



DEPARTMENT OF PHYSICS  
MAITREYI COLLEGE  
UNIVERSITY OF DELHI

# BHAUTIK KSHITIJ

THE ANNUAL MAGAZINE

*Issue 1*

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*“We are stardust brought to life, then empowered by the universe  
to figure itself out—and we have only just begun.”*

*-Neil DeGrasse Tyson*

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# PRINCIPAL'S MESSAGE

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*Greetings from Maitreyi College!*

Dear Readers,

It gives me immense pleasure to witness the sincere efforts of the students of the Physics Department in the release of the first issue of the e-magazine “Bhautik Kshitij”, which is exuding with the creativity and enthusiasm of the students.

The magazine has been aptly named and is indicative of the boundless Universe waiting to be explored by our dear students.

I take this opportunity to congratulate all the students and teachers of the Physics Department who have obviously motivated and encouraged and guided the students in completing this work. The result is witness to the hard work undertaken.

At Maitreyi, we aim to empower the students by letting them explore their potential in various ways, developing in them the confidence and conviction required to face the future world. This issue reflects the creativity and innovative ideas of the students.

I congratulate and acknowledge the team work of editorial team and the students who have utilized their time in a positive ingenious manner in finalizing this first edition of the departmental magazine.

Always wishing them well for all their future endeavours.

**Dr Haritma Chopra**  
**Principal (Officiating)**



# EDITORIAL BOARD



*Dr Poonam Juneja*  
*(Convener; Teacher-in-Charge)*



*Dr Prajwalit Shikha*  
*(Co-convener)*

One of the most fascinating and complex areas of science, Physics encompasses everything from the smallest subatomic particles to the vast expanse of the universe. The discoveries and advancements made in this field have had profound impact on our understanding of the world around us. The most exciting aspect of physics is that it allows us to explore the fundamental laws that govern the behavior of matter and energy, transfer and conservation of energy. These fundamental principles have practical applications in everything from engineering and medicine to space exploration and environmental science. Another fascinating area of Physics is the study of quantum mechanics, which explores the behavior of particles on a microscopic level and has led to groundbreaking discoveries in areas such as computing and cryptography, and has the potential to revolutionize our understanding of the nature of reality itself.

We proudly present the enthusiastic and creative efforts of our students in the form this e-magazine “Bhautik Kshitij”, which is aptly named to represent the vast expanse of areas of Physics.

It is our belief that our students have the potential to make significant contributions to the scientific community, and we are confident that they will continue to excel in their academic and research pursuits, and make us proud in the future.

We congratulate and thank all the contributors and the editorial team for their dedication and hard work.

Best Wishes.



# *STUDENT EDITORIAL BOARD*

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*Pranshi Mathur*

*Editor-in-Chief*

Literally meaning 'the Horizon of Physics', Bhautik Kshitij is an exploration of the incredible world of the subject. Especially because of covid, our batch had very less interaction with our seniors and peers- we've always felt disconnected from them. This magazine was our attempt to bring everyone together, share their experiences and be inspired by their victories. Since it's the very first issue of the our magazine, we gave it our all to ensure that it becomes our legacy. We hope the magazine will inspire the reader to view the subject and the field of physics in a new light and gives them hope for the future.



*Sharanya Renjit*

*Editor-in-Chief*

Knowledge is power and our aim is to equip everyone with it. Being in the field of Physics, there is often a dirth of seniors in the field to turn to for help. The problems we faced should not hinder others, and this is the reason we decided to make this magazine. Knowing what new research projects fellow students are working on will hopefully inspire and allow us to explore newer perspectives. And being aware of the various paths taken by our seniors will be a beacon of hope in difficult times. I'm grateful for the support and help we received and I hope to see more issues of our magazine as the years go by.



*Dipti Malik*

*Head of Design*

This magazine is special because it's the first issue of our Departmental magazine.

Being a part of the design team was a great opportunity to get to know the talent of the students of our department and I have done my best to showcase it and present it for everyone to see.

Hope you all enjoy our work.

# *STUDENT EDITORIAL BOARD*

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***Simrat Kaur Nanda***  
***Editor Head***

A writer has a mind full of thoughts that they can put on the piece of paper. We have selected various articles, poems, paintings and many more. It fills my heart with joy that we have so many bright people around us who are doing great job in their fields. I enjoyed being part of this beautiful journey, every moment and every single second gave us immense pleasure. We all worked very hard to achieve this milestone. I hope you all will definitely feel happy to be a part of this journey. Happy Reading!!



***Pranjal Nayak***  
***Editor Subhead***

It's a moment of great pleasure for me to introduce our first ever magazine, Bhautik Kshitij, of our department. This magazine also holds a special place in my heart as this is my first experience as a writer. The sincere efforts put in by our editors and designers have played a huge part in making this magazine possible. I hope you will enjoy reading and appreciate it.

With thanks and best wishes to all our readers and the members of the editorial team.



***Isha Patel***  
***Editor Subhead***

We would like to introduce to you the very first issue of 'Bhautik Kshitij', our departmental magazine.

This magazine will hopefully be the start of a vibrant and engaging expression of our students' voices. Thanks to the editorial board, we put a dynamic piece filled with creativity, freedom and self expression. At last I'd like to say, enjoy every moment you have because in life there aren't rewinds, only flashbacks.

Remember 'Bhautik Kshitij' belongs to you!

# STUDENT EDITORIAL BOARD

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*Avnika Tyagi*

*Team member*

It has been an amazing and exhilarating journey for me to be able to work on our annual magazine "Bhautik Kshitij". The joy of curating this magazine was unparalleled. As someone who's always been passionate about science and literature, it was the perfect opportunity which involved both. It was an immense pleasure to go through the complete process which involved sheer hardwork of our entire editorial board.



*Jeau Mishr*

*Team member*

It is my utmost pleasure and joy to be a part of the 1st edition of our Magazine- 'Bhautik Kshitij'. I highly appreciate the efforts put in by our editorial board members in making this magazine a big success. I believe that this initiative will open many doors of opportunities for us as well as our juniors. I hope that the readers find this magazine enriching and fun to read.



*Bhawna Verma*

*Team member*

We are united by our deep interest in physics, and the expression of that interest is Bhautik Kshitij. It was a pleasure to work with the team, the Department of Physics and with Scintillations on this amazing journey of understanding each individual, their point of view, and how they creatively perceive this world of physics. It was never about ink on paper but about the colours that every single one of us used to make this magazine a bright rainbow.

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# About the Department

*The Physics Department was established in 1983 with the following objectives:*

*encouraging students to achieve their educational goals to the best of their potential, promoting the holistic development of resilience, determination, confidence, and creative thinking, developing leadership skills by organizing workshops and various competitions, enabling students to share their knowledge in various group activities, offering a dynamic, interactive environment that engages students in the learning process, provide constructive feedback to promote student self-assessment, effective use of laboratories and technology to create and sustain access to learning and provide scientific programs that lead to the acquisition of knowledge and skills necessary to achieve career advancement.*



# STUDENTS' ACHIEVEMENTS

BHAUTIK KSHITIJ

## B.Sc. (H) Physics 2nd year

DIPTI MALIK

Got selected for NIUS Camp and had the opportunity to visit NCRA, Pune. No doubt, getting selected for NIUS is regarded as the most prestigious and enriching research experience to have as a 1st Year!

Read her Experiences in her own words:

Every experience makes you grow!

One of such experience I had was when I went for HBCSE-TIFR's NIUS Astronomy camp 2022. We had lectures on Radio astronomy, extragalactic, cosmology, solar and stellar physics given by some best professors. They all were very friendly and made the concepts crystal clear. We went to NCRA pune for workshop on Radio astronomy in which we were told how to take data from telescope and how to assemble it's data. It is one of the best experience on can have.



## B.Sc. (H) Physics 3rd year

### RIA GOEL

An Ex-Galore member, she has brought many laurels to Maitreyi College. Her Achievements being a member of Galore are listed below:-

Shivaji College - First Position

Birla Institute of Technology and Science, Pilani - First Position

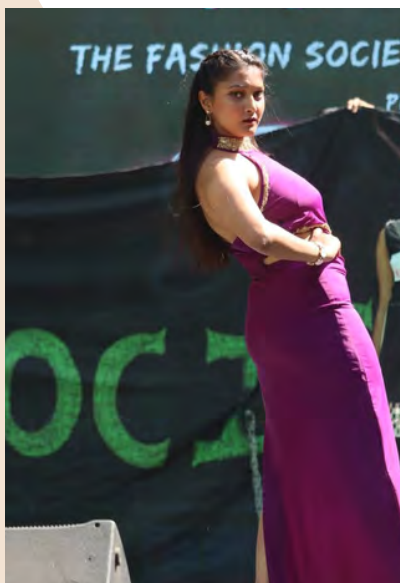
Amity Business School-Second Position

Sri Aurobindo College - Second Position

KJ Somaiya-Second Position

IIT Bombay - Third Position

College of Vocational Studies - Third Position



## SHARANYA RENJIT

Sharanya Renjit joined VF as a volunteer in January 2022. She demonstrated her prowess in writing and got selected to the content writing team just a month after joining. After working for a year, she was appointed to the post of the Content Writing Head.

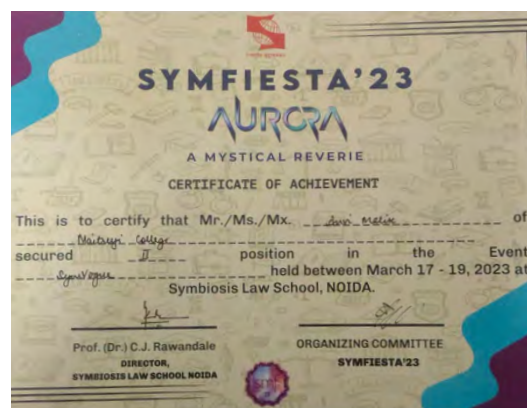
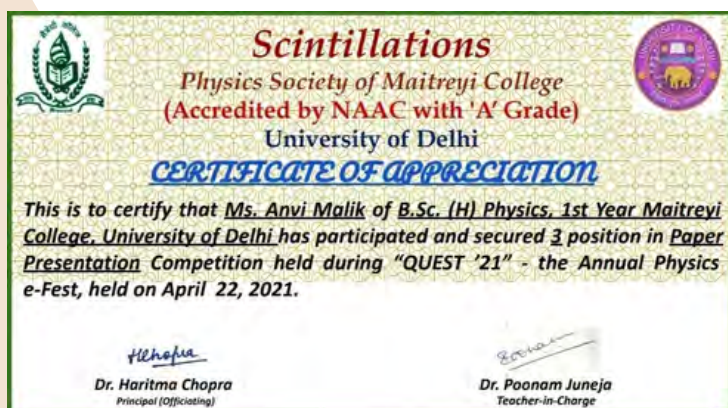


## ANVI MALIK

Her achievement as a member of Galore:  
Atma Ram Sanatan Dharma College - First Position



She secured 3rd position in Paper Presentation Competition held during 'Quest '21'- Annual Physics E-fest of Scintillations Maitreyi.



She secured 2nd position in an event held during 'Symfiesta '23'- Symbiosis Law School, Noida

## SIMRAT KAUR NANDA

Was awarded 3rd place in the 2nd Kalam Series Annual Essay competition on Space Tourism: A new era of space - Department of Science, Lady Irwin College, DU



On January 19, her poem 'Ek Pyaar Aisa Bhi' got published by Wordings Publications through a competition which was held online on Instagram Platform in Waves Of Resonance, Volume 4.

On March 10, her poem 'Mai Apni Manzil Zaroor Paungi' got published by Wordings Publications through a competition which was held online on Instagram Platform on Teary Void, Volume 2



# SUMMER INTERNSHIP PROJECTS

BHAUTIK KSHITIJ

## SUMMER INTERNSHIP PROJECTS

The Centre of Research (CFR), Maitreyi College, established in 2019, is committed to indulging the enthusiasm for research among our faculty and students. CFR undertakes the operation of 2 activities every year, viz. the Summer Internship Programme (SIP) and Annual Project.

The Summer Internship Programme organised by CFR (Centre For Research) is carried out in the months of May-July every year, wherein students, under the guidance of teachers, carry out two-month long projects in college. Proposals for the projects are invited, and an orientation programme is organised to give information about the working of CFR. The projects can be from subject matters covering various disciplines.

Project proposals are evaluated in the months of March-April. These proposals are then sent to the subject experts for review. After the review process, projects are selected based on the experts' comments and the selected projects are executed during the summer break.

After completion of the projects, students submit project reports to the CFR which are evaluated by external subject matter experts. The results of the projects are presented by students before an external jury.



**THE FOLLOWING GROUPS PARTICIPATED IN AVLOKAN 2022:-**

S.N	Title Of Project	Department	Mentors	Mentees
1	Optimization of Solar Power for Automatic Control using Sensors	Physics	Dr Parul Yadav, Dr Mansi Dhingra, Dr Neha Gupta	Vaishali Bagauli, Ria Goel, Bhavna Dargan, Simrat Kaur Nanda,  Anshita Sharma, Jeau Mishr
2	Battery Capacity: Measurement and Analysis	Physics	Dr Ritu Dhingra, Dr Prajwalit Shikha	Aastha Agarwal, Urvashi Sangrola, Preeti, Pranshi Mathur
3	To design and build a Portable Gauss meter	Physics	Dr Apoorva Verma, Dr Ritu Dhingra	Amanjot, Shiva Raj, Soumya Bajpai, Ananya
4	Electromagnetics of SERS Tailored with SPR using Anisotropic Nanoparticle Systems near a cancer molecule: A 1st Principle Account	Physics	Dr Neelam Singh	Dhruvi Agarwal and Mansi Tewatia

5	Quantum Computing: Principles, Applications and developing of Quantum tools	Physics	Dr Parul Yadav, Dr Shalini Lumb Talwar, Dr Mansi Dhingra	Sharanya Renjit, Vaishali Sharma, Purnima Wadhwa, Sweta Singh, Monika Suthar, Rishika Mittal
6	Growth & Characterization of Piezoelectric Single Crystals and study of its Electric Properties	Physics	Dr Prajwalit Shikha, Dr Sumit	Avnika Tyagi, Bhawna Verma, Kirti Bhagia, Megha Bhardwaj, Shreya Chaturvedi, Nimisha Sagar

The competition included presentations given by the selected student groups. Each presentation was followed by a robust round of questioning by the judges.

The group consisting of Dr Parul Yadav, Dr Mansi Dhingra, Dr Neha Gupta and Vaishali Bagauli, Ria Goel, Bhavna Dargan, Anshita Sharma, Jeau Mishr and Simrat Kaur Nanda was declared the winner of Avlokan 2022.

## THE PROJECTS AND EXPERIENCE GAINED BY STUDENTS

1. Pranshi Mathur recounts that her team studied variations in battery capacity under different discharging conditions to understand batteries better- as an attempt at understanding how to store energy more efficiently and reduce environmental degradation due to the batteries we use.
2. Anshita Sharma from the winning team of Avlokan 2022 gives an account of how they had to wait for 3-4 days so that accurate readings could be obtained. The readings required the weather to be sunny which was not the case initially.
3. The Project titled "Growth and Characteristics of Piezoelectric Single Crystals and Study of its Electrical Properties" focused on Investigation of Structural and Optical Properties of Solution grown Glycerine Glutaric Acid Single Crystal. The crystal shows periodicity-arranged identically at the lattice point. Optical properties of the crystal can be known when light falls on the crystal medium. The project also included GGA single crystals grown by slow evaporation technique.

# ARTICLES

BHAUTIK KSHITIJ

# THE BIZARRE WORLD OF QUANTUM PHYSICS

AVNIKA TYAGI

B.SC.(H) PHYSICS 3RD YEAR

"If you think you understand quantum mechanics you don't understand quantum mechanics" – Richard P Feynman

It's a truism to say if quantum mechanics hasn't profoundly shocked you, you haven't understood it yet. Well if you are interested in knowing the smallest things known to the scientists you have to dig in through the breathtaking world where much of our understanding of the universe fails!

-The Quantum World- A world that bends the rules of human existence in a way that leaves us with numerous possibilities and questions. A perspective that can change forever how you look- the realm of tiny atoms and particles, The Quantum Realm.

The laws here seem impossible yet are vital to everything in this universe. We don't notice the strangeness of quantum mechanics in everyday life, but it is always there if you know where to look, a game of perspectives, your way of looking at the world.

Down at the quantum level, the laws that govern this tiny realm appear completely different from the world we see. It's almost not possible to picture how weird things can get at the smallest scales. In the quantum world there is a sense that things don't like to be tied down to just one location or to follow a single path it is as if the things were in more than one place at the same time, what you do here has an immediate effect somewhere else.

If people start behaving like particles inside the atom most of the time you wouldn't even know where they are instead they could be anywhere until you look for them. "Do you really believe the moon exists only when you look at it?" Albert Einstein famously asked. Some believed the act of measurement forces the particle to make a certain choice which means reality doesn't exist if you are not looking at it, the universe was never born if there was no one born to see it. Quantum mechanics thrill scientists even if it frustrates them. It thrills them because it works. Experiments verify the accuracy of quantum predictions. The most bizarre prediction that quantum mechanics ever made was quantum entanglement. Two particles can become entangled if they are close together and their properties get linked. Even if you separate the two particles sending them in opposite directions they would still remain entangled. These tiny things communicate faster than light! Quantum mechanics explained quantum tunneling, superposition, wave-particle duality, and whatnot, concluding not only is the Universe stranger than we think, but it is also stranger than we can ever think. Quantum mechanics tells us that everything observed is affected by its observer, which means that everyone sees a different truth as everyone is creating what they see, their own realities.

# THE HOLOGRAPHIC PRINCIPLE

SHREYA BAHUKHANDI

BATCH OF 2020

What if someone told you that you were nothing more than a simple hologram? Everything you touch is just a plain 2-dimensional figure and none of it is real! In 1990, Leonard Susskind, a physicist at the Institute of Advanced Studies, Princeton proposed that our universe is (maybe) a projection of information stored on a gigantic cosmic 'bubble' that surrounds our universe. The Holographic principle is a property of quantum gravity theories which resolves the black hole information paradox within string theory. The cosmic bubble that surrounds our universe contains all the information required to govern the occurring events in the universe. The coded information is like Morse written for the transmission of telegrams. The fact that all the information controlling the events in the universe is already stored somewhere tells us that all the events in the universe's timeline are already predefined. From a different perspective, it may be assumed that we are programmed in a way that cannot be altered; that every decision leads to a series of predefined events depending on the previous event that may appear to us to have been chosen by us, but isn't actually. Now to take your imagination a step ahead, what if in the next 50 or 100 years we can develop technology that allows us to access the information encoded on this cosmic bubble? We will become the masters of our destiny knowing what the future holds for us. Is it possible to believe that we might be able to change the information according to our wishes, i.e. choose the series of events best suited for us. Hypothetical ideas like these may not trouble ordinary masses like us, but for the critics of extravagant ideas, they will matter.

According to our definition, a hologram is nothing but a plain 2-dimensional picture being projected as a 3-dimensional entity. It is all in the magic of light. So where is the 2-dimensional image of our cosmic hologram? For years we have believed that an atom is the fundamental unit of matter. But if an atom is a projection itself, what is the actual fundamental unit of matter as we know it? The holographic principle forces us to reconsider our fundamental reality of ourselves. Simulations in our world cannot feel, touch, smell, laugh or see. What makes these simulations (or us) so special, that they can see, touch, or feel? Are all these a part of our programming as well? And the biggest question of all, how and from where did this cosmic “bubble” originate? The bubble may control the life of the universe from its birth till the very end, but what controls the bubble itself? The basic layout of the principle revolves around the assumption that we are nothing but a hologram and everything around us is just ‘data’ similar to data stored in the memory of a computer chip. It is very similar to the concept portrayed in the movie, “The Matrix”, where Neo can detach himself from the real world and fight underground in the dimensions of computer data and code, the matrix of their world. The paradox that dawns upon us, is readily criticized, and the principle is that if we are a virtual factor then why can’t we download our brain in the memory around us? Let us say, that in the future this was even possible, then will this memory be accessible to the host of the memory? The Holographic principle provides us with a rough outline or understanding of the universe but is still pent up with its drawbacks, like any other theory regarding the existence of the universe. The overall view of the superficial part of the principle is quite simple. Imagine a cubical box with yourself at the center of it. Now, add a bigger box around this previous one, and an even bigger one around the aforementioned box.



Picture the inner walls of one box projecting an image on the outer walls of the box within. The innermost projection comes from the smallest box on you. The universe, according to the Holographic principle, is very similar to this simulation but with infinite boxes instead of a finite number of them. Even after the bizarre propositions of the holographic principle, theoretical physicists consider it because the equations defining the holographic principle are simple. Unlike the other theories or principles, whose equations break down or propose infinities when they are applied in different situations, the equations of holographic principle give a sensible outcome for 'all' possible situations, which is a fairly convincing factor for theoretical physicists. You will be surprised to know that even Einstein's relativity theory gives absurd solutions when applied to black holes. Using the holographic principle, astrophysicists can resolve presumably all the paradoxes in astronomy. We do not know if the experimental observations favor the holographic principle or not.

If we ever find substantial evidence to prove that the universe is nothing but a hologram, it will again be one of those times when physics proves to us that reality is not what it seems like. Just like every other theory in science, there are some questions about the principle that remain unanswered, like: can it explain how universes exist in the infinite space of a black hole? Does it apply even in different dimensions? How are we a hologram if we can feel each other's mass? Is 'reality' even real? However bizarre it may sound, the readers will agree on the intrigue it blooms in us, to know of the possibility that nothing is real. Not even us!

# PHYSICS: A MANIA

ARUSHI SAXENA

B.SC (H) PHYSICS 3RD YEAR

Physics is a bodacious subject yet one of the subjects most people shudder to think of. It often becomes the scapegoat for the “stress” induced in the young teens who study it, along with other subjects. What we truly need to understand and inculcate is that physics is a beautiful subject that brings us all the wonders in a packaged form and is a medium for formulating laws for natural occurrences and quantifying the events in nature. We, the interested ones are inquisitive about the possibility to dislike a subject like physics. Please allow me to delineate using a quote: “I learned very early the difference between knowing the name of something and *knowing* something.” -Richard P. Feynman. Let’s bring forth an explanation for the above-mentioned quote because as physicists we are supposed to recreate the methods of teaching the same laws and theories in an appealing and delicately detailed manner. Basically, “knowing” the name here means the constraint of considering the subject “physics” as a part of the syllabus and not acknowledging the great knowledge we perceive from the subject. But, “knowing something” refers to the actual knowledge we perceive from something. Now let’s relate to a real-life circumstance. One day my mom expressed to my dad that Arushi is running very fast, my dad being a physics teacher couldn’t relate. Because for him, what matters is, what is making Arushi run, how is her pattern of running, and most importantly, What is implied by ‘only fast’, how fast? Here fast is a term, but ‘quantifying’ fast is physics. Physics is all about plunging into the details of the occurrence of different events in nature and the reason behind their occurrence.

Our smallest and the biggest tasks are proven by physics, be it a book kept stationary on a desk or be it the making of a rainbow on a rainy day. We are so immersed in completing our syllabus and unfortunately, working hard on the subject only to get rid of it, that we consider physics as a task to complete and do not know the reason behind great occurrences around us. “Physics is an attempt to conceptually grasp reality as something that is considered to be independent of its being observed. In this sense one speaks of physical reality” - Albert Einstein It’s not about ‘what is happening; physics is about, ‘HOW is it happening.’ It is not about ‘cramming derivations’ it’s about the ‘PROCESS’ that derivations follow that gives us a result about an event. Once we get into ‘WHY AND HOW is it happening’ our way of seeing physics changes. “When you change the way you look at things, the things you look at you will change” - Max Plank As sometimes, all it takes is a tiny shift of perspective to see something familiar in a new light.

Now an important question arises:

How do we start the process of learning physics?

1. When you have to swim, you need to reduce the fear of water and start loving it. Physics is like swimming, start loving it, and it flows to you automatically.

2. Never try to cram physics. It’s a subject of concepts; cramming physics is an insult to the subject. Always, go into the concepts and proceed further with the topic. Physics is a subject that offers infinite knowledge and therefore, just by finishing our syllabus we can’t commit that we know everything about physics. Physics is a never-ending subject. Remember: “Physics is an infinity of which our syllabus only captures a part.”

3. Physics's strength lies in the fact that every concept is related to every other concept, we can make flow charts that relate one concept to another, which makes it simple to learn physics and find out the relation between different parts of physics.

4. Physics always has a practical application; therefore, we can picture and imagine every concept. It's a proven scientific fact that visualizing things makes learning easy, so always try to picture the concept or question while learning, it helps to build up interest also.

5. Last, but not least, like every other person has a flaw, nothing is meant to be perfect, similarly every other law of physics has a limitation. We necessarily need to know the conditions and the situation where a law is applicable and where it is not so that we know the right application of the law and do not apply it anytime anywhere. So let's get ourselves electrocuted with the charge of physics. And now to conclude let's use another quote, to end, on a happy note :

“What one man calls God, Another calls the laws of Physics” –Nikola Tesla

# SPACE TOURISM

SIMRAT KAUR NANDA

B.SC.(H) PHYSICS 3RD YEAR

In the 21st century everything is a click away. We can do calculations instantly, get groceries delivered to our doorstep within minutes or make a call overseas easily. Isn't it surprising how our technology has become so advanced within two decades?

There was also a time when we thought that there isn't any other world that exists in our universe. But now we're reaching new milestones in science- going to Mars, discovering the moons of Jupiter and the beautiful rings of Saturn. Countless astronauts like Neil Armstrong, Kalpana Chawla, Rakesh Sharma, and Sunita Williams helped us achieve greater heights in science.

Since the 20th Century people have wondered if we could ever go to space. I always think about what it would be like to go to another planet.

Depiction of alien life in cartoon shows and sci-fi movies peak my interest and leads me to wonder if we will be ever to make contact with extraterrestrial beings. It has always been my dream.

It is bizarre to think widespread people could travel to space.

But it happened in reality when SpaceX launched 'Dragon Capsule' in which 4 common people travelled to space. This mission called 'Inspiration-4' was launched on 15th September 2021 and they all returned safely on 18th September 2021. This is indeed a proud moment for all of us. I wish India will be able to embark on such missions soon as well. It will give a new horizon to our space program and we will learn more about the universe.

In future, we may be able to establish colonies on other planets. We can build new infrastructure and develop civilizations there. Now human race can expand beyond our planet.

The Missile Man of India, Dr A.P.J Abdul Kalam once remarked, “Dreams are not that which you see in sleep, a dream is that which never lets you sleep”. So here is a dream that will come true.

But, it seems to be a world of fantasy more than reality because, in reality, we all know every coin has two faces i.e. pros and cons. A few disadvantages may also become hurdles in the way of us leading the movement to space. An example of a hurdle is the cost of travelling to space. The expenses of a spacesuit are more than the income of several common people joined together.

Only famous industrialists have been able to go on space travel programs and see our planet above.

The income of a common man only satisfies the needs of their family. It is still an impossible dream for common people. Developing countries like India, Spain, Pakistan, Bhutan, Myanmar, and other are countries trying their best to achieve this goal. But, I am still sure that the governments of these countries will take action to achieve this goal efficiently. So the dreams of various people will no longer be a dream and come true very soon. So we all will become the witness to this beautiful journey. I strongly believe that if you see hurdles as obstacles then a small desire will remain incomplete but if we see hurdles as a stepping stone for towards building a foundation then the biggest of our desires will be accomplished and we will get a flight towards the impossible.

Thank You!

# IS MULTI-DIMENSION POSSIBLE

BHAWNA VERMA  
B.SC.(H) PHYSICS 3RD YEAR

The concept of dimension always seems to amuse scientists and people. We exist in a 3-dimensional state but our brain can't stop thinking about the possibilities and existence of things in the 4th dimension or 5th dimension. Human brains are not limited, we exist in the 3-D state, and most of the things we see are 3-D and yet we have numerous theories and philosophies surrounding the idea that multi-dimension exists. Humans have been trying to describe the multidimensions since the time spirituality was in practice, however, spirituality shares a great analogy with what's now known as metaphysics.

Let's begin with the modern-day multi-dimension theory and then travel back to the beginning of the idea of multi-dimension. The multi-dimension theory, today states that "matter is not the dominant thing in the universe, rather the information that creates the matter is". This theory is also called the "Theory of multidimensional reality" it is the world's purely information-based theory of existence. There were a lot of theories trying to explain what is the fourth dimension and 5th dimension particularly was highly anticipated however they were not accepted by a majority of scientists. One theory that is worth mentioning here is "time is the 4th dimension", according to this we are existing in the 4th dimension and time is the invisible 4th branch of our dimension. This theory was believed for a long time and then discarded.

If we look at the metaphysical aspect of this topic we might understand why so many theories came and go.

According to metaphysics, we all are the different projections of a single subconsciousness and we exist in the 3D realm. However, it also says that we do not only exist in one realm we have multiple parallel selves that exist in different realms and hence at a given time we are existing in different realms or realities. Since some of these realities might be more developed than us or some might be less developed than us.

Here comes the spiritual aspect, according to spirituality when we exist in a higher dimension we do not need to have a 3D body, we are simply existing as an experience that might as well be known as a soul or a vibration. Now, this is what they use to refer to as our higher self, which exists in a higher dimension while we are existing in the 3D world. The concept of existing as an experience or as a soul is kind of similar to the modern-day definition of multidimensional as mentioned above. It also states that the whole of the universe is based on the events that lead to a different set of events and it's not based on time.

Since time is relative and we have defined time in the way it suits the best on earth, now just imagine you get to meet an alien or go to an alien planet they need not have defined the time same as us, they don't need to have 60 seconds in a minute or say 24 hours a day. It could be a reason why the theory mentioned above that stated time as the 4th invisible branch was discarded.

In conclusion, multi-dimensions do exist. We exist in a 3D world but simultaneously we are also existing in different dimensions, in different realms. We might not be able to completely describe how the objects would look in higher dimensions because, then we'll need to have a 3d model of the object,



and anything that exists in the 3d world not necessarily be the same way in the higher dimensions. Spirituality could be a major key to unlocking various secrets of the universe just like physics, but unfortunately, it's not in practice these days. The major reason could be that people linked spirituality to various kinds of religions and now we are only left with the various religious practices without the real reason behind them. This is why people look at science for reasons and do not want to go down deep into its roots. Last but not least inter dimensional traveling can be considered as traveling side ways in time and it is possible according to some beliefs.

There are infinitely many explanations and theories that are interesting and definitely a good topic for discussion but I'll like to conclude here because people might get lost in their heads while reading this.



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# ALL ABOUT

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## RESEARCH DURING

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## UNDERGRADUATION

BHAUTIK KSHITIJ

Are you interested in a career in research? Almost all research institutes and a lot of professors are open to taking undergraduate students on their research projects. We talked to 3 students from different colleges who have participated in research internships.

Q.  
How important do you think it is to participate in research projects/internships during your undergrad? How does it help your career?

YASH: the experience, the skills, and most importantly the network you get by doing such internships is incredible. You improve your verbal, communication, writing, and reasoning, and learn a ton of new skills which are relevant in every sector. You get clarity on your interests, get travel to various places, meet new people, enjoy, and create lifelong memories. Therefore, in conclusion, you not just grow professionally but as a person as well, and that's what makes it all worth it.

SAMARTH: If someone wants to continue in physics and wants to pursue it as a career, they definitely should apply for an internship. I think it's a great way to understand how things work in academia and to explore your interests.

MADHUR: Every student should pursue at least one internship during their undergrad studies. These experiences allow us students to test out early about which kind of research we enjoy most: theoretical, experimental (lab work and/or fieldwork), or computational, and provide clarity about the career paths we want to pursue. Students do better in courses on topics in which they have already done an internship. Doing good work on a project can earn one a letter of recommendation from their supervisor and even a publication in a journal. research experience looks really appealing to admission officers in foreign universities. If someone wants to pursue higher studies in India, they will be ahead of their peers who don't have experience.

Q.  
What is the  
application process  
like?

YASH: There are dedicated Internship programs offered by various universities and research laboratories around the world. It's much easier to get the funding, certificate of completion, credits, etc in such programs. But it's usually competitive and so I always recommend cold mailing professors, as it's the easiest, straightforward, and a standard (not quickest though) way to get an Internship.

SAMARTH: I applied to the Perimeter Institute through their standardised application process where they undertake about 50 students worldwide and out of those 50 students 10 are invited for an in-person internship at the Perimeter Institute that is situated in Ontario Canada. For another one I got to know through a webinar lecture by Dr. Jyoti ... which was organised by our physics department. I mailed her and sent her my SOP as well as the CV then there was an interview conducted through which I got selected for this two months internship.

MADHUR: Both the ISEC Camp and the DSKC Summer Workshop have dedicated forms that can be filled out online. I secured my summer traineeship in the Nanobiotechnology Lab by cold mailing Prof. Anita Kamra Verma and I'd like to talk about this in detail. Cold mailing principal investigators/professors that carry out research in your area of interest is an indispensable skill that not only is useful when trying to get a research internship at an institute that doesn't have a dedicated internship program but also comes in handy at the Masters and PhD level.

**YASH:** I believe what always stands out most in my profile is my computation skills. Nowadays, coding is being used in almost all fields of research, and professors look for students with good computational skills. So, if you want to build a career in STEM or looking to get some research work coding should be on the top of your checklist. (Tip: If you have no experience in coding, start with Python, it's the easiest and most widely used of all the languages).

**Q.**  
**What do you think stands out the most in an application to a professor/researcher?**

**SAMARTH:** You have to highlight your genuine interest and what you'd like to learn through this project in your application. Before applying, I looked up the professor's research interests and learnt about her work. I connected that to my interests and what I'd like to learn during the project in my SOP. I believe this really stands out in an application.

**MADHUR:** Genuine interest and enthusiasm about the field, assuming the student has an above-average GPA. Most established research internship programs require the applicant to submit a "Statement of Purpose" (SOP) where they can achieve that. In this document, you can talk about a real story about how you stumbled across a particular topic and any efforts you make to learn more about the field – this can be reading the latest publications and textbooks, taking online courses (MOOCs), attending conferences, etc.

YASH: Here are some tips on how you should draft your email:

- ◆ Keep it short and concise. Never write lengthy mails.
- ◆ Don't write Dear Sir/Mam, write Dear Dr. LastName/full name or Dear Prof. Last name/Full name
- ◆ Subject should be catchy and to the point. Like: Application for Summer Internship, Prospective research intern
- ◆ For International profs, schedule your mail so that it reaches prof. around 9:00 AM.
- ◆ Don't send mails on Weekends.
- ◆ Always add your CV and Transcript. ( Research proposal, if possible)
- ◆ Create a call to action. Like ,I will be applying to your university for my masters and thus this will be a chance to experience research environment before graduate studies.
- ◆ Write follow ups if possible after waiting for 1 week. (Not all, but to those profs whose work you really like).

Q.  
Some cold  
mailing/SOP  
writing tips  
for students:

MADHUR: Always have a catchy subject line in the cold mail, such as “Application for Research Internship” or “Prospective Summer Intern”. Never start your email with “Dear Sir/Ma’am” when emailing a professor/group leader. It gives the impression that you’re Bcc’ing a generic mail to tens of professors and haven’t gone through the professor’s or group’s website. Use “Dear Prof./Dr. [last name],” instead. In the body of your mail, introduce yourself, communicate that you want to intern in the group/lab and when you want to do so, how you got interested in the field, what is your previous experience (if any), relevant coursework, skills, etc. Brownie points if you talk about the professor’s previous publications or a talk that they gave at a conference.

Neatly divide your email into 3-4 paragraphs and thank them in the end for considering your application. As mentioned earlier, make sure that your email does not come across as generic ,include phrases like “I’m seeking a research internship in the [insert name] lab at the university of [insert name], USA” and “I went through your lab/group’s website and found the research theme on developing polymer hydrogels loaded with nanoparticles for labeling cells to be tracked with CT fascinating and wanted to learn more about the field and gain research experience”.

Never try to use the reputation of the group/lab or the institute that you want to work at as a justification for applying. Don’t say that the internship will improve your CV, this gives a bad impression. Remember that your sole motivation for pursuing an internship should be to learn more about the field and get hands-on research experience.

**YASH:** My experience has been quite fruitful, as it allowed me to work on a lot of diverse research topics and fields. In particular, the IFJ PAN PPSS program was the most well-managed and organized of all. If someone is looking for a research opportunity in high-energy physics, I would highly recommend checking out this program.

**Q.**  
**What is it  
like to work  
as a student  
researcher?**

**SAMARTH:** There is an Interuniversity Accelerator center in Delhi that works in particle physics, nuclear physics, atomic physics, etc, and the professor I worked under was affiliated with IUAC and was working as an Experimental physicist there- our research was basically about taking some molecule like eg. Taking butadiene in our case and then smashing it the with high-velocity particles which in my case was xenon and in the whole process butadiene breaks off into small fragments and then those fragments are studied. the potential energy curves are drawn and the properties of butadiene are examined. I was in the Data analysis part of the whole process- the huge after-experiment data was scrutinized and useful information was collected out of it.

**MADHUR:** The ISEC camp was a fun experience as I got to work and interact with students from all over the world. Besides regular meetings with my project partner and mentor, we had a “fun and games” session almost every day where all participants got together to play gartic phone and other online games.

My traineeship in the Nanobiotechnology Lab at KMC was my first offline experience. It was a very valuable experience where I not only got to learn about research in life sciences but also witnessed what it is like working in a lab, what maintenance tasks should be performed, and the exciting projects that were being carried out by the PhD students.

**SAMARTH:** Since it is relatively harder to get an internship in the first year due to the lack of experience, most people look for one in their second year. In the first year you can:

1. Do projects within your college and work with your professors.
2. Attend seminars and workshops that interest you
3. Read research papers articles.

This helps you gain experience and develops your CV, so you have something to show. It also doesn't matter if your prior experience isn't related to the field you're wanting to apply in now.

**Q.**

**It is often overwhelming to apply to such internships due to our lack of experience. How do you cope with this?**

**MADHUR:** I always wondered how people carry out research projects at the undergrad level when they may not have the necessary background in their formal coursework. This was resolved by the professors by giving us 2 weeks to study literature on Nanotech and Materials Science before actually starting the analysis of data.

During my time at KMC, I was intimidated since I didn't even have Biology during my +2 but I made things work by studying prerequisite topics right from the basics. The PhD students scheduled training on various techniques and assays that I should know even if the techniques were not planned for my project



**YASH:** Since our classes were online, I got a lot of time to focus on my projects. But for someone looking to participate in any research internship nowadays, I would highly recommend doing research internships during the summer and winter holidays. Additionally, you can also go for online/remote internships along with your classes, as it's not that hard to complete all the assigned work during weekends.

**Q.**  
**How did you balance your internship with your college studies?**

**SAMARTH:** I would suggest doing research internships during the summer and winter holidays. I pursued my internships during the summer vacations. Also, The Perimeter institute's program was scheduled at night and it used to happen for two days a week so time management was not an issue at that time overall it may become difficult at times but it is very much manageable.

**MADHUR:** All three of my internships and experiences took place either when I was having an online college or during the summer vacations so time management was not an issue. There are students that manage research work along with college studies. Let's say you got a summer project under a professor and you'd like to continue to work under them, then you can communicate with them and be honest about the time you can dedicate. If that doesn't sound manageable to you, then summer and winter programs are the way to go.

An illustration of two graduates in black caps and yellow gowns. The graduate on the left is holding a rolled-up diploma. The graduate on the right is also holding a rolled-up diploma. The background is a light gray gradient.

# ALUMINAE MESSAGES

BHAUTIK KSHITIJ

Do you often wonder what opportunities lie ahead of you after completing your Bachelor's degree? Do you want to branch out and explore a different field but are unsure how it would turn out for you? Here are stories, their motivation, a day in their life and their advice for us.



My name is Kaushalya Jhuria. I have done my bachelors in Physics from Maitreyi College, University of Delhi in the years 2013-16. Currently I am doing postdoctoral research working on quantum information and superconductivity from Berkeley lab USA.

I always wanted to be a teacher. Until my master's I was not sure about my career. But when I did a summer project and internship in IIT Delhi, I got exposure and decided to do postdoctoral research.

My motivation in life comes from my mother. It's not easy to step out of your comfort zone. But, the way she overcame her difficulties inspires me a great deal. My inspiration behind pursuing Physics was my tuition teacher who also did her bachelors in Physics from Maitreyi College. And then I came across Prof Chandralekha and Prof Walter Louis. They truly enjoyed Physics. It was inspiring to see them.

My advice to juniors- It is true that sometimes our hearts and brains have different opinions. But the truth is also that we have to lose something to gain something. At one point of time, I had two options- one to stay with my family and another was to stay away from my family to pursue my postdoc. My heart and brain had a conflict.

To cope with this kind of situation, just analyse the situation and think about the long term effects. "Its not just about what I lose, but also about what I gain". At the end I'd like to say that one should look within and analyse their weak points and strengths. Once you get to know yourself, you can win over anything. Just accept the situation with a positive attitude. You should be the source of motivation for yourself. Thank you!



My name is Ashika Rohtagi. I have completed my bachelors in physics from Maitreyi college, University of Delhi in the batch of 2016-19. After that I pursued masters from IIT Kharagpur in geophysics and then got placed in Schlumberger Geophysics Technology as a geoscientist.

I always had a doubt in my mind that after this bachelor's degree I will not get a job. I thought I have to have a B.tech degree and only then will I find a job after graduation. Otherwise, a PhD seemed to be the only option. But I wanted to know about how cooperate sector works, and that's why I choose geophysics in my masters.

My real motivation is multi national companies and their working. My job is not a 9-5 job. In a day I am assigned 3-4 tasks. It could be done in 2 hours or even take 12-13 hours. After that I'm done with my work for the day.

I didn't want to pursue a PhD but I still went for it. I also wanted to experience how the cooperate sector works.

My inspiration is my mentor during my JAM preparation and and in the cooperate sector.

My advice to juniors-believe in changes. And in developing skills like coding, data analytics or even dancing or singing. Always believe in yourself. Try to do many internships. I believe in 'jack of all trades but master of none, but it is better to be the master of one'. Thank you!



Hi, I am Mani Khurana, working as a Scientific Officer at Bhabha Atomic Research Centre (BARC), Mumbai, since 2019. I completed my graduation from Maitreyi College, University of Delhi (2014- 2017), followed by post-graduation from IIT Delhi (2017-2019).

I was always enthusiastic about being a scientist. I never missed a chance to interact with my professors and seniors to learn about the best possible ways to work in a research field.

During my training period in BARC, I cultivated a deep understanding of all the aspects of Physics, further allowing me to choose the department or field I was more inclined towards. Currently, my team and I are working on a specific topic related to our stream.

I always wanted to work according to my will. I didn't want to bind myself to something particular and this made me want to pursue a career in research.

My advice to juniors is to learn from others' mistakes. Talk to people who are already in that field. Nowadays, the internet and social media make it easier to do so. In the end, I would suggest you keep a proper balance between your professional and personal life. And make sure you are satisfied with what you are doing. Most of the time people will try to pull you away from success, at that time you just need to believe in yourself and take that little step forward. Thank you!



My name is Navya GS, a graduate of physics from Maitreyi College in the year 2018-2021. Currently, I am doing my Master's in design from National Institute of Design from Bangalore.

In the first semester of my bachelor's, I found that all my batchmates were enthusiastic about physics. And I thought that I couldn't be a good physicist, With time I developed an interest in design. So, that's how I decided to do master's in design.

My daily routine- I start work at around 9 AM. We have to draw, make sketches and go out to get life sketches. It's all fun and doesn't feel like work to me.

My inspiration behind my career choice was my GE maths teacher. She loved what she was doing and I wanted to be like her-to do something that I loved.

My advice to juniors- we need to think about the present moment. Don't bother yourself thinking about the future. Do what you love and make sure you do something that makes you happy. Thank you!



My name is Ojasvi Sharma. I completed my bachelor's in physics from Maitreyi College and currently, I am pursuing an integrated PhD from IISER Pune, working on open quantum systems.

I was always very passionate about physics. I learned a lot of things during my bachelor's teachers at my college and at coaching, and my efforts made me realise that research is an interesting field to work upon. I gave several entrance exams and interviews but all my results were awaited. First I got into IIT Delhi. Then I got a call from IISER Pune and got selected for their program. I felt fortunate to get into IISER.

My daily routine- I have my classes till 6 PM and I have to prepare a lot of reports, presentations and also prepare for exams.

My inspiration behind my current field came from my parents. They both are teachers. The habit of learning is inculcated in me by them. I would like to make a special mention here. During my bachelor's I met Dr Prajwalit Shikha and she inspired me a great deal. She has always supported and encouraged me.

My advice to juniors- to cope with conflicts between your heart and brain, just make sure to take advice from the people who are already in that field.



Be open to advice. And think practically.  
You have got only one life. Do something that you can be proud of and inspire people by. Also, accept criticism, but don't let it demotivate you. Thank you!



My name is Vani Tiwari, I completed my bachelor's in physics from Maitreyi College. I am currently in the third year of master's from NIT Bhopal.

I've been interested in physics since 10th standard, I enjoyed learning formulas and applying those formulas in real life. In 12th I became sure of wanting to pursue a career in physics, and I was very attracted to astronomy and astrophysics. My physics teacher's lectures in class 11 also motivated me towards this. I have deep gratitude for my parents, my teachers at Maitreyi and my friends for their kindness and support.

My daily routine- right now I have classes from 9 AM- 5 PM. We also have seminars on black holes, thermodynamics and all astronomy-related topics.

I was in a dilemma after my JAM result, I couldn't decide if I should drop a year or take admission in NIT. I didn't know which was the right way. All my friends got jobs after bachelor's, which demoralised me as I felt that I would only get a job after a PhD. My family and friends helped me cope with this.

I want to say to my juniors, if we do not explore different paths, we will not learn more things. If you don't want to go for physics, it's not a problem. There is not just a single field, there are many opportunities.

Always believe in yourself. Always try to communicate with people who can help you in difficult times. I know physics may not feel like an easy subject, but it is fun. Enjoy your field! Also, make sure to make an account on LinkedIn since it is very important for networking. That's all from my side, thank you!



My name is Shreya Bahukhandi. I did my bachelor's in physics from Maitreyi College. My first job was at Google, which I left to become a blockchain developer. And now I work as a digital asset manager and I work at cryptocurrency in the stock market. I was also recruited as a blockchain developer by Solana.

I developed an interest in coding when I was 12. And I know ten computer languages now. I wanted to do something that is at the brink of technology. Now I work on Wall Street, and the people there pushed me to do what I am doing right now in a way. I met with some amazing clients like Drake, Huda Kattan, and Anderson Cooper. My daily routine-I start work in the evening and I end up working till 6:00 AM.

When I was 12, I had my first bitcoin, and a few years later we uncovered that and found it to be a huge sum. And that pushed me towards cryptocurrency. My family and pets have been my biggest motivation, I want to make sure to provide them with a great life. My family is my strength. They have always supported me. They have continuously pushed me to achieve my true potential.

My advice to juniors- things may not work out today, tomorrow, or maybe for a year. But if you stay true to your work, they will work out eventually. Thank you.



Hi! I am Shranya. I completed my bachelor's in physics from Maitreyi College in 2021 and currently, I am doing my master's at Jamia Millia Islamia. I am a fashion influencer and a professional blogger.

It took me a year to first develop an interest in fashion design. During the lockdown, I liked to style things. It took me a month to figure out blogging as a career. I've been studying French for 6 years and also have a Diploma in it. I used to be very busy with my studies during the week and used to take care of blogging on weekends.

I wish to tell my juniors that it's okay to feel clueless when you first start something. I started blogging in February 2020, but in March lockdown happened and I felt clueless as to how to make it bigger. But I realised that you just have to keep going.

There is no such inspiration behind my choosing my current field. It is just that I had an interest and began doing it.

I believe this happens with every person, that our minds and heart have different opinions. At that time meditation is key. I practice meditation at night and that helps me a great deal.

My advice to everyone is to just go with the flow, enjoy what you are doing and spread happiness. Thank you!



My name is Ankita Wadhwa. After my bachelor's in physics from Maitreyi, I dropped a year to prepare for JAM and got into NITs in the North East, but since I wanted to stay in Delhi I applied for DTU entrance examination. I secured an All India Rank 3. After that, I got placed at Physics Wallah Coaching Institute as a business analyst.

During my master's I published a paper in an international journal on disposing of glasses. It was a year-long journey and during this, I realised that the field of physics is not suitable for me.

Exploring different software and technology while making projects online in covid times made me realise that I have good analytic skills. A career test showed my analytic skill as 93% and suggested data analysis as a career option for me, and I decided to prepare for it. There were many turning points during mac and I decided to not pursue a PhD in physics.

I did an internship in march 2022 from the platform Stitch as a data analyst that was a time when I made a difference what I wanted to do or what not.

While thinking of the future, our mind is clear at times and confused at others. It takes a lot of time to decide which direction we should go in. I used to feel relaxed after talking to someone in the same field. We shouldn't shy away from talking to people when feeling low.

I enjoy what I am doing right now. Everything that happens in life has a reason, so you should keep yourself stress-free. You are not a failure if you do not get into an IIT. Start exploring other fields and options and keep at it until you find the right one!

Thank you!

# CREATIVE SECTION

BHAUTIK KSHITIJ



## DARK ROOM

*Sitting alone makes you to counter many a thing  
There's something which comes for everything.*

*Little confusion, heart in delusion  
Perplexed mind, thoughts of different kind*

*The realisation comes into motion-  
Heart carrying emotion  
Doing things with extra devotion  
But still left behind due to some proportion  
This creates in my heart to a little frustration  
Fear of future, anxiety due to-*

*Different kinds of human creatures*

*Overthinking, for not making the way you wanted  
Little pressure, hefty questions  
Heart and mind craving for clarity of answers.  
Then sudden realisation!  
All these outer worldly things disrupting my inner voice and emotion!  
Let's not affect that, and work in equal proportion  
So that heart and mind can give collinear solution*

*ANSHITA SHARMA*

*II YEAR*

## MY COMPANION

*When I look into the mirror  
I saw a girl, my companion.  
Standing straight, staring right into my eyes!  
Providing me warmth and looking at me with adoring eyes!  
Always holding my hand in my good  
And bad  
She is the one who holds me whole-  
Even in the hard times, when I am totally lost,  
And makes me realise my beautiful reflection,  
A pair of brown and beautiful dazzling eyes  
Speaking all the truths of my heart!  
And the brain which knows all about the truth of bitter society,  
The face that wants to make some changes,  
But always scared to be judged  
The face that wants to question whenever something is wrong  
But chose to stay silent,  
Wanted to say many things but she can't say anything.  
After a moment,  
My companion always makes me realise my worth-  
It's a part of me, a confident girl.  
Wanting to touch the greatest heights of the sky with all her talent  
With utmost calm and ambition,  
The one who is teaching me how to admire myself  
Even when everything around me is crumbling down,  
  
With a big and beautiful smile,  
With a big and beautiful smile!*

ANSHITA SHARMA  
II YEAR

## GALILEO GALILEI

*Galileo sir, you are great  
What a history you have created  
Your works are so unbelievable  
Yet without you, they are unimaginable*

*You gave many contributions,  
Always provided scientific solutions  
You were a physicist, a mathematician and a philosopher  
For me, you are the physics creator*

*You laid foundations of physics-  
You are father of physics,  
For me, you are my only inspiration*

*How many struggles you have faced  
But you always got up again and again.  
My words are just words  
How could I express my gratitude towards you!*

*Thank you sir for coming to this world  
Otherwise we would've remained so puzzled  
You were such a noble man,  
From all my heart I say, I am your fan.*

*SIMRAT KAUR NANDA  
III YEAR*

## SUNFLOWER

*My empty hands  
Oh my eyes moving on the ground.  
Don't stop this crying;  
Can't we just go to the other side?  
When the moon will rise,  
Won't end this loving of mine  
Even I'm get nothing  
This is the bliss I'm having  
Then i say  
How far I can go-  
How close I'm now,  
Why, I feel like,  
I pour everything out  
But it is still in my throat,  
Don't know the cause,  
Of this heaviness in my chest.*

*It is full or  
Is it hollow?*

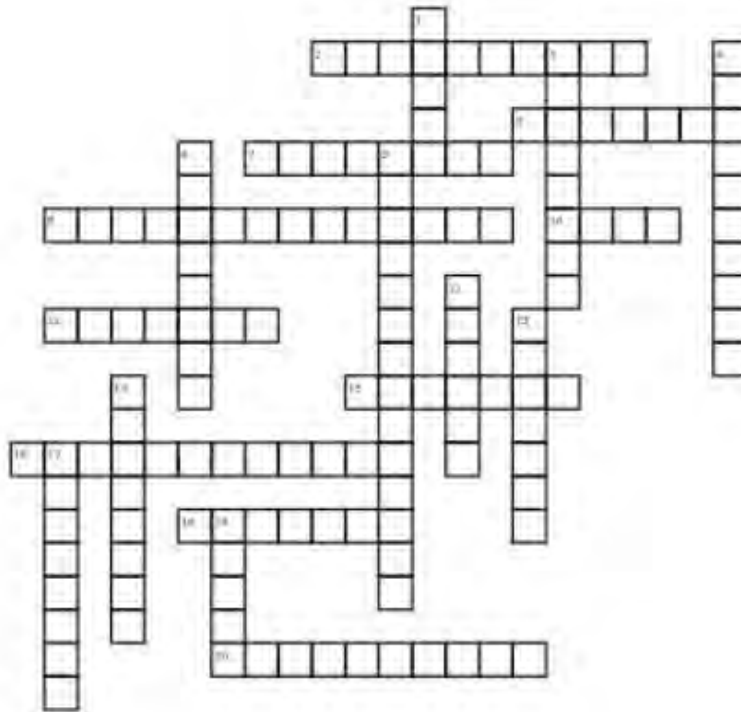
YOGITA SHARMA  
III YEAR

## DUALITY OF LIFE

*Calmness of the life-  
Swiped away by the striking light.  
Reasons of the smile:  
All emitted as if electrons in time.  
The energy that keeps me alive,  
Decays slowly like damping.  
The strength of the soul,  
Tired by the duality of laws;  
Unsolved problems of life-  
The reason seems to be dilation of time,  
But still, stays a little hope  
As strong as the gravitational force;  
The darkest phases of the life,  
Takes you to the new heights;  
With all the fundamental forces you got-  
Reflect back with great momentum in all.*

*GARVITA DHANAVAT  
BATCH OF 2022*

## CROSSWORD



## Down:

1. It's a moon of Saturn (5)
3. Who discovered X-Rays (8)
4. Father of thermodynamics or thermal physics (10)
6. Who discovered the neutrons (8)
11. The Curie couple discovered this element (6)
13. Lustrous and silvery white element (7)
14. Who gives the current and voltage loop < laws (8)
17. Ideal diode equation is given by which -equation (8)
19. Rays having highest ionization power (5)

## Across:

2. Only lady to win 2 noble prizes i.e. Physics and Chemistry (10)
5. Who discovered that moving electrons can create magnetic field (7)
7. Light year is the unit of (8)
9. Founder of ISRO (14)
10. Rutherford did his scattering experiment on which sheet (4)
12. An actinide solid element at room temperature (7)
15. Which metal has the band gap of 1.12 eV (7)
16. Branch of physics which deals with the laws of Universe (12)
18. CGS unit of heat energy (7)
20. Who give the principle of floatation (10)

# Artwork



*Dipti Malik*

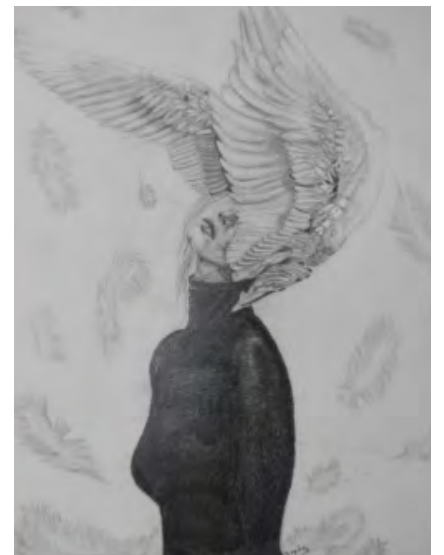
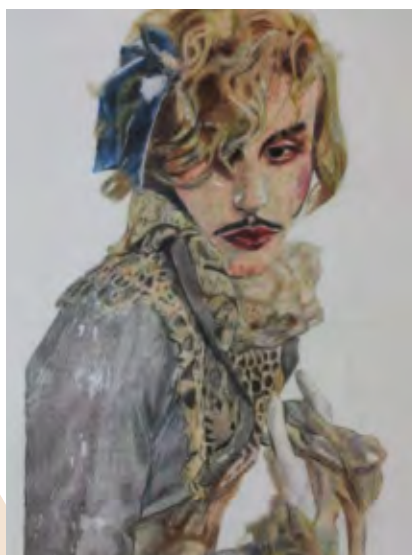
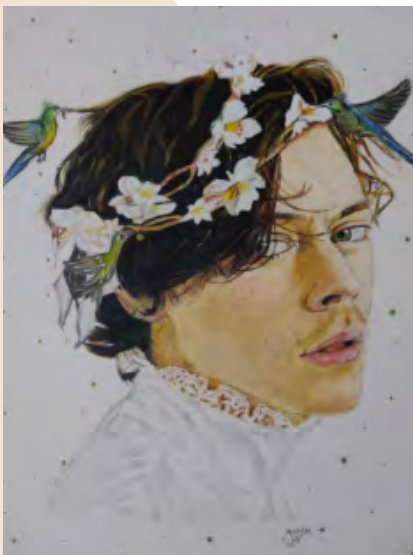


*Yogita Sharma*



*Kumud Tanwar*

**BHAUTIK KSHITIJ**



*Yogita Sharma*



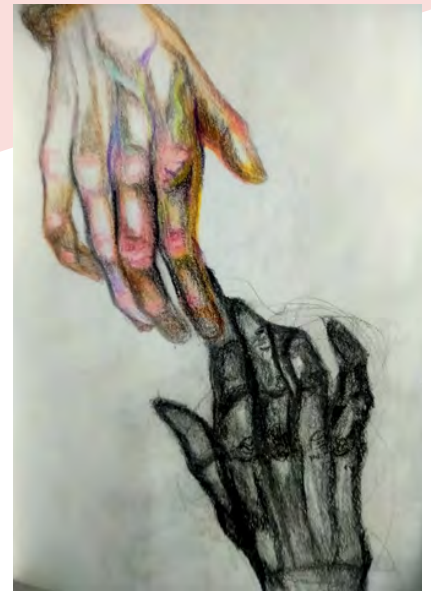
*Bhawna Verma*



*Bhawna Dargan*

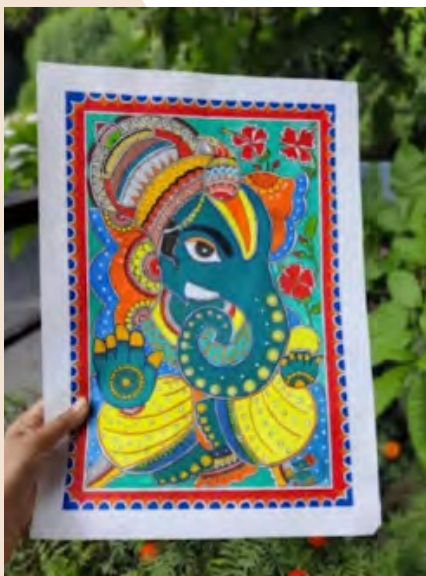


*Aditi Mudgal*



*Bhawna Verma*

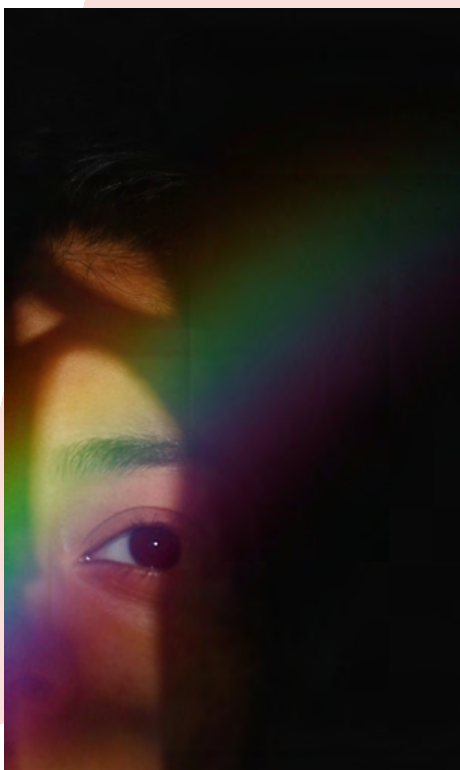
**BHAUTIK KSHITIJ**



*Anshika*

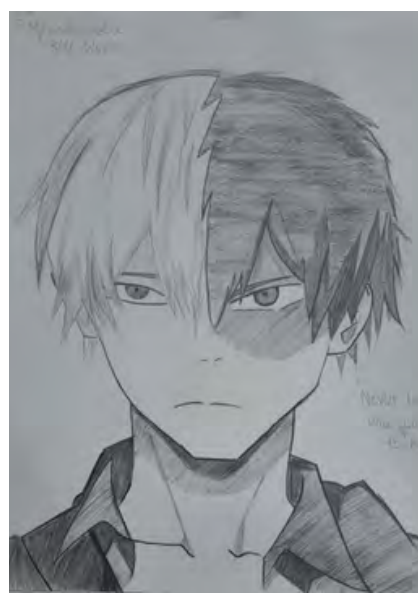






*Photographs by Bhavna Dargan*

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*Ria Goel*

