



SEPTEMBER | 2026

PRATHAM

Physics Research Advancements by Thoughtful Humankind and their Achievements Miscellany
Quarterly Newsletter





PRATHAM

Meet the EDITORS



Shefali Pareek
Research Scholar



Iram
Research Scholar



Sandeep Kumawat
Research Scholar



Amandeep Kour
Research Scholar

Editorial Advisor



Dr. Manoj Kumar Saini
Associate Professor

PRATHAM

Message from HoD

Dr. Kamakhya P. Misra

Head, Department of Physics &
Biosciences (I/C)

Manipal University Jaipur



Editorial

It gives me immense pleasure to present the latest issue of the Pratham a Quarterly Newsletter of Department of Physics, Manipal University Jaipur. This publication reflects the collective energy, enthusiasm, and achievements of our faculty, students, and collaborators who continue to uphold the department's tradition of academic excellence and research innovation.

In recent months, our department has made significant strides in both teaching and research. From fostering curiosity-driven learning in the classroom to advancing cutting-edge investigations in materials science, photonics, nanotechnology and nuclear sciences, we continue to cater to the vibrant scientific community. The engagement of our students, particularly the research scholars, in attending and organizing the conferences, workshops, and outreach activities is highly encouraging. It underscores our commitment to experiential learning and holistic development.

This newsletter highlights contributions of our faculty colleagues through publications, conferences, and collaborations, which strengthen the department's reputation as a hub of intellectual growth. As we move forward, our focus remains on expanding interdisciplinary research, enhancing laboratory infrastructure, and encouraging innovative teaching methods that inspire the next generation of physicists.

I extend my heartfelt appreciation to the editorial team for their dedicated efforts in bringing together this issue. I hope the readers will find it both informative and inspiring. Let us continue to work together towards excellence in physics education, research, and societal impact.

PRATHAM

Vision

Excellence in Physics education that deepens its foundation and cultivates critical skills, while advancing the cutting-edge research.

Mission

- To offer a transformative learning experience that equips students with a solid foundation in Physics, preparing them for successful careers in academia, industry, and beyond.
- To foster a research culture among students, enabling their contribution to the scientific enterprise.
- To apply Physics research to innovate for advancing industries and enhancing lives.
- To promote Physics and scientific literacy through community engagement, public lectures, and outreach programs.



PRATHAM

Events

MANIPAL UNIVERSITY
JAIPUR

Department of Physics,
School of Physical and Biological Sciences, Manipal University Jaipur

Organizes a talk on

QUANTUM INDUSTRY AND CAREER

Quantum Technologies | Industry & Collaborations | Career Opportunities

Speaker:
Dr. Jagrati Dwivedi
Technology Manager
NQM-Quantum Materials & Devices (QMD) Foundation, IIT Delhi

Date:
21st August 2026, Friday

Time:
10 to 11 AM

Venue:
Conference Room, FB6, AB2

All are welcome!

Conveners: Dr. Athira M, Dr. Sathi Sharma
Department of Physics, Manipal University Jaipur

The Department of Physics, Manipal University Jaipur, organised a talk under the **Academia-Industry Symbiotic Alliance (AISA)** series on “**Quantum Industry and Career**” on 21 August 2026. The session was delivered by Dr. Jagrati Dwivedi, Technology Manager at the NQM-Quantum Materials & Devices (QMD) Foundation, IIT Delhi. The talk introduced the National Quantum Mission, its key initiatives, and ongoing industrial projects, highlighting opportunities for students and faculty in quantum research, academia-industry collaborations, skill development, and emerging career pathways in the rapidly evolving quantum technology sector. The session also emphasised the importance of interdisciplinary learning and industry engagement in translating quantum science into practical applications. It encouraged participants to explore emerging opportunities in quantum technologies and develop skills relevant to this rapidly advancing field.



PRATHAM

Events

MANIPAL UNIVERSITY JAIPUR

INTERNATIONAL CONFERENCE ON APPLIED MATERIALS QUANTUM AND NUCLEAR SCIENCES (ICAQNS-2026)

29th Sep-1st Oct, 2026 **Hybrid Mode**

Department of Physics, School of Physical and Biological Sciences, FoSTA, Manipal University Jaipur, Jaipur, India

WELCOMES

Chief Guest
Dr. S. Muralithar
Scientist H
Inter-University
Accelerator Centre (IUAC),
New Delhi, India

Guest of Honour
Dr. Rajesh Pratap Singh
Scientist H
Inter-University
Accelerator Centre (IUAC),
New Delhi, India

Keynote Speakers
Dr. Ayon Bhattacharjee
Deputy Director
National Institute of Technology
Meghalaya, Shillong, India

Prof. Tsironis George
Director
Institute of Theoretical
& Computational Physics
University of Crete, Crete, Greece

Invited Speakers

Themes of the Conference
Advanced Functional Materials, Nanoscience and Nanotechnology
Quantum Science and Emerging Quantum Technologies
Theoretical, Computational and Data-Driven Physics
Nuclear, Particle and Radiation Physics
Plasma Physics and Space Science
Energy Physics and Sustainable Technologies
Interdisciplinary and Applied Physics Innovations

ORGANIZED BY
Department of Physics
School of Physical & Biological Sciences, FoSTA,
Manipal University Jaipur
in collaboration with
Institute of Theoretical and Computational Physics (ITCP),
University of Crete, Greece

Chief Patron
Gen. (Dr.) M.D. Venkatesh
Chairman, MJU

Patron
Prof. N. R. Sharma
President, MJU

Co-Patron
Dr. (Dr.) Anil Rana
Vice-President, MJU

Conference Chairs
Prof. Kuldip Singh Sangwan
(Chair, FoSTA)

Conveners
Dr. Debajyoti Bhattacharjee
Department of Physics

Dr. Anupam Kumar Sharma
Associate Professor
Shri Mata Vaishno Devi University,
Katra, India

Dr. Aniruddha Mondal
Professor
National Institute of Technology
Durgapur

Dr. Abhay Kumar Singh
Professor
Banaras Hindu University,
Varanasi, India

Dr. Ambesh Dixit
Professor
Indian Institute of Technology (IIT)
Jodhpur

Dr. N.L. Heda
Professor
University of Kota,
Rajasthan

Dr. Rita Gupta
Associate Professor
Indian Institute of Technology Delhi,
India

The Department of Physics, Manipal University Jaipur, organised the **International Conference on Applied Materials, Quantum and Nuclear Sciences (ICAQNS-2026)** on 29 September–1 October 2026 in hybrid mode, in collaboration with the Institute of Theoretical and Computational Physics (ITCP), University of Crete, Greece. The conference brought together eminent scientists, academicians, and researchers to discuss recent advances in applied materials, nanoscience, quantum technologies, nuclear and particle physics, plasma physics, and sustainable energy technologies. The scientific programme featured keynote and invited talks, fostering interdisciplinary research, knowledge exchange, and international academic collaboration. The conference provided a platform for researchers to share emerging findings, explore new research directions, and strengthen collaborations across diverse fields of physics and materials science.

PRATHAM

Moments & Memories

1. Quantum Industry & Career



PRATHAM

Moments & Memories

2. ICAQNS-2026



PRATHAM

Moments & Memories

2. ICAQNS-2026





PRATHAM

UG Student Achievements



**Ashutosh Kumar
Maurya**

B.Sc. (Hons), Physics

Oral Presentation:

Systematic Anomaly in the Evolution of Moment of Inertia of $i_{13/2}$ -Driven Quasiparticle Configurations in the A 160 mass Region.

Conference: International Conference on Applied Materials, Quantum and Nuclear Sciences (ICAQNS 2026)

Achievement: Best Poster Presentation Award

Lakshya Sangtani, Bsc. (Hons) Physics, has secured third place in AI Idea Hack- Phase 2, conducted as part of the MIT Research Conclave 2026, held on 18 September 2026 at Manipal Institute of Technology, Manipal.



PRATHAM

Scholars' Achievements & Endeavours



Deependra K. Nitharwal
Research Scholar

Publication:

Zinc selenide quantum dots: recent advances in synthesis, characterization, optoelectronic and photocatalytic applications

Journal: Coordination Chemistry Reviews

Impact Factor: 25.6 **Quartile:** 1



Deepika Maan
Research Scholar

Oral Presentation:

Photocatalytic Degradation of Methylene Blue Dye Using ZnO and ZIF Derived Nanostructures

Conference: International Conference on Applied Materials, Quantum and Nuclear Sciences (ICAQNS 2026)



Iram
Research Scholar

Oral Presentation:

Temperature-sensitive studies of refractive indices, birefringence, and order parameters in a binary mixture of 5CB and 5CB-d8 liquid crystal

Conference: International Conference on Applied Materials, Quantum and Nuclear Sciences (ICAQNS 2026)



Kritika Garg
Research Scholar

Oral Presentation:

An Extensive Spectroscopic Analysis of a Binary Mixture of TB7A & TB4A Liquid Crystals

Conference: International Conference on Applied Materials, Quantum and Nuclear Sciences (ICAQNS 2026)

PRATHAM

Scholars' Achievements & Endeavours



Neha Sharma
Research Scholar

Workshop Participation:

Fabrication of Nanodiagnosics Devices held at Institute of Nano Medical Sciences.



Om Prakash yadav
Research Scholar

Poster Presentation:

Effect of Ga substitution on electronic and optical responses at in-site in $K_2AgInCl_2$ perovskite using first-principles calculations

Conference: International Conference on Applied Materials, Quantum and Nuclear Sciences (ICAQNS 2026)



Palak Gupta
Research Scholar

Oral Presentation:

Wave functions of hidden strange pentaquarks

Conference: International Conference on Applied Materials, Quantum and Nuclear Sciences (ICAQNS 2026)



Ranjeet Vishwakarma
Research Scholar

Publications:

Investigating spectroscopic properties and density of state of fluorinated dimeric (CB6O.O8) liquid crystal compounds using DFT

Journal: Discover Applied Sciences

Impact Factor: 3.8 **Quartile:** 2

Ooster Presentation:

Numerical Investigation of Temperature-Dependent SHG Phase-Matching Wavelength in Periodically Poled $MgO:LiNbO_3$

Conference: International Conference on Applied Materials, Quantum and Nuclear Sciences (ICAQNS 2026)

PRATHAM

Scholars' Achievements & Endeavours



Sandeep Kumawat
Research Scholar

Poster Presentation:

Systematic Analysis of Octupole Correlation and Shape Coexistence in A~70 mass region

Conference: International Conference on Applied Materials, Quantum and Nuclear Sciences (ICAQNS 2026)

Publications

1. Analytical modeling with segmented quasi-phase matching LiNbO₃ for voltage-controlled second harmonic generation spectra

Journal: Discover Applied Sciences

Impact Factor: 3.8 **Quartile:** 2

2. Poling technique for domain engineering of lithium niobate for periodic poled lithium niobate fabrication

Journal: Discover Materials

Impact Factor: 5.8 **Quartile:** 1

3. Electro optic tuning optimization of segmented periodically poled LiNbO₃ optical parametric oscillators via segment length ratio variation

Journal: Discover Applied Sciences

Impact Factor: 3.8 **Quartile:** 2

Oral Presentation:

Numerical Investigation of Temperature-Dependent SHG Phase-Matching Wavelength in Periodically Poled MgO:LiNbO₃

Conference: International Conference on Applied Materials, Quantum and Nuclear Sciences (ICAQNS 2026)



Ugrasen Singh
Research Scholar

PRATHAM

Scholars' Achievements & Endeavours



Vadali
Research Scholar

Oral Presentation:

Determination of Astrophysical S Factors for the Reaction $^{14}\text{N}(p,\gamma)^{15}\text{O}$ from the Proton Transfer Reaction $^{14}\text{N}(^3\text{He},d)$

Conference: International Conference on Applied Materials, Quantum and Nuclear Sciences (ICAQNS 2026)



Vishakha Sharma
Research Scholar

Publications

Defect passivation and surface/interface modification in annealed $\text{Ga}_2\text{O}_3/\text{Si}$ thin films deposited by electron-beam evaporation: Correlation with optical properties and wettability

Journal: Surfaces and Interfaces

Impact Factor: 6 Quartile: 1

Poster Presentation:

Structural, Optical, and Wettability Properties of E-Beam Evaporated Ga_2O_3 Thin Films on Glass Prospects for UV-Blocking and Protective Coatings

Conference: International Conference on Applied Materials, Quantum and Nuclear Sciences (ICAQNS 2026)

PRATHAM

Scholar to Doctor

The Department of Physics extends heartfelt congratulations to the following scholars for successfully earning their PhD degrees. Their commitment, groundbreaking research, and academic excellence have made remarkable contributions to the scientific community.


$$KE = \frac{1}{2}mv^2$$



Dr. Sanjay Kumar

Thesis Title—Exploring the Ground State of Geometrically Frustrated Magnetic System.

Supervisor - Dr. Rashi Nathawat

Co-Supervisor - Dr. Satyapal S. Rathore & Dr. Arvind Kumar Yogi



PRATHAM

Faculty Awards

Heartiest congratulations to all the faculty members on receiving the MUJ Excellence Awards for academic and research excellence! Your dedication, hard work, and commitment to excellence are truly inspiring. Wishing you continued success and many more achievements in the years ahead.



Dr. Saktivel Pandurengan

Congratulations on bagging Research Track Faculty—Research Excellence Award, Manipal University Jaipur.



Dr. Rashi Nathawat

Congratulations on bagging the Academic Excellence Award and Dr Ramdas M. Pai Award for professional Excellence, Manipal University Jaipur



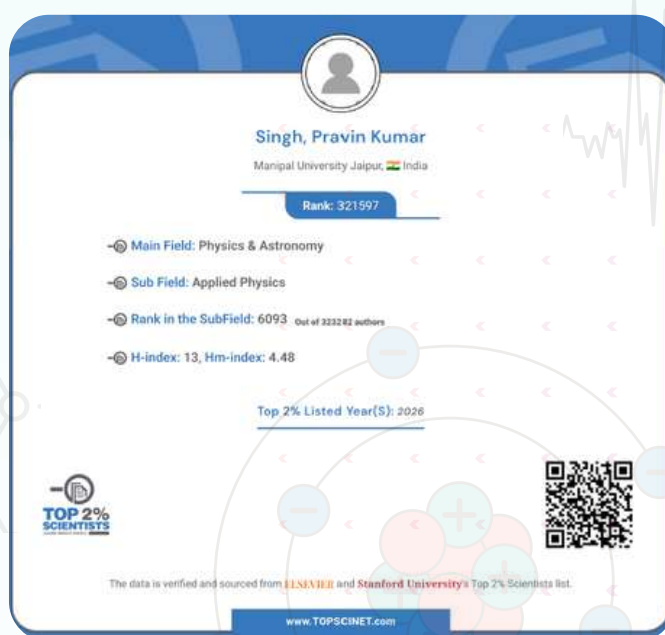
PRATHAM

Faculty Awards



Dr. Himmat Singh Kushwah

Congratulations on being listed among the top 2% of scientists recognized by Elsevier and Stanford University.



Dr. Pravin Kumar

Congratulations on being listed among the top 2% of scientists recognized by Elsevier and Stanford University.



PRATHAM

Upcoming Events

ICQTAM-2026

Dr. Sharath Kumar Rao K.
Vice Chancellor, MAHE

Co-Patrons

Cmd. (Dr.) Anil Rana
Pro-President, MUJ

Dr. Karunakar A Kotegar
Pro Vice Chancellor (Tech. & Sci.), MAHE

Dr. Amit Soni
Registrar, MUJ

Dr. Nitu Bhatnagar
Provost, MUJ

Dr. Kuldip Singh Sangwan
Dean, FoSTA, MUJ

Chairs

Dr. Ashima Bagaria
Associate Dean, SoPBS,
FoSTA, MUJ

Dr. Sajan Daniel George
Professor & Director
Manipal Institute of Applied
Physics, MAHE

Co-Chair

Dr. Kamakhya Prakash Misra
Head, Dept. of Physics, MUJ

Conveners

Dr. Manoj Kumar Saini
Associate Professor, MUJ

Dr. Ratan Kumar Bera
Associate Professor, MUJ

Co-Convenor

Dr. Himanshu Nautiyal
Assistant Professor, MUJ

Organising Secretary

Dr. Unnikrishnan V. K
Associate Professor, MAHE



Manipal University
Jaipur
Dahmi Kalan, Jaipur,
Rajasthan 303007,
India

Contact us



icqtam@outlook.com

(ICQTAM 2026)



Theme- Quantum Horizons and Material Innovations: Building the Future of Technology

Jointly Organized by

School of Physical and Biological Sciences, Manipal University Jaipur

&

Manipal Institute of Applied Physics, Manipal Academy of Higher Education



December 10-11, 2026

About the Conference

The International Conference on Quantum Technologies and Advanced Materials (ICQTAM 2026) under the aegis of Manipal Research Board (MRB), aims to bring together researchers, scientists, engineers, and industry experts from around the world to explore the latest advances in quantum science and advanced materials. This conference builds upon the remarkable success of International Conference on Quantum Technologies and Applications (ICQTA 2024), organized by MAHE in February 2024. The conference will focus on emerging areas including quantum computing, quantum sensing, nanotechnology, 2D materials, metamaterials, and next-generation functional materials, fostering interdisciplinary collaboration and innovation for future technologies.

Tracks

1. Quantum Computing and Communication

Quantum Computing, Simulation, and Information Processing, Quantum Communication, Cryptography, and Networks

2. Quantum Sensing and Metrology

Quantum Sensing, Metrology, and Imaging Technologies, Quantum Materials: Design, Synthesis, and Characterization

3. Quantum Materials and Devices

Heterostructures, Topological Insulators, Photonic, Plasmonic, Spintronic, Superconducting and, 2D Materials, Energy Conversion and Photothermal Applications, Computational and Theoretical Approaches to Quantum Systems

4. Advanced Materials and Applications

Nanomaterials, Biomaterials, Advanced Functional Materials and Composites, Ceramics, Polymers, and Hybrid Materials, Flexible Electronics, Energy Storage and Emerging Material Technologies.



Call for Papers

All accepted and presented papers will be considered for publication in Scopus-indexed journals or proceedings with reputed international publishers, subject to peer-review standards and publisher guidelines.



more to be added soon...



**4-Best Oral Presentation
Awards Sponsored by ACS**



ACS Publications
Most Trusted. Most Cited. Most Read.

Registration Fee

Category	Participants from India	Participants from Foreign
Research Scholars	Rs. 3000/-	USD 100
Faculty/Postdocs	Rs. 5000/-	USD 200
Industry participants	Rs. 6000/-	USD 300

Website: <https://icqtam2026.com/>



PRATHAM

Upcoming Events

ICQTAM-2026

The International Conference on **Quantum Technologies and Advanced Materials** (ICQTAM 2026) will be held on 10–11 December 2026 at Manipal University Jaipur, under the theme “**Quantum Horizons and Material Innovations: Building the Future of Technology.**” Jointly organized by the School of Physical and Biological Sciences, Manipal University Jaipur, and the Manipal Institute of Applied Physics, Manipal Academy of Higher Education, the conference aims to bring together researchers, scientists, academicians, and industry experts to discuss recent developments in quantum computing and communication, quantum sensing and metrology, quantum materials and devices, and advanced materials and their applications. For further details, visit the official conference website: **ICQTAM 2026**

Abstract submission is open!

Website: <https://icqtam2026.com/>

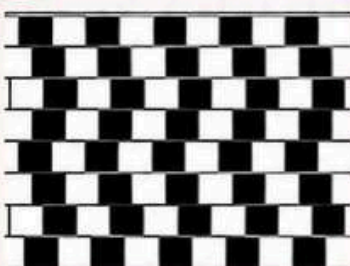
PRATHAM

The Mind Behind Illusions

Can You Fool Your Brain?

Amazing illusions and the science behind them!

1 The Café Wall Illusion



Try it!

Are the horizontal lines parallel or do they look slanted?



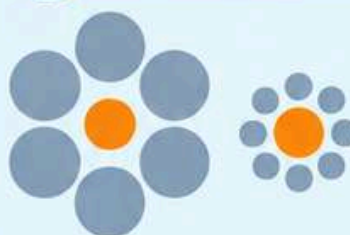
Answer:

The horizontal lines are perfectly parallel!

Why does this happen?

The strong contrast between black and white tiles and the offset pattern confuses our visual system, creating a false tilt even though the lines are straight and parallel.

2 The Ebbinghaus Illusion



Try it!

Which orange circle is larger?



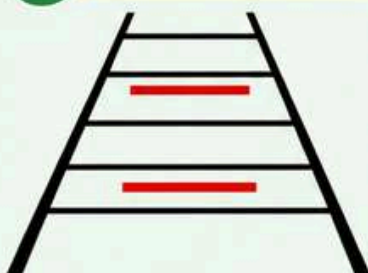
Answer:

Both orange circles are exactly the same size!

Why does this happen?

Our brain judges the size of an object based on its surroundings. The circle surrounded by larger circles appears smaller, while the same circle surrounded by smaller circles appears larger. This is a context effect in visual perception.

3 The Ponzo Illusion



Try it!

Which red line is longer – the upper one or the lower one?



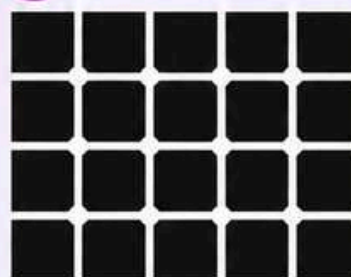
Answer:

Both red lines are actually the same length!

Why does this happen?

Our brain uses perspective cues to interpret the image as a 3D scene, like railway tracks receding into the distance. The upper line is perceived as being farther away, so we assume it must be longer, even though both lines are identical.

4 The Hermann Grid Illusion



Try it!

Do you see grey dots at the intersections? Count them!



Answer:

There are no grey dots! All the intersections are the same white colour.

Why does this happen?

Our brain uses a process called lateral inhibition, where the brightness of a region is influenced by its surroundings. The high contrast between the black squares and white lines causes the intersections to look grey, except the one you focus on.

What Does This Tell Us?

- Our brain does not just record what our eyes see.
- It uses past experience, context and assumptions to make the best guesses about the world.
- These shortcuts usually work well in real life, but in specially designed images, they can be tricked!
- Similar principles are used in art, design, architecture and even virtual reality.

Did You Know?

- Your brain processes visual information in just ~100 milliseconds.
- Optical illusions show that what we see is a "best guess" made by our brain.
- The same principles are used in art, movies, architecture and even user interface design.
- Studying illusions helps scientists understand how the brain works.