.





A workshop, "Experiments in Curriculum", was conducted from 16th-25th February, 2022 to give hands-on experience to students. The workshop covered experiments listed under Thermal Physics, Digital Systems, Electricity and Magnetism and Mechanics.

Thermal Physics experiments were coordinated by Dr. Rashmi Rakshit and Dr. Ambuja Jaiswal, **Digital Systems and Applications** experiments were conducted by Prof. Monika Tomar and Dr. Geeta Rani, **Electricity and Magnetism** experiments were conducted by Dr. Abha Dev Habib and Dr. Divakar Pathak and **Mechanics** experiments were conducted by Dr. Bilasini Devi and Dr. Nisha Rani.

It was a learning experience for the students as they could finally perform experiments hands on after the pandemic.



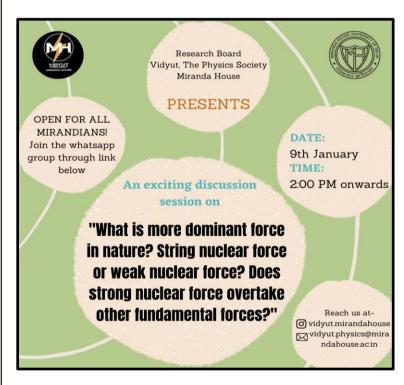
On 13th October 2021, the first discussion session under the series *Research Board*, *Vidyut* was hosted.

Students from the Physics Department enthusiastically participated in the discussion: "What makes a planet a planet? Qualifying characteristics of a planet. The cloud of confusion around pluto".

The webinar started at 5:30 pm on zoom with the introduction. All the participants put their comments on the topic and discussed the characteristics of Planets and why Pluto is not considered a planet.

No. of participants: 20



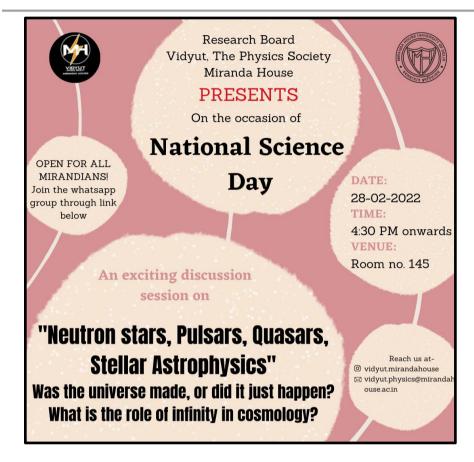


The second discussion session under the Research Board, Vidyut was held on 9th January 2022 at 2:10 pm.

Discussion was based on "Which is the dominant force in nature? Strong nuclear force or weak nuclear force? Does a strong nuclear force overtake other fundamental forces?"

Research board heads and participants shared their views and discussion went on well.

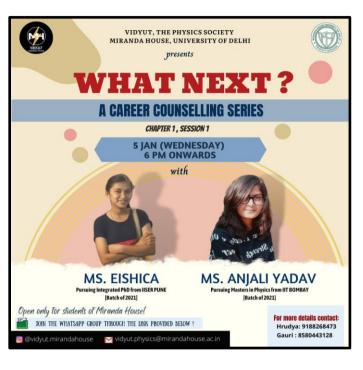




The discussion, under the series Research Board, Vidyut, was conducted on the day of *National Science Day* in offline mode amongst students.

The session was held by **Ms. Roopal Bansal** (3rd year undergraduate). She began by asking about what all knew about the terms mentioned. The discussion further was led by her by introducing all the participants with different concepts of them. It was an insightful and refreshing experience for all the participants. The session was concluded with a vote of thanks by the office bearer.





Chapter 1, Session one of the Career Counseling Series "What Next" was on 5th January 2022 at 6:00 pm to 7pm.

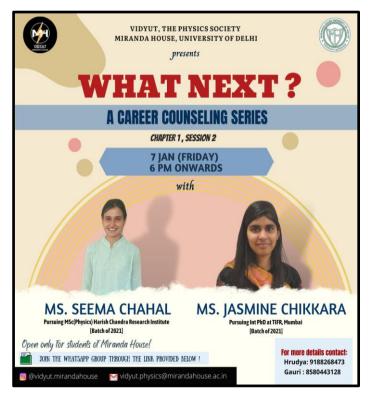
Speakers included **Ms. Eishica**, who is pursuing integrated Ph.D. from IISER Pune and **Ms. Anjali Yadav**, who is pursuing masters in Physics from IIT Bombay.

Speakers were enthusiastic and handled the session with high spirits. They gave information on various entrance examinations like jam jest etc. They also shared their experience of preparing for entrance examinations. Students came up with their doubts on the duration of studies, books that must be referred to and more.

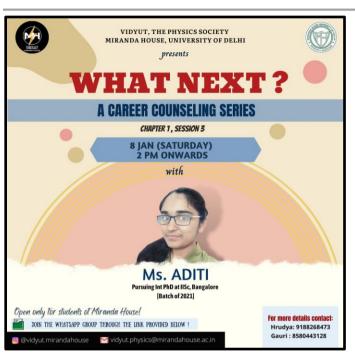
No. of participants: 60

Chapter 1, Session 2 of the Career Counseling Series "What Next?" was on 7th January 2022 at 6:00 pm to 7pm.

Speakers included former students - Ms. Jasmine Chikkara, who is pursuing integrated PhD at TIFR, Mumbai and Ms. Seema Chahal, who is pursuing masters in Physics at Harish Chandra Research Institute.



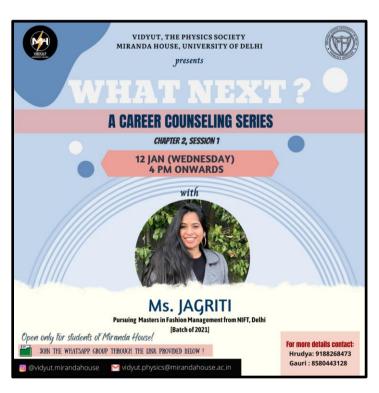




Chapter 1, Session 3 of Career Counseling Series "What Next?" was held on 8th January 2022 at 6:00 pm to 7 pm.

As speaker, **Ms. Aditi,** who is pursuing *integrated Ph.D. at IISC Bangalore*, gave vital information on various entrance examinations like JAM, JEST etc. She also shared her experiences of preparing for entrance examinations and explained how she cleared her interviews and tests. The session was very informative and inspiring.

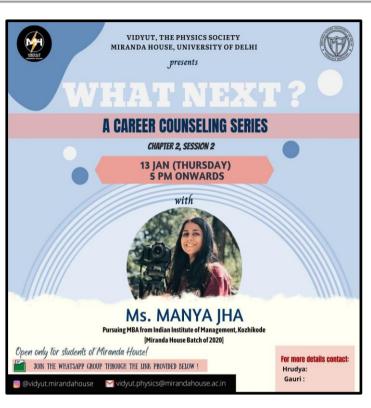
No. of participants: 60



Chapter 2, Session 1 of the Career Counseling Series "What Next?" was held on 12th January 2022 at 6:00 pm to 7 pm.

Speaker was **Ms. Jagrati** who is pursuing masters in fashion management from NIFT, Delhi.

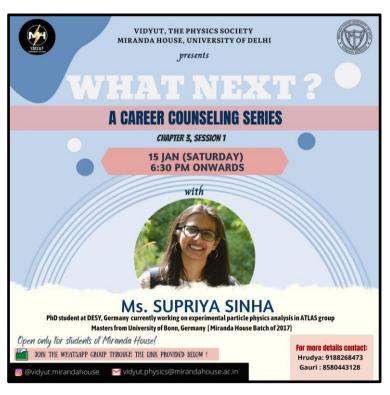




Chapter 2, Session 2 of the Career Counseling Series "What Next" was held on 13th January 2022 at 6:00 pm to 7 pm.

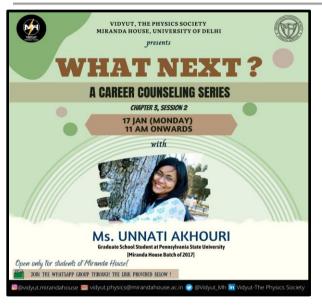
Speaker was **Ms. Manya Jha** who is pursuing *MBA from IIM, Kozhikode*.

No. of participants: 31



Chapter 3, Session 1 of the Career Counseling Series "What Next" was held on 15th January 2022 at 6:30 pm. Ms. Supriya Sinha, who is currently pursuing her PhD from DESY, Germany, after completing Masters in Physics from Bonn University, Germany talked about career in Physics.





Chapter 3, Session 2 of the Career Counseling Series "What Next?" was held on 17th January 2022 at 11 am onwards.

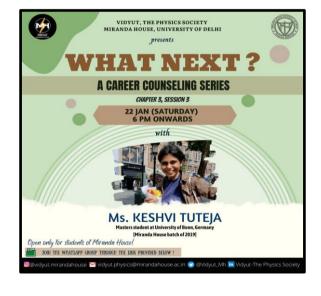
The speaker was **Ms. Unnati Akhouri** who is a graduate school student at Pennsylvania State university.

No. of participants: 40

Chapter 3, Session 3 of the Career Counseling Series "What Next?" was held on 22nd January 2022 at 6 pm onwards.

Speaker was **Ms. Keshvi Tuteja** who currently pursuing *Masters at University of Bonn, Germany*.

No. of participants: 40

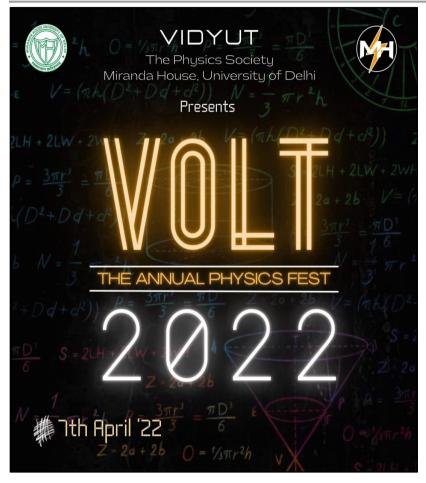




Chapter 3, Session 4 of the Career Counseling Series "What Next?" was held on 25th January 2022 at 2:00 PM onwards.

Dr. Pragya Chawla, who is a postdoctoral research fellow at University of Amsterdam, Netherland, talked about career in research.

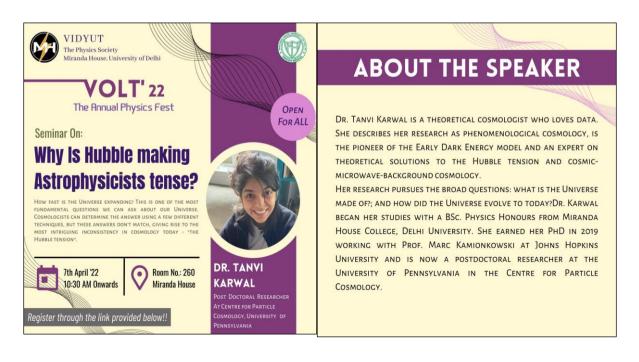




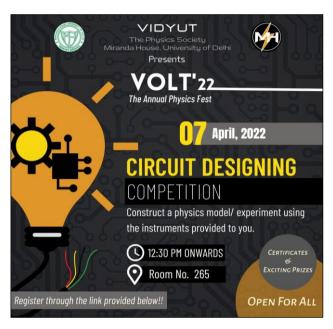
The Annual Physics, **Volt**, was conducted on 7th April, 2022.

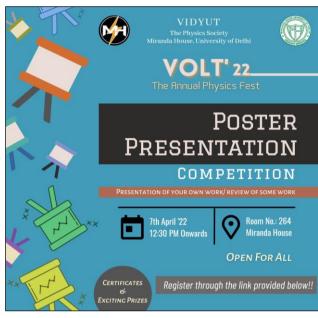
The event began with a talk by **Dr. Tanvi Karwal,** postdoctoral researcher at University of Pennsylvania on "Why is Hubble making astrophysicists tense?".

The fest was further continued by conducting competitions, paper presentation, poster presentation, circuit designing and marvel trivia.

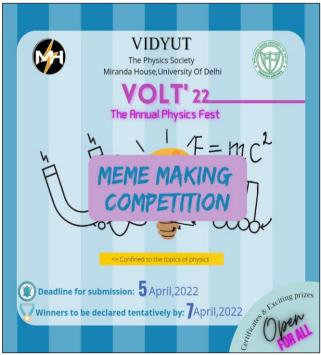














Part B.2

Extension Activities organized

Summer Workshop for Undergraduate Science Students, Flavor of Research: Investigative Projects in Multidisciplinary Contexts held at the D. S. Kothari Centre for Research and Innovation in Science Education, Miranda House, University of Delhi from 15 June to 31 July 2021.

Participation: 16 faculty members of the Physics Department mentored 47 Summer Projects. Out of 125 undergraduate students who successfully worked on projects, 45 students were from other institutions.



MIRANDA HOUSE

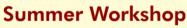
University of Delhi



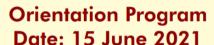


Flavour of Research

Investigative Projects in Multidisciplinary Contexts



(15 June 2021 - 31 July 2021)



11.00 am onwards

Prerequisite: Zoom Application

Join Zoom Meeting

ttps://zoom.us/j/96444654266?pwd=L0F2dXNhVUNkYnFFU0Y3NkRHZ1M3dz09

Meeting ID: 964 4465 4266 Passcode: Vgr91V





















For further details see:

https://mirandahouse.ac.in/uploads/dskc/summerworkshop/2021%20DSKC%20Sum mer%20Workshop%20Report.pdf



Part B.3

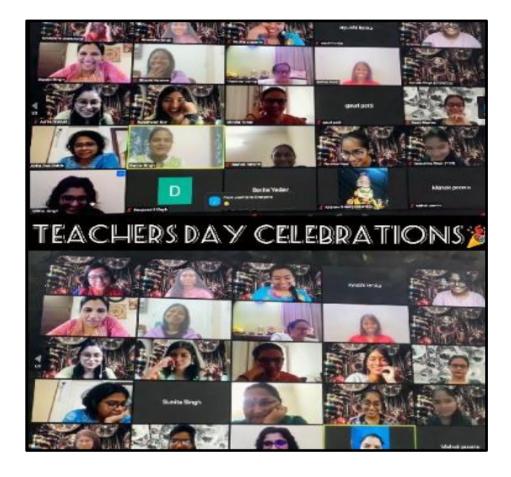
Any other event organized as part of students' activities (not listed above)

A farewell was conducted on *May 29, 2021* for the *graduating seniors*. The online celebration was vibrant and consisted of a personal touch.

Various games were played online by students and teachers. The atmosphere was filled with joy and the longing of graduating without meeting each other in person. Due to the second wave, the circumstances were like that but each one of them took away great memories from the online celebration as well. participants were in the farewell. It ended with some sweet notes of goodbye from the teachers and the seniors. They shared their experiences and gratitude towards the institution they were a part of and how they have evolved as a person over the past 3 years. They even share some memories they created while studying in online mode as well.







Students of Physics Department organized an online event on the occasion of **Teachers Day, 5th September, 2021,** which is also known as the birthday of Dr Sarvepalli Radhakrishnan.

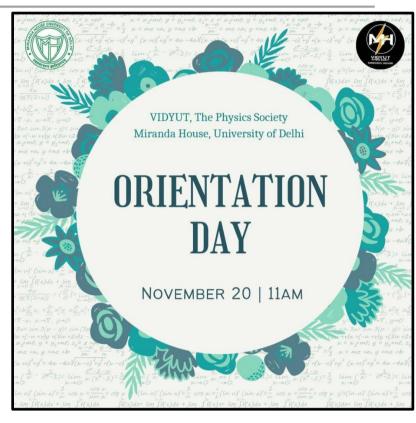
The event was held in an online mode. Many cultural programs and games were also presented by the students. In the end, all the students thanked all the teachers for their constant mentoring.

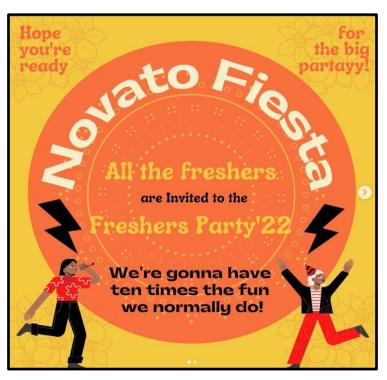


An Orientation Programme for the newly admitted students was held on 20th November, 2021.

The major objective of the programme was to introduce students to all the teachers of the Department, make the students aware of the Physics Society of which they are by default members, to give them a brief idea of the departmental activities, help them to understand the timetable, etc. In short, this meeting was a brief introduction to the department.

No. of participants: 180





The freshers were welcomed by the Department and 2nd year students on **7th February**, **2022**.

The event was conducted online and students played games and some competitions were conducted in a virtual mode.