

QUANTUM COMPUTATION AND QUANTUM INFORMATION

3-DAY WORKSHOP

7 - 9 JANUARY 2026

DEPARTMENT OF PHYSICS

GOVT. COLLEGE MADAPPALLY



SPONSORED BY

**DIRECTORATE OF COLLEGIATE
EDUCATION, KERALA**

Quantum Computing and Quantum Information are rapidly emerging interdisciplinary fields, applying principles of quantum mechanics, information theory, and computer science to develop a new computational paradigm. Recognizing the strategic importance of these fields, the Department of Physics, Govt. College Madappally, is organizing a Three-Day Workshop on ‘Quantum Computation and Quantum Information’ on 7 – 9 January 2026. The workshop aims to enhance understanding, encourage research, and strengthen teaching capabilities through expert lectures and hands-on sessions.

The workshop combines theory and experiment, introducing participants to two cloud computing platforms – **IBM’s QISKIT and CDAC’s QNIVERSE**. It aims to bring together faculty and researchers in Kerala to explore practical aspects of quantum computing. **As a preparatory session for the workshop, a one-day introductory class on the mathematical foundations of quantum mechanics will be conducted on 6 January.** The third day of the workshop will introduce the participants to different experimental developments in quantum information.

The target audience includes physics teachers of colleges and universities in Kerala as well as researchers and postgraduate physics students in Kerala. It is hoped that through the workshop the participants will gain exposure to the fundamentals of quantum computation and quantum information, and learn to use different cloud computing platforms for teaching and research applications in these fields.

The number of participants is limited to 40. The participant will have to bring the laptop for the hands-on sessions. Kindly register using the following link.

Registration Link: <https://docs.google.com/forms>

Last Date for Registration: 29 December 2025

Sri. Shinu P M
Principal

Prof. Suneera T P
Head, Dept. of Physics

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Day 0 : 6 January 2026

Lecture 1	:	Mathematical Foundations of Quantum Mechanics
9.30 – 11.00		Dr. Randeep N C
Lecture 2	:	Postulates and Principles of Quantum Mechanics
11.30 – 1.00		Dr. Randeep N C
Lecture 3	:	Quantum Mechanics of Multi-Particle Systems
2.00 – 3.30		Dr. Randeep N C

Day 1 : 7 January 2026

Lecture 1	:	Overview of Quantum Computation and Quantum Information
9.30 – 11.00		Prof. Sudheesh Chethil
Lecture 2	:	Fundamentals of Quantum Computation
11.30 – 1.00		Dr. Rohith M
Lab Session	:	Dr. Rohith M supported by Ms. Athira K M and Ms. Sree Devi M R
2.00 – 5.00		<ul style="list-style-type: none">- Introduction to the Qiskit and Qniverse platforms for quantum computation- Quantum measurements- Constructing quantum circuits analogous to classical digital circuits

Day 2 : 8 January 2026

Lecture 1	:	Quantum Algorithms: Deutsch–Jozsa Quantum Algorithm
9.30 – 11.00		Dr. Rohith M
Lecture 2	:	Quantum Teleportation
11.30 – 1.00		Dr. Rohith M
Lab Session	:	Dr. Rohith M supported by Ms. Athira K M and Ms. Sree Devi M R
2.00 – 5.00		<ul style="list-style-type: none">- Demonstration of the Deutsch algorithm- Execution of the Deutsch–Jozsa algorithm- Quantum teleportation procedures

Day 3 : 9 January 2026

Lecture 1	:	Decoherence and Quantum Map Experiments with Photonic Polarization Qubits
9.30 – 11.00		Dr. Sajeev D
Lecture 2	:	Atom Interferometry : Turning Quantum Physics into Sensors
11.30 – 1.00		Dr. Manju Perumbil
Lecture 3	:	From Quantum Mechanics to Quantum Devices : Pathways to Semiconductor Qubits
2.00 – 3.30		Dr. Anusha S



Dr. Sudheesh Chethil

Professor

Indian Institute of Space Science
and Technology (IIST),
Thiruvananthapuram



Dr. Rohith M.

Assistant Professor

Department of Physics
Government College, Malappuram



Dr. Randeep N C

Assistant Professor

Department of Physics
SARBTM Government College,
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Dr. Sajeev D

Associate Professor

Department of Physics, Government
College Kariavattom,
Thiruvananthapuram



Dr. Manju Perumbil

Assistant professor in Physics

ITEP, Central University of Kerala



Dr. Anusha S

PhD

Indian Institute of Science Education
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Ms. Athira K. M.

Inspire PhD Fellow, Department of Physics
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