Physics Pulse

IIT (ISM) DHANBAD

VOL.III No.2 | FEBRUARY 28, 2026 | PHYSICS NEWSLETTER*

Physics in History

28 February is celebrated as **National Science Day** in India to commemorate the discovery of the Raman Effect by C. V. Raman in 1928, for which he received the 1930 Nobel Prize in Physics. It began with a simple question during a sea voyage in 1921, when he questioned why the Mediterranean Sea appeared blue. Using a Nicol prism, he showed the light was too polarized to be a mere sky reflection, suggesting molecular scattering. Inspired by Compton's work on inelastic X-ray scattering, Raman and his student K. S. Krishnan experimentally confirmed that light can exchange energy with molecules. This Raman Effect provided strong support for quantum theory and laid the foundation of Raman spectroscopy, now widely used in condensed-matter physics, chemistry, materials science, biology, and medical diagnostics.

His discovery not only brought global recognition to Indian science but also continues to inspire generations of researchers to explore the fundamental nature of light and matter.

Sir C. V. Raman (1920s). Image courtesy of Wikipedia.

AI Meets Theoretical Physics

In February 2026, researchers reported that an advanced ChatGPT-class AI system helped in solving a problem in theoretical particle physics related to gluon scattering amplitudes **[1]**. The AI was used to suggest a possible mathematical formula and assist in organizing parts of the proof, which were later carefully checked and confirmed by the scientists. The work shows that AI can support theoretical physics by helping with difficult symbolic calculations and pattern recognition, while human researchers remain responsible for the final results. This development was discussed on OpenAI's official blog and also covered by the Harvard Gazette.

Interview with Prof. Tennyson

Prof. Jonathan Tennyson, Massey Professor at University College London, visited our department as a guest faculty member for the GIAN Course **Astronomical Spectroscopy**, held from October 27 to 31, 2025. We had a chance to interact with him. Read the interview on page 4. Read more »

What are your thoughts on this development?

"The physics of these highly degenerate scattering processes has been something I've been curious about since I first ran into them about fifteen years ago, so it is exciting to see the strikingly simple expressions in this paper.

It happens frequently in this part of physics that expressions for some physical observables, calculated using textbook methods, look terribly complicated, but turn out to be very simple. This is important because often simple formulas send us on a journey towards uncovering and understanding deep new structures, opening up new worlds of ideas where, amongst other things, the simplicity seen in the starting point is made obvious.

To me, "finding a simple formula" has always been fiddly, and also something that I have long felt might be automatable by computers. It looks like across a number of domains we are beginning to see this happen; the example in this paper seems especially well-suited to exploit the power of modern AI tools. I am looking forward to seeing this trend continue towards a general purpose "simple formula pattern recognition" tool in the near future."

—Nima Arkani-Hamed, Professor of Physics, Institute for Advanced Study, specializing in theoretical high-energy physics

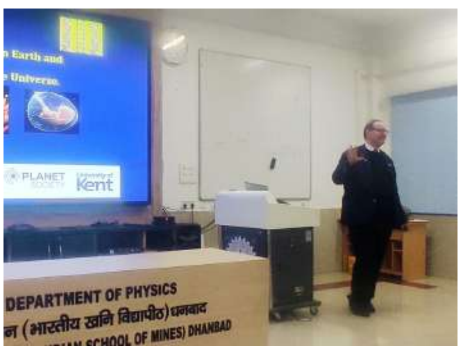
[1] Alfredo Guevara, Alexandru Lupsasca, David Skinner, Andrew Strominger, and Kevin Weil, *Single-minus gluon tree amplitudes are nonzero*, arXiv:2602.12176 [hep-th] (2026) .

*Send your feedback to: physicspulse@iitism.ac.in

Events Organized

Prof. Nigel Mason from the University of Kent, UK, visited the Department of Physics from 1-3 January, 2026, and delivered an invited talk titled **"Exploring the origins of life on Earth and the quest to find life across the Universe."**

In his lecture, Prof. Mason addressed one of the most profound questions in science: Are we alone in the universe? He discussed whether Earth is uniquely suited for life or whether life may exist elsewhere in the cosmos. Emphasizing the importance of understanding the origins of life (OoL) on Earth, he highlighted how investigating the physical and chemical conditions that enabled life to emerge provides crucial insights into the search for life on exoplanets. Prof. Mason further explained how ongoing research in origin-of-life studies across global research centers contributes to the development of strategies for detecting extraterrestrial life. The talk offered a comprehensive perspective on how terrestrial studies inform astronomical exploration and underscored the exciting possibility that the coming decades may witness transformative discoveries in our understanding of life in the universe.



The Department hosted a seminar by Dr. Nirman Chakraborty, Alexander von Humboldt Fellow at Technische Universität Darmstadt, on Friday, January 30, 2026, at 12:15 PM in Raman Hall. In his talk titled **"Perturbative Operando Spectroscopy to Probe Spin Exchange Mechanisms in Surface-Analyte Quasi-States for Energy Applications,"** Dr. Chakraborty discussed advanced spectroscopic techniques used to understand how molecules interact with catalytic surfaces in real time.

His presentation focused on helicity-resolved Raman spectroscopy and operando methods to study spin-spin coupling and surface hybridization processes relevant to pollution detection and renewable energy conversion. By probing reaction intermediates and surface defects, he demonstrated how these insights help clarify catalytic mechanisms and guide the design of more efficient energy materials and environmental sensors.

Physics News

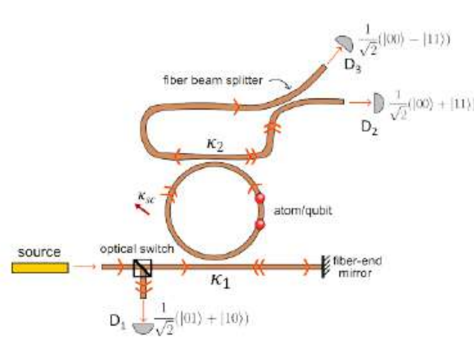
Breakthrough detection predicts a Neutron Star in the middle of the Milky Way

At the heart of the Milky Way, the Breakthrough Listen team found a potential candidate for a pulsar, rotating 122 times a second. A pulsar is a highly magnetized, rapidly rotating neutron star, usually a remnant of a supernova explosion of a massive star. The Breakthrough Listen team is a research group typically dedicated to searching for intelligent alien life "technosignatures".

Using the Green Bank Telescope between 2021 and 2023, the team identified a single pulsar candidate, dubbed the Breakthrough Listen Pulsar (BLPSR). While scanning, scientists were surprised by how few pulsars were found, especially when the center of the Milky Way was supposed to be filled with such remnants. This breakthrough reshapes our view of the galaxy we currently live in.

The Building Blocks of Quantum Internet laid!

A new protocol for near-perfect atom–photon entanglement, long a major goal in quantum research, has been introduced by Goswami, Chien, Jen and their colleagues at Academia Sinica. The revised method could help build strong quantum interconnects that link different quantum devices. Instead of using two photons, the team sends a single photon to interact twice with an atom inside an optical cavity. This controlled double interaction creates high-fidelity entanglement between the atom and the photon. Such a reliable atom–photon link is essential for quantum repeaters.



Photons can carry quantum information across long distances, while atoms serve as stable quantum memories. Together, they form the foundation for secure quantum communication and quantum internet infrastructure.

Awards and Recognitions

Dr. Moushila Bayen, working under the supervision of Prof. Pankaj Mishra presented and defended her thesis titled **"Statistical Mechanics of Structures and Phase Behaviour in Two-Dimensional Colloidal Systems."** Her research focused on understanding structural organization and phase transitions in confined colloidal systems using statistical mechanical approaches. Our warm congratulations to Dr. Bayen, along with our best wishes for her continued success ahead.

Dr. Meenu Pandey, working under the supervision of Prof. Bobby Antony, defended her thesis titled **"Theoretical Investigation of Electron-Molecule Interactions: From FEBID and PA-CVD Precursors to Bio-Relevant Systems."**. Her work explored electron-induced processes in molecular systems with applications ranging from nanofabrication precursors to biologically relevant molecules. We congratulate Dr. Pandey and wish her continued success in her future endeavors.

Dr. Soumya Bagchi (PI) and Dr. Timo Dickel (Co-PI), GSI Helmholtzzentrum, Germany, have been awarded a research project titled "*Exploring New Fission Isomers and Innovating Advanced Ion-Catcher Technologies*" under the Indo-German DST-DAAD Personnel Exchange Programme, with a sanctioned amount of INR 13,39,800. This project aims to improve the performance of the Cryogenic Ion Catcher facility at GSI. The Cryogenic Ion Catcher facility at GSI is a unique instrument to thermalize ions and to measure their masses with a Multi-Reflection Time of Flight Spectrometer. This project also focuses on exploring new fission isomers in the nuclear chart.

Dr. Soubhik Bhattacharyya joined as a Post Doctoral Fellow at the Department of Physics, IISc Bangalore, under the Mentorship of Dr Vibhor Singh on 19 Feb 2026.

Academic Visits

Prof. Manu Kurian recently participated in the topical workshop *"Exotic Quarkonia in Heavy-ion Collisions (EQHC 2025)"*, held at the campus of Johannes Gutenberg University Mainz from 02–06 February 2026. At the workshop, Prof. Kurian delivered a talk titled "Off-Equilibrium Effects on Quarkonia and Heavy Flavor in the QCD Medium." The event was hosted by the Mainz Institute for Theoretical Physics (MITP), a part of the PRISMA+ Cluster of Excellence. The visit offered a great opportunity for interaction between leading theorists and experimentalists in quarkonium and heavy-ion physics, resulting in meaningful discussions and creating opportunities for future collaborations. This travel was supported by Anusandhan National Research Foundation (ANRF) under the International Travel Support (ITS) Scheme. Dr. Kurian also visited RIKEN, the Institute of Physical and Chemical Research in Japan, where he participated in the Annual RIKEN meeting 2025. His travel and participation were sponsored by RIKEN, reflecting the institute's recognition of his outstanding contributions to collaborative international research.

He also visited and delivered an invited talk at the International Conference titled *"Emerging Frontiers in Theoretical and Experimental Physics"* held on February 20, 2026 at SAFI Institute of Advanced Study. His presentation contributed to discussions on recent developments at the interface of theoretical and experimental research, fostering academic exchange and collaboration among participants.

Dr. Tusharkanti Dey recently represented our department at prestigious academic forums. He attended the **Spintronics and Magnonics Symposium (SMS3-2026)** at IIT Hyderabad (January 21–24, 2026), delivering an invited talk titled "*Possible Spin Liquid Behavior in* $Ba_3MTa_2O_9$ *(M = Mn, Cu)*". Additionally, on January 5, 2026, he presented a seminar titled "*Unconventional Magnetism in the Triple Perovskite* $Ba_3MnTa_2O_9$" at the Department of Applied Physics and Materials Engineering, National Institute of Technology Patna.

Mr. Pritam Biswas, working under the supervision of Prof. T. K. Dey, visited Prof. Avinash V. Mahajan's laboratory at IIT Bombay to perform temperature-dependent magnetization and solid-state NMR measurements. The visit provided valuable hands-on experience and deeper exposure to advanced magnetic characterization techniques. Temperature-dependent magnetization measurements were carried out to investigate magnetic ordering phenomena, magnetic anisotropy, and field-induced effects, offering insight into the bulk magnetic response of the material. Solid-state NMR studies enabled probing of the local magnetic environment, spin dynamics, hyperfine interactions, and microscopic magnetic correlations. Analysis of the temperature dependence of the NMR shift, linewidth, and spin–lattice relaxation rates provided important information about low-energy spin excitations, magnetic phase transitions, and fluctuations in correlated magnetic systems.

Mr. Sudhanshu Arya, working under the supervision of Prof. Bobby Antony recently participated in the 1st International Online Conference on Atoms (IOCAT 2026), held online during 29–30 January 2026 and organized under the MDPI journal Atoms.

During the conference (Session: Atomic collisions–Theory and experiment), he delivered a Selected Speaker presentation titled ""Electron scattering from molecular targets using relativistic model-potential framework"". The work presents a relativistic electron–molecule scattering approach based on the Dirac partial-wave formalism and a spherical complex optical-model potential, enabling cross section calculations over a broad energy range relevant to electron-driven processes in technology, astrophysical environments, and radiation-damage studies.

Mr. Ashutosh Yadav, working under the supervision of Prof. Bobby Antony presented his poster titled "Theoretical Study of Electron Scattering from Magnesium Sulfide" at the 1st International Online Conference on Atoms, part of the International Online Conference on Atoms series, held on 29–30 January 2026.

Interview with Prof. Jonathan Tennyson

Professor Jonathan Tennyson is a distinguished theoretical physicist at University College London whose work has significantly shaped modern molecular physics and astrophysical spectroscopy. He is internationally renowned for his pioneering contributions to computational molecular science and for leading the ExoMol project, a landmark initiative that provides comprehensive molecular line lists essential for studying exoplanetary and stellar atmospheres. His research bridges fundamental quantum theory and observational astronomy, enabling scientists to decode the chemical fingerprints of distant worlds. He visited our department as a guest faculty member for the GIAN Course **Astronomical Spectroscopy**, held from October 27 to 31, 2025. Here we present a short interview with Prof. Tennyson, conducted by our newsletter team, led by Prashant Singh Lohiya, Sanchari Biswas, and Aminul Hussain.

Q: So, could you briefly explain what you work on and how it is impacting the environment and society?

Prof. Tennyson: So I do quantum mechanical calculations from first principles and the particular topic I was talking about here is a use for interpreting the spectra from space. So I'm doing laboratory astrophysics with particular emphasis on trying to understand what exoplanets are made of. When you get a signal from something like the James Webb telescope, we work on how you can interpret that in terms of the molecular composition of the planet. So we provide the necessary laboratory data for doing that. That's not my only research activity but at the moment it's my main one.

Q: For people who are not from this area, could you briefly explain what you do, in simple terms, so that they might get inspired to pursue it?

Prof. Tennyson: To quote Paul Dirac, a very famous British physicist: "Quantum mechanics provides the fundamental equations for all of chemistry and a large part of physics." He added that the only problem was that these equations were too difficult to solve. Now, the difference between Dirac's time—nearly 100 years ago—and now is that we have very powerful computers. So, what we do is develop computer algorithms to solve a wide variety of problems that are key to chemistry and physics using quantum mechanical methods. For example, I've worked on how much light a single molecule of CO absorbs. This is extremely important for the Earth's atmosphere. We were able to compute this more accurately than people could measure it, and our data are now used in climate change models to calculate radiative transport. We also make predictions about processes in plasmas, such as those used in making computer chips. The gases traditionally used in plasma processing, like SF, are serious greenhouse gases - SF is actually the worst known global warming gas. So, there's a search for alternatives. Using quantum mechanical calculations, we can quickly eliminate unsuitable candidates and identify promising ones before experimental testing. Another area is astronomy. When interpreting telescope or spacecraft data, you need accurate molecular data. That's what our group has calculated extensively in the ExoMol project, which was aimed at exoplanet atmospheres but is now used widely in many areas - astronomy, laser design, dark matter searches, combustion modelling, and plasma processes. The way molecules absorb and emit light is fundamental. It doesn't change whether it's happening in a star, an exoplanet, or a fire on Earth. Once you have that fundamental data, it can be applied anywhere.

Q: And currently you are based in the University College of London and a fellow of Royal Society also. So could you tell us what were some turning points that led you to where you are today?

Prof. Tennyson: Yeah, there's several. Firstly, I actually studied chemistry at university, both bachelors and PhD and I did a very successful post-doc in the Netherlands in a chemistry department. I worked quite a lot there with physicists. The experimentalists interestingly were in the physics department, the theorists were in chemistry. Then I got a job at a government research lab and they didn't have physics and chemistry, they just had a theory group. So I joined the theory group and it had cadets from both physics and chemistry. They had a lot of quantum chemists in, had nuclear physicists in, so it was quite broad. It had people doing electron collisions, which was what I was doing there, and photo ionisation. So it was just a physical science theory group. And then I started looking for academic jobs and I applied for a lot of jobs in chemistry departments and only one in the physics department and that was the one I got, so I became a physicist. And a big turning point for me in terms of scientific development was at UCL. We did calculations on the very simple triatomic molecule H3+, only two electrons, so you can do very good electronic structure calculations on it. And we made predictions for what the spectrum should be like and that prediction turned out to be useful for an assignment of a spectrum in Jupiter where we get very nice assignments. Only after that was the spectrum identified in the laboratory, basically on the basis of our calculations. And that was a real turning point in terms of my ability to make useful contributions to astrophysics. And then after my post-doc, a chemist by background, became professor of astronomy. I never looked at another molecule except H3+, and had a very successful career just doing that.

Q: So, talking about your contributions, you have done some astounding work in your ExoMol project, which is renowned for producing molecular lines for planetary motions and astronomical applications. So what led to this project and what were the specific requirements for this project and how has its impact in your community of astronomy and everything else grown in time?

Prof. Tennyson: So, I spent a period between when we found H3+, and starting ExoMol, computing very large lists of molecular transitions, molecular line lists, which were important for cool stars. And whereas the cool star people used the line lists, no one was that interested, to be honest. And then exoplanets came along. And I discovered very early that actually these line lists were important for exoplanets. So indeed I collaborated on the first ever detection of a molecule in an exoplanet because it used our line list. And so I decided this was a very interesting new topic and I should change directions and look at exoplanets. And what I'd struggled to do on the stellar stuff was with a big enough group of people to really solve the problem properly. So one line list when you've got 20 molecules doesn't really solve the problem. You need 20 line lists. With exoplanets, there was quite clearly a lot of interest in the community that they wanted this data. So I thought the thing was then to actually put together a big grant which the European Research Council would fund and they give you 2.5 million euros over 5 years so you can employ a lot of people doing this. And I was lucky enough I was successful with a European Research Council grant that allowed me to resign as head of department. I'd been head of department for the previous 7 years which is not the greatest research decision because you spend a lot of time being an administrator. So I resigned as head of department and went back to full time research doing this. And my pitch at that point was I was the only person in Europe who could do this. And I think the ERC accepted that pitch. So I put together a team including hiring somebody who is now a professor at UCL, Sergei Yachenko to help me run the project and we were able to systematically set around doing the database. And then somewhat to my surprise, the ERC gave me a second grant 5 years ago. I'd just finished making the line lists with very high accuracy because there was a new technique available for looking at exoplanet spectra which required high accuracy. Now essentially, I don't know how many exoplanet models there are in the world, 10 to 20 of them are different modelling programmes, they all use our data. The interpretation of James Webb telescope which as you probably know is a 10 to 12 billion dollar telescope, all of them used for the exoplanet work they all use our data. I mean we've completely become the market lead in this area. And we get very regular requests for more line lists, more data. So the thing that's happened in the 12 years out of 13 years I've been running the project is the number of line lists. People want us to do something which we still haven't done yet has not gone down. So we just need more and more people.

Q: Congratulations on that, it's a huge success. Were you always interested in academia or was there something else you did want to try ?

Prof. Tennyson: Yeah, I mean you talked about turning points in my life and I suppose I didn't go back to the very first one which is I went off to Cambridge to study chemistry and the first term we had organic reaction mechanisms which to me didn't seem to have any intellectual rigour to them and synthetic organic chemistry in the lab which turned out to be very bad at. So it was rather depressing to get a pile of brown goo at the bottom of your test tube and burn your fingers when the person next door to you has got a nice set of white fluffy crystals. So I went home after the first term not feeling at all happy with my choice and then we came back and we had quantum mechanics and we were told this was a theory of everything and you just had to solve the equations and you get all the answers and I thought well, if I did that I didn't have to burn my fingers again. That was a complete epiphany and I decided that what I wanted to do was solve quantum mechanics problems for real systems that people are interested in. Essentially that's what I've done in the intervening decades.

Q: Sir, I am guessing that you have been here for almost 30 years, in academia, am I right?

Prof. Tennyson: More than that. So I've been at UCL for 40 years. I should add that unlike India, the UK does not have compulsory retirement. So I spoke to my head of department about whether I should retire and he told me very firmly I was too young to retire. So I carried on working. So in fact I got the second ERC grant when I was 65. The ERC also doesn't mind. They don't ask your age. It's very nice for me.

Q: So you are also the founder of Quantemol Ltd. and Blue Skies Space Ltd. How do you view the relationship between academic research and technological innovation?

Prof. Tennyson: I'm very much someone who wants to do research because it has an impact. Writing a paper that no one reads seems to me a pointless activity. So I want to get results that are going to be meaningful for someone and useful for someone, and if that impact is industrial, that's good news. If it can help you make things more efficiently, make things better, improve the world in some way, and industry is a method of doing that. I have to say it was never in my life plan to start founding companies. 21 years ago, I was sitting in my office one day without a thought that I was going to start a company and I got a knock on my door from a gentleman called Dan Brown (Dr. Daniel Brown). He's not Dan Brown, whom any of you have ever heard of; he didn't write The Da Vinci Code. He had the marvellous title of Entrepreneur in Residence in our Computer Science Department and he is a company starter and two hours later we had agreed to found a company which became Quantemol. We had an electron collision software, the UK molecular R-matrix Code(UKRmol+). UKRmol+ which I was a major contributor of, but it was written by a whole lot of other people. This code was and is freeware but it's incredibly difficult to use. What we did was write an expert system to run the code and this allowed people to actually get results very efficiently. You didn't have to be a PhD in electron scattering to get the results and so the productivity of the code has increased hugely because I've gone with my own PhD students. Before this, no student ever did more than one molecule because it took so long just to get good results for a molecule. You don't spend your time analysing that. I've had students who have done 20 molecules using this code as a part of their PhD. So it's completely changed what you can do. So that was the finding of Quantemol. We have plasma physics software, we have a database, we do consultancy, we have a new version of this electron collision code which I wrote with a post doc which was actually written at UCL again so it's been very successful and Quantumol itself is doing extremely well.

Q: You have done some amazing work. If you could tell us if there are any opportunities that Indian students could apply at UCL and somewhere in the UK, special programmes that your university offers, and also if you had Indian PhD students or collaborations in India? **Prof. Tennyson:** Our university actually has a target of collaborations with India. At the moment we have many collaborations with China, and I think they want to diversify. They have specific collaborations with IIT Delhi. I have to hire British students and a few foreign students, but that's very limited. I've never had an Indian PhD student, though I have had Indian postdocs. One of the effects of leaving the European Union is that it's now easier to hire non-European postdocs. Earlier, if you were hiring someone who wasn't British, you had to show that you couldn't hire anyone in Europe, which made things harder. I've had Indian postdocs, and there are some collaboration agreements with India. So far, I've never managed to get funded on any of them, though a long time ago I did get some support from the British Council. There's a distinct possibility that these collaborations will increase. You may know that our Prime Minister and a large team, including the Provost of UCL, recently visited the Indian government, and many promises were made. One of the major topics of discussion was increasing access to UK higher education and research collaborations. I hope that happens - it would benefit both sides. I've had a number of very good collaborations with Indian scientists, mostly informal, and I've always enjoyed them.

Q: Finally, in your 40 years of experience, you must have faced many ups and downs, frustrations, and stress. Could you give some advice to young researchers on how to deal with these challenges and stay motivated?

Prof. Tennyson: Sometimes, when you do a calculation and it doesn't work, you have to accept that maybe the idea itself isn't practical - it might be too computationally expensive, or you may have missed something important. You have to be flexible. You also have to realise that nothing is perfect - both experiments and theories have uncertainties. I get quite annoyed when I see theoretical papers comparing their results to experimental points without showing the uncertainty range. What matters is whether you agree within the uncertainty, not just at one point. One of the joys of being a university professor is that you can learn from your students. In my 60s, I started working on machine learning and quantum computing, which are completely new fields for me. My students come with the technical knowledge, and I bring the understanding of the scientific problems - together we make progress. If you come back in another 40 years, I think science will be done very differently. I've witnessed Moore's Law - computers becoming faster and faster - but now that's slowing down. Instead, computers are getting bigger. So, the way we approach problems will keep evolving. The key is to stay optimistic and adaptable. A good academic knows how to choose the right problems - interesting, but solvable. That's a skill you learn with experience. Most PhD students don't have that yet, and that's okay. it's part of growing as a scientist. Don't be afraid to enter new fields and learn new things. When I joined UCL, I knew nothing about astronomy, but I learned from the astronomers in my group. Science thrives when you keep learning.

Research Publications

1. A. Anand, **Aditya Singh**, S. N Gashti and B. Pourhassan , Thermodynamic signatures of non-Abelian dilaton black holes, Physics of the Dark Universe.

2. S. N Gashti, A. Anand, **Aditya Singh**, A. Mishra, M. A. S. Afshar, M. R. Alipour, B. Pourhassan, and J. Sadeghi, Thermodynamic signatures and insights into Hořava–Lifshitz AdS black holes, International Journal of Geometric Methods in Modern Physics.

3. **Prashant Singh Lohiya, S. K. Sharma**, Bifunctional Optoelectronic Applications of Pristine $CsCuCl_3$ Perovskite: A Combined Experimental and Numerical Study, ACS Applied Engineering Materials.

4. **Mohd Qaisar Hayat, S. K. Sharma**, Structural insights and optical performance of lead-free $Cs_2CuBiCl_6$ double perovskite for potential in light-emitting applications, Journal of Alloys and Compounds.

5. **Pratyay Mukherjee, Ritwik Mondal**, Ultrafast switching of antiferromagnetic order by field-derivative torque, Physical Review B.

6. Mayank Singh, **Manu Kurian**, B. Schenke, S. Jeon and C. Gale, Charm quark evolution in the early stages of heavy-ion collisions, Physical Review C.

7. **Salam Jimkeli Singh**, L. Walling, P. Chinnamuthu, **Asit Kumar Kar**, Glancing angle deposition of TiO_2 vertical nanopillars on poly(3,4-ethylenedioxythiophene): poly(styrenesulfonate) with enhanced optical and charge transfer characteristics, Thin Solid Films.

8. **Sridhar Sahu, Smruti Ranjan Parida**, Adsorption of H2, CH4, and their mixture on Na-decorated [1, 1]Paracyclophane: An atomistic approach International Journal of Hydrogen Energy

Physics Job Opportunities (February 2026)

1. Systems Engineer – Semiconductor Fab Equipment
Applied Materials | Bengaluru, Karnataka: Seeking a Master's/PhD in Electrical Engineering, Mechatronics, or Engineering Physics with 8+ years of multidisciplinary R&D experience. Strong background in electro-optics, control systems, and signal/image processing (Python/Matlab) required. % international travel annually.
Application link:

2. Materials Failure Analysis Engineer
Apple | Bengaluru, Karnataka: Self-driven engineer required to perform hands-on root cause analysis and advanced materials characterization using SEM, FIB, EBSD, and related techniques. Responsibilities include developing improved methodologies, technical reporting, and collaboration with cross-functional teams.
Application link:

3. Process Engineer – Process Simulation & Modeling
Applied Materials | India: Role focused on semiconductor and OLED manufacturing process optimization. Involves developing analytical and geometric models for vacuum evaporation, thin-film optics, and device characteristics. Strong physics fundamentals, modeling expertise, and basic programming skills (MATLAB/Python/VBA) required.
Application link:

Conference Announcement

1. Department of Physics, IIT (ISM) Dhanbad will organize the **Symposium on Particle–Gamma Coincidence Techniques in Nuclear Science (SPaGCoNS 2026)** from **13–15 July 2026**. The symposium aims to provide a focused platform for scientists and young researchers to exchange ideas on recent advances in particle–gamma coincidence techniques, discuss the development of advanced experimental setups, and foster collaboration across national laboratories, universities, and research institutes. The event will feature invited plenary talks, oral presentations, and poster sessions. Abstract submission and registration are now open. Further details are available on the symposium website: SPaGCoNS 2026 Website. The symposium is being convened by Prof. Soumya Bagchi, with Prof. Amitava Adak serving as the Co-Convenor, Department of Physics, IIT (ISM) Dhanbad.

2. Department of Physics, IIT (ISM) Dhanbad will host the **National Symposium on Intense Laser Matter Interactions 2026 (ILMI 2026)** during **August 6–8, 2026**. The symposium will bring together researchers working in high to ultrahigh intense laser science, laser-driven plasma applications, theoretical and computational plasma physics, ultrafast magnetization dynamics, HHG and THz science, as well as pulsed laser ablation and processing techniques.

Abstract submission and registration details are available on the official website: ILMI 2026 Website. Participants are encouraged to follow the website regularly for updates and important deadlines. The symposium is being convened by Prof. Amitava Adak, with Prof. Ritwik Mondal serving as the Co-Convenor, Department of Physics, IIT (ISM) Dhanbad.