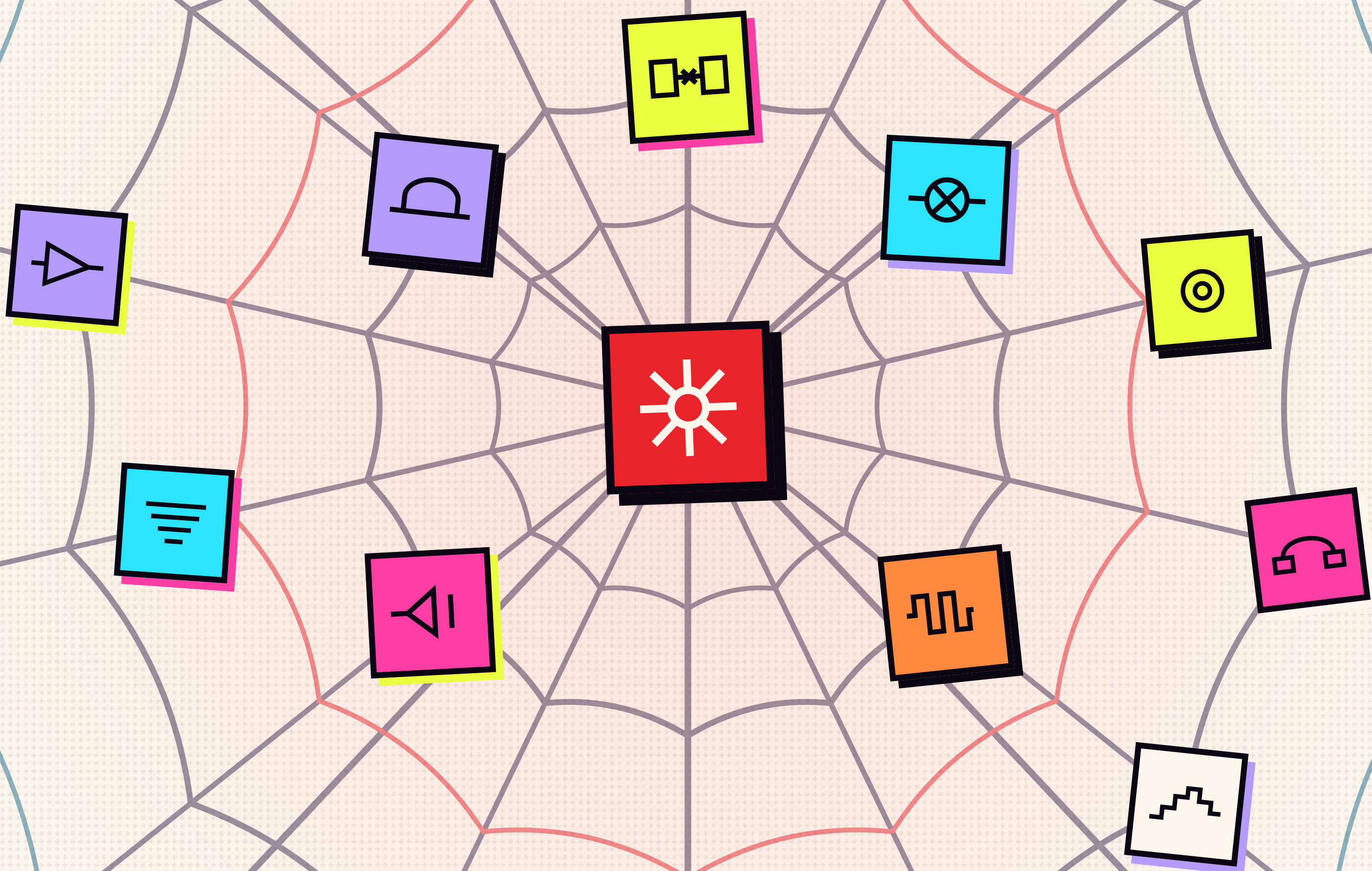
DEPT. OF PHYSICS · IIT (ISM) DHANBAD

VOL. III · NO. 7 · JULY 2026

PHYSICS PULSE

the quantum web issue



SUPERCONDUCTING CIRCUITS

CAUGHT IN THE *Quantum Web*

Thirteen instruments hold a qubit still: junction, resonator, mixer, circulator, amplifier — strung across a lattice cold enough to hear a single microwave photon land.

CONFERENCE · HOSTED HERE

SPAGCONS 2026 COMES TO PENMAN AUDITORIUM

Three days of particle–gamma coincidence physics, convened by the department: 187 participants, 43 invited delegates, and labs from Warsaw to San Francisco.

13–15 JULY

PAGE 05

PHYSICS PULSE

DEPARTMENT OF PHYSICS · IIT (ISM) DHANBAD · VOL. III · NO. 7 · JULY 2026

in this issue

FROM THE EDITORS

Welcome to the July edition of Physics Pulse. Our comment this month argues that India's deep-tech moment is now, and that quantum technology is where the argument is easiest to test: three years of the National Quantum Mission have produced real machines, and an equally real list of hardware the country still imports. In the news pages, a long-predicted topological crystal is finally grown and a spinning black hole is imitated by circuits that never move. We also mark three July dates — the Higgs, Trinity and Pluto — and report a busy month at home, including SPaGCoNS 2026 hosted by the department. We hope you enjoy reading.

PHYSICS NEWS

CONDENSED MATTER

FINLAND GROWS A QUANTUM MATERIAL PREDICTED A DECADE AGO

NATURE COMMUNICATIONS · 11 JULY 2026

Physicists at the University of Jyväskylä and Aalto University have built the first convincing example of a **two-dimensional topological crystalline insulator** — a phase of matter proposed by theorists more than ten years ago but never cleanly realised in the laboratory.

The material is an atomically thin, two-layer film of tin telluride (SnTe) grown on a niobium diselenide substrate. Its interior behaves as an ordinary insulator, while its one-dimensional boundary carries conducting states that are protected not by magnetism but by the symmetry of the crystal lattice itself.

Two numbers make the result attractive for devices. The measured band gap exceeds 0.2 electron volts — large enough that the topological behaviour should survive at room temperature — and the edge states can be tuned by strain, which the team found is essential for stabilising the phase in the first place.

The work was led by Associate Prof. Kezilbeiek Shawulienu with Profs. Peter Liljeroth and Jose Lado, and points towards strain-tunable platforms for spin-based electronics and nanoscale quantum devices.

READ MORE: NATURE COMMUNICATIONS · DOI 10.1038/S41467-025-67520-Y

WAVES & GRAVITY

A BLACK HOLE'S ENERGY, EXTRACTED ON A BENCH-TOP

NATURE · 12 JULY 2026

A team at the CUNY Advanced Science Research Center, led by Andrea Alù with Hadiseh Nasari and Hady Moussa, has reproduced **Penrose–Zel'dovich superradiance** — the theoretical siphoning of energy from a spinning black hole — in a device with no moving parts at all.

Instead of rotating anything, the group built a ring of electronic resonators and modulated their properties in a rapid, carefully synchronised sequence, so that waves in the ring experience a synthetic rotation. Waves entering with the right handedness came out amplified, having drawn energy from the medium exactly as the astrophysical picture predicts.

Beyond the analogue-gravity appeal, engineered rotation of this kind offers a new handle on wave amplification for photonics, wireless communication and quantum technologies.

READ MORE: NATURE · DOI 10.1038/S41586-026-10725-Y

OPTICS

A 200-YEAR-OLD SHADOW MAKES KNOTS OF LIGHT

OPTICA · 13 JULY 2026

In 1818 Siméon Poisson objected that Fresnel's wave theory implied something absurd: a bright spot at the very centre of a circular object's shadow. The spot was promptly observed, and the wave theory of light won the argument.

A group at NTU Singapore, led by Asst. Prof. Shen Yijie, has now put that same bright spot to work. Shining a laser on a small circular disc, they found the light in the Poisson spot organises itself into **optical skyrmions** — swirling, knot-like textures of the electromagnetic field — producing four related topological patterns at once within a single spot.

Such textures normally demand expensive metamaterials. Obtaining them from a disc and a laser puts topological optics, and its promise for dense data storage and photonic computing, within reach of far more laboratories.

READ MORE: OPTICA 13(6), 1184 (2026)

DEPARTMENT NEWS

KEYNOTE · ICRETBS 2026

PROF. R. B. CHOUDHARY ON CRITICAL MINERALS FOR ENERGY SECURITY

25-27 JULY 2026 · MIT MUZAFFARPUR

Prof. Ram Bilash Choudhary delivered a keynote address on *“Critical Minerals and Functional Materials for Energy and Environment Security”* at the **International Conference on Renewable Energy Technology and Bio-Sustainability (ICRETBS-2026)**, held at Muzaffarpur Institute of Technology from 25 to 27 July 2026.

FELICITATION BY THE DIRECTOR, MIT MUZAFFARPUR · ICRETBS 2026

The Director of MIT Muzaffarpur felicitated all keynote speakers at the international forum, which brought together researchers working across renewable energy technologies and bio-sustainability.

THE TALK

CRITICAL MINERALS AND FUNCTIONAL MATERIALS FOR ENERGY AND ENVIRONMENT SECURITY

INVITED KEYNOTE

PROF. SAMAPIKA MALLIK ON SCIENTIFIC APTITUDE FOR VIKSIT BHARAT 2047

13-15 JULY 2026 · CSIR-CIMFR, DIGWADIH

Prof. Samapika Mallik delivered the keynote address at the three-day Skill Development Programme on “Development of Scientific Aptitude for Viksit Bharat”, held at CSIR–CIMFR under the theme “Building Future-Ready Researchers for an Innovation-Driven Bharat.”

Speaking on *Scientific Aptitude and the Vision of Viksit Bharat 2047*, she argued for curiosity, critical thinking and innovation as the working habits by which research answers national problems rather than merely describing them.

APPOINTMENT

PROF. UMAKANTA TRIPATHY JOINS AN EDITORIAL BOARD

Prof. Umakanta Tripathy has been selected as an Editorial Board Member of the journal *Scientific Reviews*. The department congratulates him.

SPAGCONS 2026 BRINGS NUCLEAR PHYSICS TO PENMAN AUDITORIUM

13–15 JULY 2026 · IIT (ISM) DHANBAD

DELEGATES AND SPEAKERS, SPAGCONS 2026 · PENMAN AUDITORIUM, IIT (ISM) DHANBAD

The Department of Physics hosted the **Symposium on Particle–Gamma Coincidence Techniques in Nuclear Science (SPaGCoNS 2026)** from 13 to 15 July at Penman Auditorium, convened by **Prof. Soumya Bagchi** with **Prof. Amitava Adak** as co-convenor, and guided by an advisory committee drawn from VECC Kolkata, BARC and TIFR Mumbai, SINP Kolkata, IUAC New Delhi, the UGC-DAE Consortium, the University of Delhi, IIT Ropar and IIT (BHU).

The meeting drew **Prof. Ashok Kumar Jain** (formerly of IIT Roorkee) as chief guest. Alongside the national laboratories, the delegate list ran to the Heavy Ion Laboratory at the University of Warsaw, ELI-NP Bucharest and the University of California, San Francisco.

187
REGISTERED PARTICIPANTS

43
INVITED DELEGATES

Sessions covered nuclear structure, reactions and reaction mechanisms, nuclear astrophysics, radioactive ion beams and exotic nuclei, and instrumentation — the last being the thread that ran through the discussion of what it would take to build state-of-the-art nuclear-physics facilities in India, a question the comment on pages 06–08 takes up in another field.

The organisers thank the sponsors and partners: ANRF, BRNS–Department of Atomic Energy, CAENspa India Pvt. Ltd., Revine Technologies Pvt. Ltd., ORTEC/AMETEK and Shree Venkatesh Enterprises — and all the speakers and delegates whose participation made the meeting an enriching one.

INDIA NEEDS DEEP TECH. THE WINDOW IS *Now*.

BY DR. SUMIT KUMAR

THE QUANTUM HARDWARE LEDGER

In April this year the National Quantum Mission announced two things in the same week. The first was a milestone: a **1,000-kilometre quantum-secured link** built from indigenous technology, chained through trusted nodes at roughly 200 km a hop — comfortably ahead of the schedule that set 2,000 km as an eight-year goal. The second was a list: nine more deep-tech startups funded, taking the mission's cohort to seventeen, working on quantum biosensors, photon detection, atomic memory and positioning systems.

Something is being built. The question worth asking in a physics department is what, exactly, and what is still missing.

The arithmetic first. The mission was approved in April 2023 with ₹6,003 crore — about $735 million — spread over eight years, seed money intended to kickstart a deep-tech startup ecosystem and build research capacity rather than to bankroll an industry outright. It became operational in late 2024 with four thematic hubs: computing at IISc Bengaluru, communication at IIT Madras with C-DOT, sensing and metrology at IIT Bombay, materials and devices at IIT Delhi.

Roughly 152 researchers across 43 institutions now work inside it. In three years that money has produced India's first full-stack superconducting machines from QpiAI — the 25-qubit *Indus* in 2025, the 64-qubit *Kaveri* after it — twenty-five calcium ions trapped at IISER Pune with a 20-qubit system promised by the end of this year, a six-qubit photonic demonstration at IISc, and the country's first quantum diamond microscope at IIT Bombay. For the money, that is a great deal of physics.

> **A COUNTRY CANNOT BUY A TECHNOLOGICAL BASE WITH A ROUNDING ERROR.**

And in three years the mission has moved from being a line in a budget to a set of machines that exist, in rooms, in India. That is not nothing. The argument that follows is about scale, not about whether the work is real.

INDIA NEEDS DEEP TECH — THE ARITHMETIC

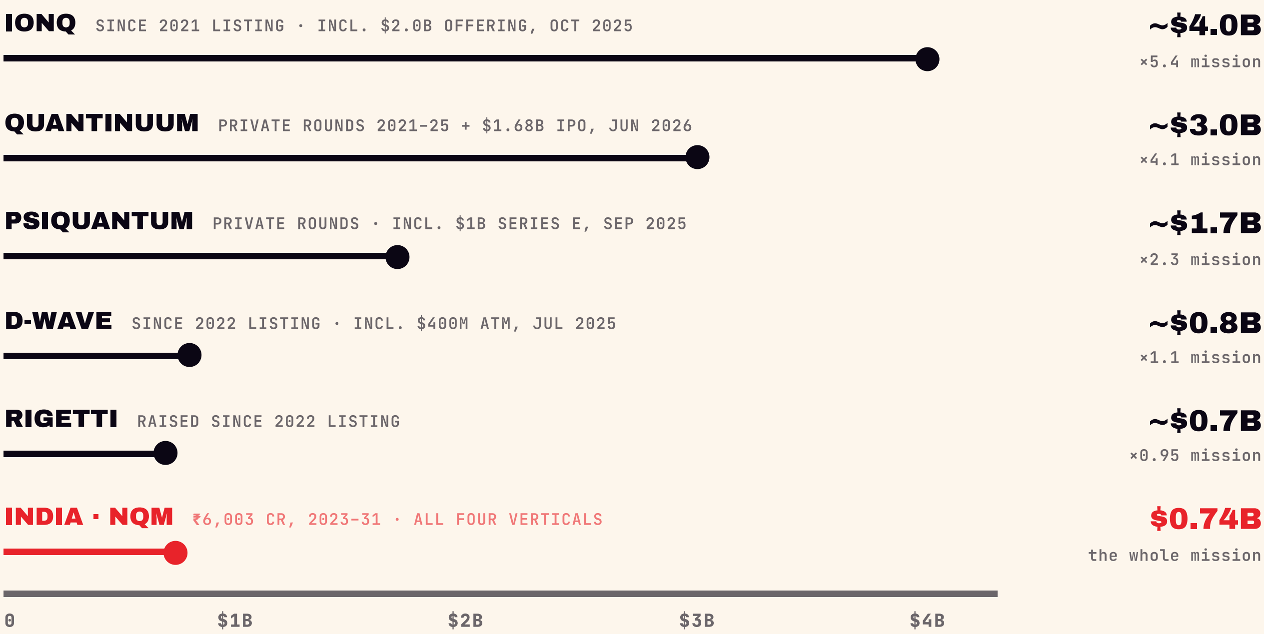
The fairest way to measure the mission is not against what companies are said to be worth, but against what they actually have to spend. By that yardstick the gap is starker. **IonQ** has raised about $4 billion since it listed — a single offering in October 2025 brought in $2 billion, nearly three times the mission's entire eight-year budget. **Quantinuum**'s June IPO alone collected $1.68 billion; **PsiQuantum**'s one Series E round matched the mission twice over. Only **Rigetti**, at roughly $700 million, has raised slightly less than India has committed.

But read the ledger carefully: almost none of that money is government money. It is private capital — IPOs, venture rounds, public offerings — raised by companies that took publicly funded science and sold investors a business built on it. Washington and Beijing did not write those cheques; markets did. Seen that way, the mission's ₹6,003 crore is doing the job seed money is meant to do — seventeen startups funded, machines built, a supply chain begun — and the real gap is the rupee's next step: the Indian investor, incubator and market that turn a funded laboratory into a funded company. That is not an argument against the mission; it is the half of the race that no mission can run alone.

THE ARITHMETIC, DRAWN

WHAT THEY RAISED VS WHAT INDIA BUDGETED

CAPITAL RAISED, US$ BN, CUMULATIVE & APPROXIMATE — CASH IN HAND, A FAIRER YARDSTICK THAN VALUATION. EVERY COMPANY HERE BUILDS COMPUTING ALONE; THE MISSION'S ONE BUDGET ALSO FUNDS COMMUNICATION, SENSING & METROLOGY, MATERIALS & DEVICES.



SOURCES: QUANTUM ZEITGEIST, CAPITAL-MARKETS TIMELINE OF QUANTUM COMPUTING (2026) · BLOOMBERG / STOCKTITAN, QUANTINUUM $1.68B IPO (JUN 2026) · PSIQUANTUM PRESS, $1B SERIES E (SEP 2025) · BUSINESSWIRE, D-WAVE $400M ATM (JUL 2025) · DST / PIB, NQM ₹6,003 CR ≈ $735M (APR 2023)

INDIA NEEDS DEEP TECH — WHAT IS MISSING

So the window. Global supply chains for advanced instrumentation are tightening, not loosening, and the practical effect is already visible in Indian laboratories. Components bought routinely for thirty years now arrive with detailed end-use justifications. As one founder told *Swarajya* in July, “Right from vapour cells to these precision lasers to frequency combs — everything is under export control.” Another put the fear plainly: “That day is not far when they’ll say, no, we cannot sell lasers to India.” A technology you cannot fabricate is a technology you rent, and rented technology can be repriced or withdrawn.

What, concretely, does India still need to build? Frequency combs — made by three or four firms on earth, none of them here. Titanium-sapphire and precision diode lasers, imported from the United States, Germany and Japan, along with the laser chips beneath them, because there is no domestic compound-semiconductor line worth the name. Dilution refrigerators: the Amaravati Quantum Valley facility, assembled in an impressive eight months, still needed about 30% imported parts. Vapour cells and single-photon detectors. And above all, fabrication: India can pattern devices of two or three qubits, not a hundred.

Quantum fabs for IISc Bengaluru and IIT Bombay were announced in November 2025 at some $80 million; they are not yet running. Cryogenic cables and precision power supplies, at least, now have Indian suppliers in Dimira and QUTE Electronics — proof that the gaps are closable when someone is paid to close them.

The harder shortage is people. India has, by one count, a few dozen researchers with real quantum error-correction expertise against a world pool of eighteen hundred to two thousand; that capability takes about a decade to grow and cannot be imported in a budget cycle. We award close to nineteen thousand science doctorates a year and then watch a large share of the best-trained leave, because a postdoctoral position abroad still pays better and equips better than a faculty position at home.

Some of what is not happening is structural rather than financial. Coordination between the four hubs is thin. Some faculty remain reluctant to transfer technology to private partners. Theory and experiment groups have only begun to collaborate seriously on error correction. The ₹1 lakh crore Research, Development and Innovation fund had, by 23 July 2026, seen 22 projects approved with ₹2,192 crore of proposed support. That is a start, not a torrent.

None of this argues for pessimism. It argues for a division of labour, and a physics department is unusually well placed to take up its share. The list above is not a lament — it is a research agenda, and most of it is our subject: ultra-high vacuum, cryogenics, precision optics, thin-film growth, single-photon detection, magnetometry, metrology, materials characterisation.

IF VIKSIT BHARAT 2047 IS TO MEAN ANYTHING TECHNICALLY, IT WILL BE DECIDED BY WHETHER, TWENTY YEARS FROM NOW, THE INSTRUMENTS IN AN INDIAN LABORATORY WERE DESIGNED HERE.

A PHYSICS PULSE COMMENT. SOURCES: BUSINESS TODAY (9 APRIL 2026); SWARAJYA (JULY 2026); ECONOMIC SURVEY 2025-26; ECONOMIC AND POLITICAL WEEKLY (2026); POLICY CIRCLE (JULY 2026); DST / NATIONAL QUANTUM MISSION; QUANTUM ZEITGEIST (2026).

INTERACTIVE SESSION & DEPARTMENT SEMINAR

A (BRIEF) JOURNEY THROUGH SEMICONDUCTOR FABRICATION

DR. PABITRA DAS · R&D ENGINEER, X-FAB, FRANCE

IN CONVERSATION WITH DIVAGAR, SANCHARI & SUDESHNA

DR. PABITRA DAS WITH FACULTY AND RESEARCH SCHOLARS AFTER THE SEMINAR · DEPARTMENT OF PHYSICS, IIT (ISM) DHANBAD

ABOUT THE SPEAKER

Dr. Das completed his Ph.D. at the Saha Institute of Nuclear Physics, Kolkata, in 2014, followed by postdoctoral research at the Laboratoire de Physique des Solides (CNRS, Université Paris-Sud) until 2018. Since then he has been an R&D Engineer at X-FAB France, working on optical proximity correction and process development for analog and mixed-signal technologies. His research spanned nano-optics, plasmonics and electron spectromicroscopy.

DIVAGAR

COULD YOU GIVE A BRIEF INTRODUCTION ABOUT YOURSELF?

Dr. Pabitra Das: My journey started far from the world of semiconductor foundries. I was born and raised in a remote village in the Jhargram district of West Bengal, near the Jharkhand border. I did my undergraduate degree in Physics at Ramakrishna Mission Vidyamandir, Belur Math, then a master's in Solid State Physics at Calcutta University.

My career has been shaped by situations more than by grand designs. During my master's I tutored undergraduates and discovered I loved breaking down complex ideas — which led to a secure government job as a high-school teacher in Kolkata by the time I was 23. Comfort quickly turned into restlessness: I couldn't teach the same syllabus for the next 37 years. I resigned and joined the Saha Institute of Nuclear Physics for a Ph.D. in experimental nanoscience.

My Ph.D. was a test of endurance. I spent the first three and a half years waiting for an electron microscope to be installed, watching peers publish while I couldn't begin lab work. Those years taught me patience. Eventually I focused on the optical properties of single metallic nanoparticles, which led to a postdoctoral fellowship at Université Paris-Sud in 2014.

As my short-term postdoc contract was ending, I faced unemployment and struggled to find academic positions in India. But during a side project in France I had picked up electron-beam lithography. One afternoon, while casually eating a dosa in Paris, a recruiter messaged me on LinkedIn because they had spotted that exact skill on my profile.

> "THAT SINGLE MESSAGE COMPLETELY PIVOTED MY TRAJECTORY."

I interviewed and was hired as an R&D engineer at X-FAB. The great irony is that I never liked electronics during my academic years, yet today I work in the semiconductor industry, doing optics simulations to help manufacture chips used globally in cars, phones and medical devices.

DIVAGAR

WHAT DOES A TYPICAL DAY LOOK LIKE AS AN R&D ENGINEER AT X-FAB?

Dr. Pabitra Das: Engineers are problem solvers, and my routine reflects that. My work splits in two. First, R&D projects on technologies still under development — innovations you will probably see hitting the market five to ten years from now.

The second, often more challenging part is real-time troubleshooting. Every foundry hits problems during manufacturing, from easy to spot to incredibly elusive, and each has a direct business impact — so my day carries a lot of discussion and brainstorming with cross-functional teams. Having chosen the technical ladder over the management track, I stay on hands-on problem-solving.

DR. PABITRA DAS — CONTINUED

SUDESHNA

INDIA IS INVESTING SUBSTANTIALLY IN DOMESTIC SEMICONDUCTOR FABRICATION. WHAT ARE YOUR THOUGHTS?

Dr. Pabitra Das: It is a highly positive and ambitious step, but we need a realistic lens. By 2026, India's semiconductor ambition has moved from policy documents to operational reality: around a dozen approved projects under the India Semiconductor Mission, with Micron's and CG Power's plants in Sanand already in commercial production.

It is crucial to distinguish between the types of facility being built. The vast majority are OSAT or ATMP plants — the back end of the process, taking finished wafers made elsewhere, slicing them into chips, enclosing and testing them. The front-end creation of integrated circuits on blank wafers happens in a wafer fabrication plant, or fab. Of all these investments, the Tata Electronics facility in Dholera is the primary large-scale wafer fab under construction, targeting mature nodes like 28 nm. Building packaging and testing first is a pragmatic entry, but the long-term goal must be more front-end fabs.

Geopolitically, the world has realised it cannot afford an electronic supply chain concentrated in one or two regions. India stepping up positions the country as a trusted, resilient partner.

> **"INDIA IS NOT STARTING FROM ZERO."**
>
> We already possess a remarkably robust design ecosystem, with thousands of engineers who architect these chips. Just as India built a globally respected indigenous space-science ecosystem from the ground up, I am hopeful we will bridge the gap between design and physical manufacturing.

SANCHARI

ACADEMIC POSTS ARE SCARCE. WHAT SHOULD AN ASPIRING RESEARCHER IN INDIA DO?

Dr. Pabitra Das: Look well beyond your core domain. Physics graduates with programming skills are valued in quantitative finance and investment banking — the mindset trained on complex physical equations is what intricate statistical models need.

With current investment, the Indian semiconductor industry will employ a great many skilled graduates in coming years. Stay flexible, upskill, and position yourself to catch these emerging waves.

Still, the hurdles are real. As an engineer in a European foundry, I can attest that semiconductor manufacturing is perhaps the most complex industrial process on Earth. Fabs need massive uninterrupted power, millions of litres of ultra-pure water daily, and cleanrooms where a single speck of dust can ruin a multi-million-dollar batch of wafers — plus a flawless upstream supply chain for specialised materials, chemicals and gases. The launch of Semicon 2.0 in July 2026 targets exactly those gaps. We are on the right path, but becoming a manufacturing powerhouse will require patience, sustained capital and flawless execution over the next decade.

SANCHARI

HOW SHOULD STUDENTS BUILD A WELL-ROUNDED SKILL SET TO GET INTO A FOUNDRY?

Dr. Pabitra Das: The secret is learning to sell your transferable skills. In academia we are conditioned to believe publications are the ultimate currency; industry recruiters care far less about a paper's impact factor than about the problem-solving skills and analytical thinking behind it. Build an industry-tailored CV highlighting technical proficiencies, project management and how you overcame experimental failures — and treat LinkedIn as a dynamic CV.

And do not underestimate programming. Foundries are highly automated and generate terabytes of metrology data; I have colleagues from a purely computer-science background. Upskill in Python or C++ and learn to handle data.

> **"MAKE YOURSELF AN INVALUABLE ASSET TO ANY SEMICONDUCTOR ORGANISATION."**

THIS MONTH IN PHYSICS HISTORY

04

JULY 2012

CERN ANNOUNCES THE HIGGS BOSON

On 4 July 2012, the ATLAS and CMS collaborations at CERN announced the observation of a new particle near **125 GeV**, each with a significance of about five standard deviations — the threshold particle physics treats as discovery.

The particle was the quantum of the field proposed in 1964 to explain how elementary particles acquire mass. Peter Higgs and François Englert shared the 2013 Nobel Prize in Physics; Robert Brout, their co-author, had died in 2011.

16

JULY 1945

TRINITY: THE FIRST NUCLEAR EXPLOSION

Before dawn on 16 July 1945, the Manhattan Project detonated a plutonium implosion device in the New Mexico desert. The yield was about **21 kilotons** of TNT equivalent.

Enrico Fermi famously estimated the yield by dropping scraps of paper as the blast wave passed and measuring how far they were carried — a back-of-the-envelope method still taught as an example of physical estimation. The test opened the nuclear age, and with it a debate about the responsibilities of physicists that has never closed.

14

JULY 2015

NEW HORIZONS FLIES PAST PLUTO

After a journey of nine and a half years and nearly five billion kilometres, NASA's *New Horizons* spacecraft swept within about 12,500 km of Pluto at some 14 km per second.

The encounter lasted hours; the data took over a year to reach Earth at roughly 1–2 kilobits per second. What arrived rewrote the textbooks — nitrogen-ice plains, water-ice mountains and a haze-layered atmosphere on a world that had been a smudge of pixels for eighty-five years.

JOB OPPORTUNITIES

POST-DOCTORAL FELLOWSHIPS — ASTRONOMY & ASTROPHYSICS

IUCAA, Pune

iucaa.in/en/opportunities

POSTDOCTORAL FELLOWSHIPS IN PHYSICS

ICTS–TIFR, Bengaluru

icts.res.in/opportunities

POSTDOCTORAL POSITIONS — THEORETICAL PHYSICS

TIFR, Mumbai

theory.tifr.res.in/postdocads

PRIME MINISTER'S RESEARCH FELLOWSHIP (PMRF)

Ministry of Education · direct & lateral entry

pmrf.in

INSPIRE FACULTY FELLOWSHIP

Department of Science and Technology, Govt. of India

online-inspire.gov.in

SCIENTIFIC OFFICER & ASSISTANT — ROLLING

TIFR, Mumbai

tifr.res.in/maincampus/careers

RESEARCH PUBLICATIONS

1 Arkaprava Sil and Sudipto Singha Roy

Quantum complexity in rule-based constrained many-body models: scars, fragmentation, and chaos

Physical Review B (2026) · DOI: 10.1103/ps6c-c3s8

2 Manika Dandapat, Priyadarshi Sahoo, and Umakanta Tripathy

Detecting toxic species in the aggregation of amyloid beta in real time

Journal of Physics: Photonics (2026) · DOI: 10.1088/2515-7647/ae65f1

3 Smita Manjari Panda, Kalpanarani Dash, Devi Prashanna Behera, Monalisa Mishra, Harekrushna Sahoo, and Umakanta Tripathy

Withanolide A inhibits hIAPP aggregation: in silico, biophysical and Drosophila-based in vivo validation

Scientific Reports (2026) · DOI: 10.1038/s41598-026-60648-x

4 Sheetal Sharma, A. P. Nagendra Babu, Manoj Kumar Gupta, and Vinod Kumar Singh

Dual-functional $Ti_3C_2T_x$ MXene–ZnO heterostructure for triboelectric nanogenerators and high-energy asymmetric supercapacitors

Journal of Energy Storage (2026) · DOI: 10.1016/j.est.2026.123372

PHYSICS PULSE

VOL. III · NO. 7 · JULY 2026

last word

"THE MIRACLE OF THE APPROPRIATENESS OF THE LANGUAGE OF MATHEMATICS FOR THE FORMULATION OF THE LAWS OF PHYSICS IS A WONDERFUL GIFT WHICH WE NEITHER UNDERSTAND NOR DESERVE."

EUGENE WIGNER · THE UNREASONABLE EFFECTIVENESS OF MATHEMATICS IN THE NATURAL SCIENCES, 1960

ARTICLE SUBMISSION
people.iitism.ac.in/~sarun/newsletter/

PREVIOUS ISSUES
iitism.ac.in/physics-newsletter

SUGGESTIONS
physicspulse@iitism.ac.in