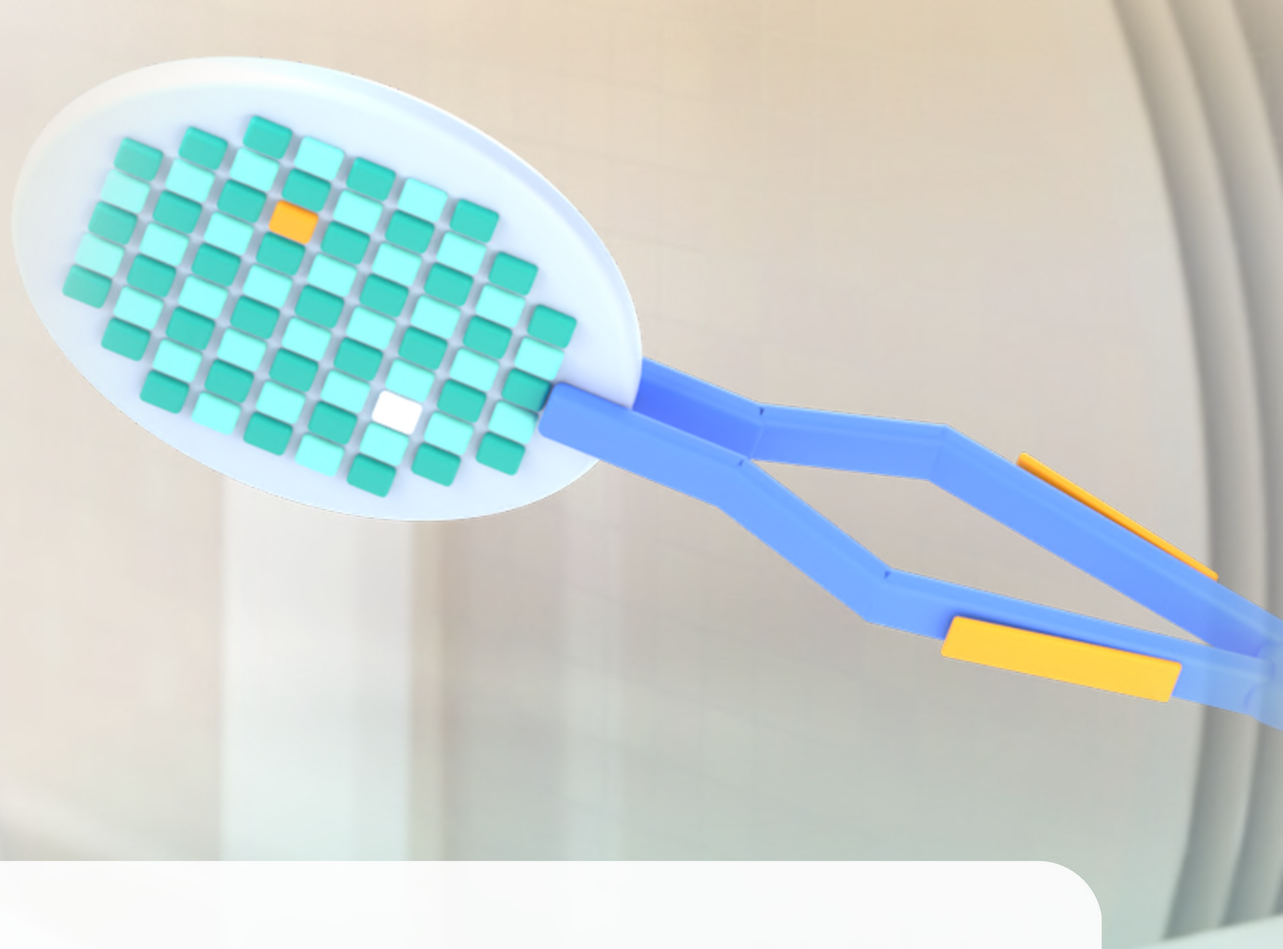
QUANTUM HANDS-ON TRAINING PROGRAM (QHTP)

QuantaRiSE

Step inside a real cleanroom.

Bridging Theory to Practice in Quantum Technologies

5-DAY HANDS-ON LITHOGRAPHY TRAINING



PROGRAM DETAILS AT A GLANCE

DATES
14–18 December 2026

TRAINING MODE
lab sessions

ORGANISER
QMD Foundation · National Quantum Mission

Limited seats · Register now

qmdhub.co.in

Organised by QMD Foundation

An initiative by IIT Delhi under the National Quantum Mission

IIT DELHI · NEW DELHI

01 · ABOUT THE PROGRAM

About the program

The QuantaRise: Quantum Hands-on Training Program (QHTP) is a specialized 5-day training initiative organized by QMD Foundation under the National Quantum Mission, designed to bridge the gap between theoretical knowledge and practical experience in semiconductor fabrication and quantum technologies.

The program aims to provide participants with hands-on exposure to cleanroom fabrication, lithography, semiconductor device processing, and characterization techniques. Through a combination of online technical lectures and intensive offline laboratory sessions at IIT Delhi, participants will gain valuable insights into fabrication workflows and experimental techniques used in semiconductor and quantum device research.

This program offers an opportunity for students, researchers, scientists, startups, and industry professionals to develop practical skills and strengthen their understanding of semiconductor device fabrication.

02 · PROGRAM OBJECTIVES

Program objectives

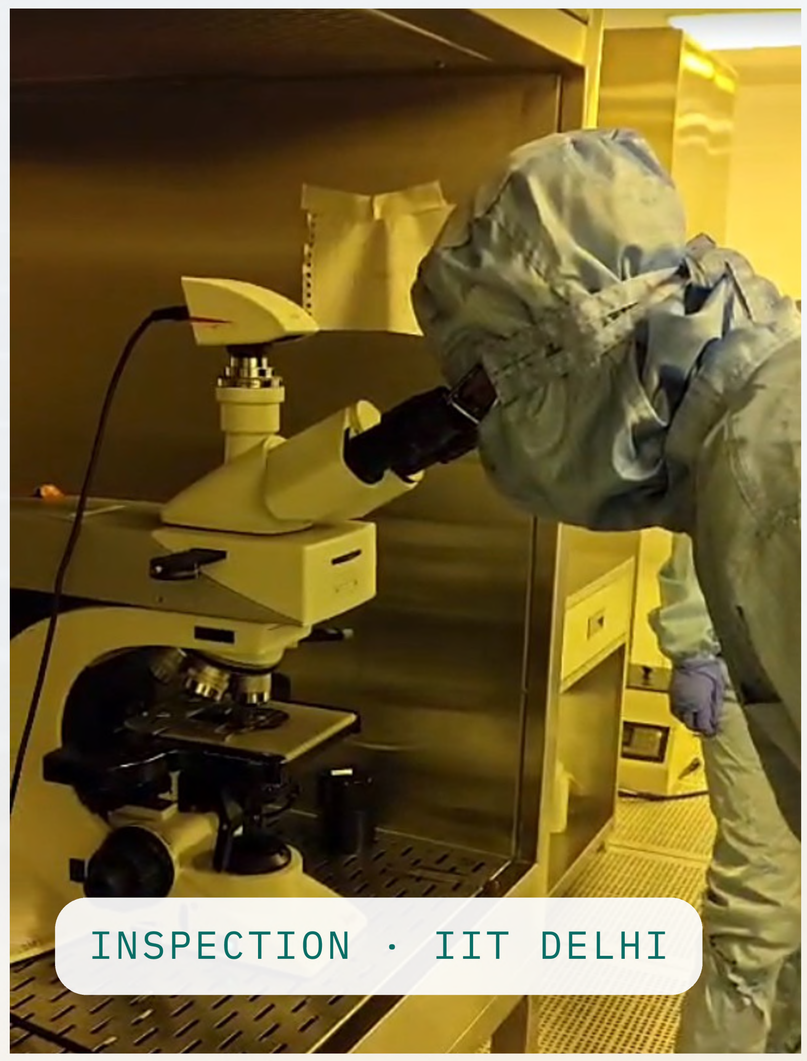
01 To provide practical, hands-on exposure to semiconductor and quantum technologies.

02 To develop experimental and laboratory-level skills required for quantum research.

03 To introduce participants to semiconductor device fabrication and cleanroom processes.

04 To strengthen understanding of lithography, device processing, and electrical characterization.

05 To align training activities with national initiatives supported by the National Quantum Mission.



INSPECTION · IIT DELHI

14–18 Dec
Program dates, 2026

5 days
Offline lab sessions at IIT Delhi

Certificate
At the valedictory session

03 · WHY IT MATTERS

Why this training matters for the quantum world



The advancement of quantum technologies depends not only on theoretical breakthroughs but also on the ability to fabricate reliable, scalable, and high-performance semiconductor devices and quantum platforms. Lithography and semiconductor fabrication are fundamental processes for translating quantum concepts into functional devices, enabling the precise patterning, engineering, and integration of materials and device structures at micro and nanoscale dimensions.

As India advances its vision through the National Quantum Mission, developing skilled researchers and professionals with practical knowledge of cleanroom protocols, device fabrication, lithography, and electrical characterization is essential for strengthening indigenous capabilities in quantum hardware development. This hands-on training aims to bridge the gap between quantum science and practical device engineering, empowering participants to contribute to the next generation of quantum technologies, semiconductor innovation, and advanced research.

04 · TRAINING HIGHLIGHTS

Training highlights

01

Cleanroom Exposure

Gain exposure to semiconductor fabrication processes and cleanroom protocols in a real laboratory environment.

02

Hands-on Lithography

Understand mask design, device layout, patterning, and maskless photolithography.

03

Semiconductor Device Fabrication

Learn essential fabrication processes, including wafer cleaning, metallization, contact formation, and lift-off.

04

Device Characterization

Get introduced to electrical characterization techniques, including I–V measurements and Hall-effect measurements.

05

Data Analysis and Interpretation

Understand device measurement results and their interpretation.

06

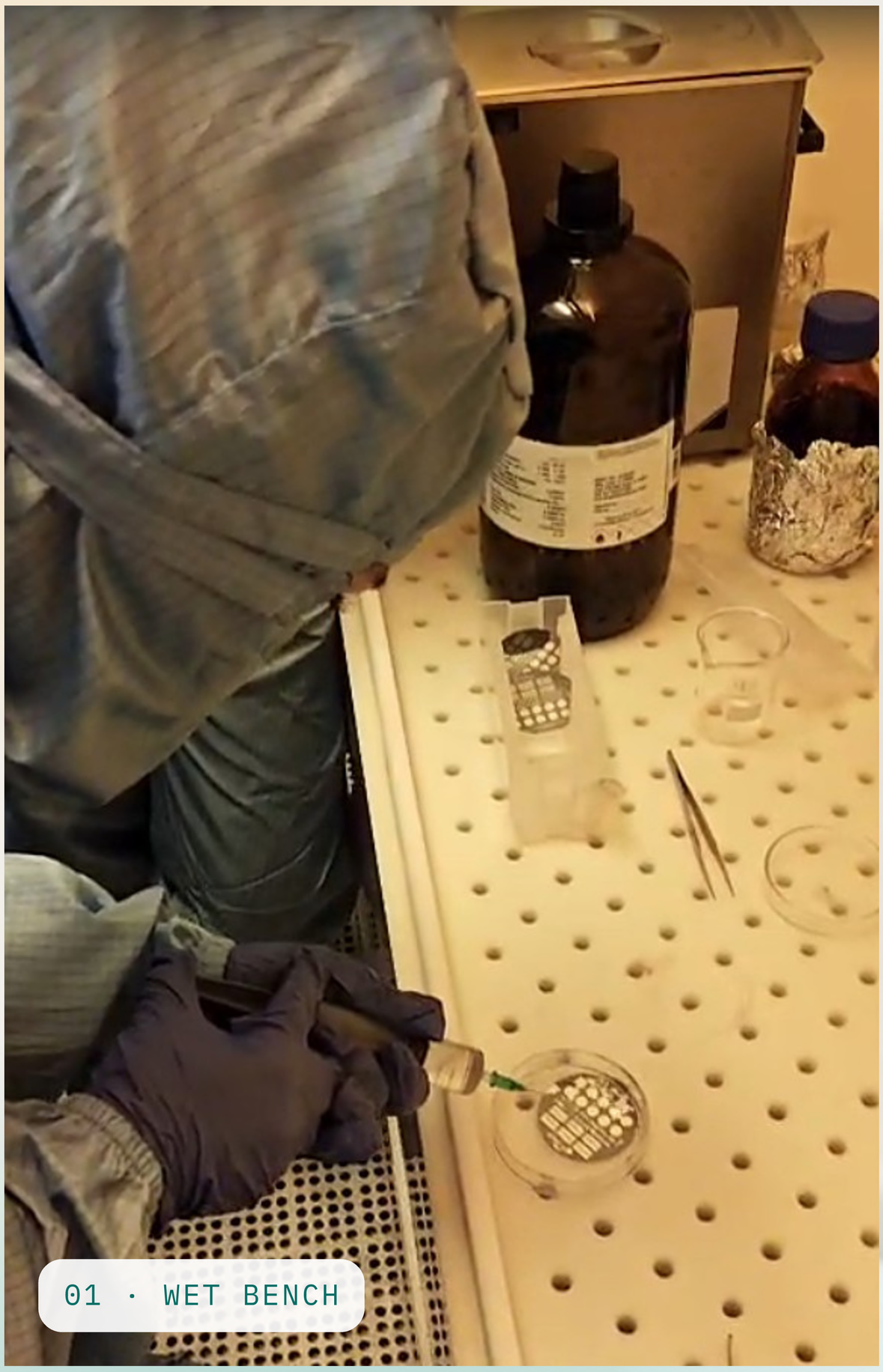
Expert-Led Technical Sessions

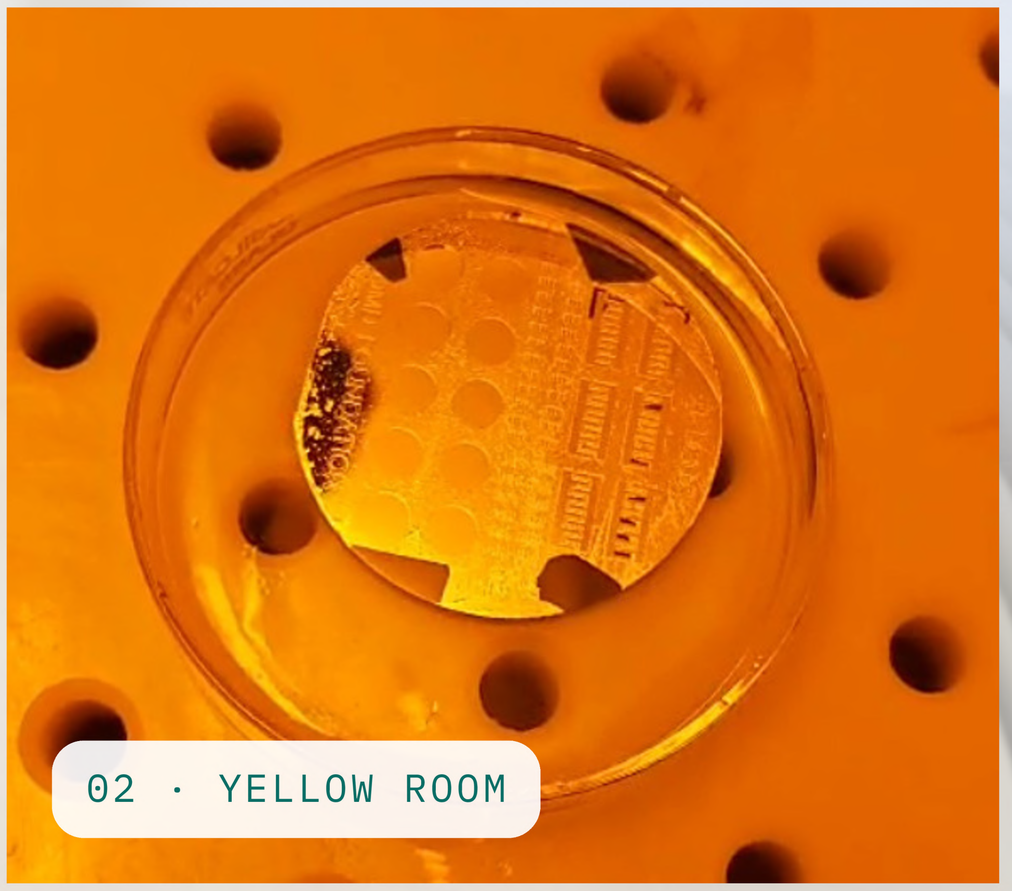
Interact with researchers and experts working in semiconductor and quantum technologies.

05 · INSIDE THE LAB

Where theory meets the wafer.

Gown up, step into the yellow room and work the tools yourself.







WHAT YOU'LL WORK ON

- CLEANROOM PROTOCOLS
- WAFER CLEANING
- MASKLESS PHOTOLITHOGRAPHY
- OXIDE DEPOSITION / GROWTH
- CONTACT FORMATION & LIFT-OFF
- I–V & HALL-EFFECT MEASUREMENTS
- PROBE-SYSTEM MEASUREMENTS

06 · TRAINING SCHEDULE

Five-day training schedule

Offline sessions at IIT Delhi, 14–18 December 2026

Day 1

- Inauguration and Introduction to the National Quantum Mission
- Fundamentals of Quantum Technologies
- Cleanroom Protocols
- Visit to the Cleanroom Facility

Day 2

- Material Growth Techniques for Quantum Devices
- Introduction to CMOS Technology
- Wafer Cleaning
- Mask Design and Device Layout

Day 3

- Device Structures (FETs and Junctions)
- Oxide Film Deposition/Growth
- Maskless Photolithography

Day 4

- Electrical Characterization (I–V and Hall Effect)
- Maskless Photolithography
- Contact Formation and Lift-off

Day 5

- Data Analysis and Interpretation
- Electrical Measurements Using Probe Systems
- Research Opportunities and National Quantum Mission Proposals
- Interaction with Speakers and Participants
- **Valedictory Session and Certificate Distribution**

GOOD TO KNOW

The program combines online technical lectures with these five offline days at IIT Delhi. Certificates are distributed at the valedictory session on Day 5.

07 · CURRICULUM

What you will learn

Participants will receive exposure to the following topics and practical activities:

FOUNDATIONS

Quantum & device concepts

- Introduction to National Quantum Mission
- Fundamentals of Quantum Technologies
- Quantum Materials and Quantum-Enabled Semiconductor Devices
- Introduction to CMOS Technology
- Quantum Device Structures (FETs and Junctions)

IN THE CLEANROOM

Fabrication, step by step

- Cleanroom Protocols
- Material Growth Techniques for Quantum Devices
- Wafer Cleaning
- Mask Design and Device Layout
- Oxide Film Deposition/Growth
- Maskless Photolithography
- Contact Formation and Lift-off

MEASUREMENT

Characterization & analysis

- Electrical Characterization (I–V and Hall Effect)
- Electrical Measurements Using Probe Systems
- Data Analysis and Interpretation

BEYOND THE PROGRAM

Your next step

- Research Opportunities and National Quantum Mission Proposals

08 · WHY ATTEND

Why attend this training?

- Gain exposure to real cleanroom environments.
- Develop practical knowledge of lithography and device patterning.
- Gain exposure to electrical device characterization.
- Understand semiconductor fabrication processes.
- Learn essential semiconductor processing techniques.
- Interact with experts and researchers in quantum technologies.
- **Explore research opportunities in emerging quantum and semiconductor technologies.**

09 · ELIGIBILITY

Who can apply?

The program is open to:

- **B.Tech Students**
- **M.Tech Students**
- **M.Sc. Students**
- **Ph.D. Scholars**
- **Postdoctoral Researchers**
- **Scientists**
- **Startups**
- **Industry Professionals**

Students, researchers, and professionals interested in semiconductor technology, nanotechnology, quantum materials, device fabrication, and quantum-enabled technologies are encouraged to apply.

10 · REGISTRATION FEE

Registration fee

The registration fee is structured according to the participant category.

₹5,000
B.Tech / M.Tech / M.Sc. Students

₹15,000
Ph.D. / Postdoctoral Researchers /Scientists

₹15,000
Startups / Industry Professionals

All fees exclude 18% GST.

Important: Please select the appropriate participant category while completing the registration form. Limited seats are available. Register early to secure your participation!

11 · HOW TO REGISTER

Registration process

Interested candidates can register through the online registration portal.

1. Click on the Register Now button.
2. Fill in the required personal, academic, and professional details.
3. Select your participant category.
4. Complete the registration fee payment as instructed.
5. Submit the registration form and wait for confirmation.

SCAN TO REGISTER

12 · FAQs

Frequently asked questions

What is the duration of the training program?

The program runs from 12–18 December 2026, including five days of offline training at IIT Delhi.

Where will the offline training take place?

The offline training sessions will be conducted at IIT Delhi.

Who can participate in the program?

B.Tech, M.Tech, M.Sc., and Ph.D. students, postdoctoral researchers, scientists, startups, and industry professionals can apply.

What is the registration fee?

₹5,000 for B.Tech/M.Tech/M.Sc./Ph.D. students, ₹15,000 for postdoctoral researchers/scientists, and ₹15,000 for startups/industry professionals (plus 18% GST).

Will participants receive a certificate?

Yes. Certificate distribution is scheduled during the valedictory session on the final day.

Will participants get hands-on laboratory exposure?

Yes. The offline component includes exposure to cleanroom facilities and practical semiconductor fabrication and characterization activities.

How can I register?

Register through the online registration link on the program webpage, or scan the QR code on page 7.

Join us in building the future of quantum technologies!

Take the next step towards practical knowledge and experimental skills in semiconductor fabrication and quantum-enabled technologies.

Be part of this hands-on learning experience and explore the technologies shaping the future of quantum research.

13 · CONTACT US

For registration, program-related information, and other queries, please contact:

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WEBSITE qmdhub.co.in

VENUE IIT Delhi, New Delhi, India

14-18 December 2026 · IIT Delhi

QMD FOUNDATION · NATIONAL QUANTUM MISSION