



Dr. M.G.R. EDUCATIONAL AND RESEARCH INSTITUTE (Deemed to be University)

Maduravoyal, Chennai - 600 095. Tamilnadu, India.

(An ISO 9001-2015 Certified Institution)



MGR ASSOCIATION FOR GREAT INNOVATIVE CREATORS

Department of Electronics and Communication Engineering

Event Title	FDP on "From Qubits to Real world Impact: Future of Quantum Technologies"		
Objective of Event	To introduce participants to the fundamentals of quantum technologies and their real-world applications. To create awareness about future research, innovation, and career opportunities in quantum computing and related domains.		
Chief Guest /Speaker Details	N.Uday Kiran, Associate Professor & Head, Sri Sathya Sai Institute of Higher learning Ananda Raman, Scientist- E, NISER, NISER Dr.		
Date	08/12/2025 to 13/12/2025	Time	10.00 AM to 02.00 PM
Venue	online	No. of Participants	100

REPORT

TITLE

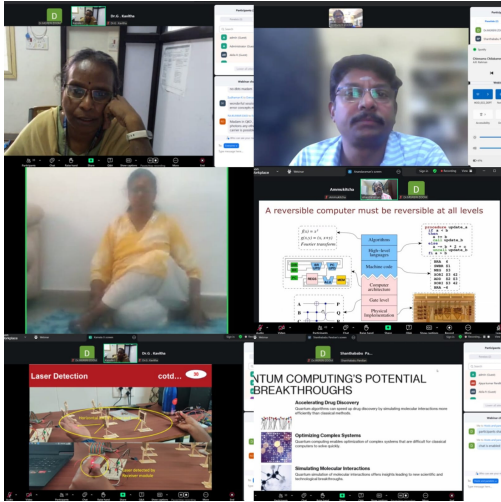
FDP on "From Qubits to Real world Impact: Future of Quantum Technologies"

CONTENT

The Department of Electronics and Communication Engineering organized a six-day online Faculty Development Program (FDP) titled "From Qubits to Real-World Impact: Future of Quantum Technologies" from 8th to 13th December 2025. The program began with Dr. N. Uday Kiran, HoD, Mathematics and Computer Science, SSSIHL, Puttaparthi, who spoke on quantum computing fundamentals and roadmap. Mr. Anandaraman, Scientist-E, NISER, Bhubaneswar, discussed universal quantum logic gates and circuits. Dr. Veeramanickam M. R. M., Additional Director, CSE, Chandigarh University, delivered a session on quantum cryptography. Professor Dr. J. Kamala, Anna University, Guindy, covered error correction and fault tolerance concepts. Mr. ShanthaBabu Pandian, Director-Data AI, London, introduced quantum computer vision. The final day featured Yogacharini Dr. M. Hemamalini on stress management through asanas. Around 90 participants attended daily. The FDP was coordinated by Dr. V. Amudha and Dr. A. Srikrishnan, ECE. The Department thanks the Honorable President and executives for their constant support.



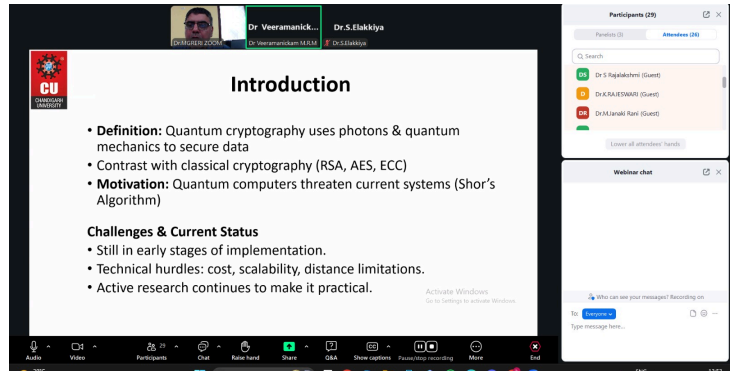
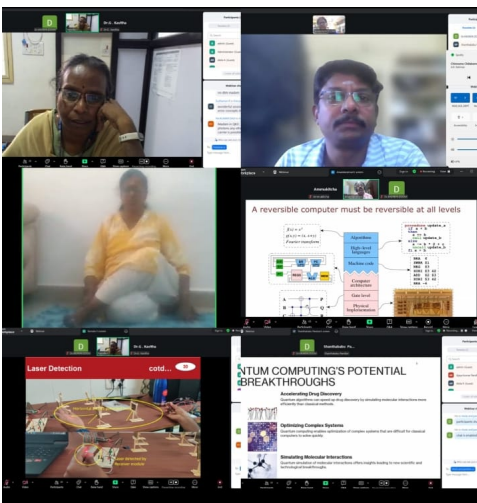
MGR ASSOCIATION FOR GREAT INNOVATIVE CREATORS



EVENT OUTCOME

The FDP provided a clear understanding of quantum fundamentals and emerging technologies, bridging the gap between qubits and practical applications. Participants gained insights into real-world use cases and future research directions in quantum computing, communication, and sensing.

PHOTOS





Dr. M.G.R. EDUCATIONAL AND RESEARCH INSTITUTE (Deemed to be University) Maduravoyal, Chennai - 600 095, Tamilnadu, India. (An ISO 9001-2015 Certified Institution)



MGR ASSOCIATION FOR GREAT INNOVATIVE CREATORS

Core Principles - Quantum

- Quantum Key Distribution (QKD):**
 - Securely generates shared secret keys.
 - Detects eavesdropping automatically.
- Superposition:**
 - Qubits can be 0 and 1 simultaneously.
 - Enables richer encoding of information.
- Quantum Entanglement:**
 - Linked particles share states instantly.
 - Creates secure sender-receiver link.
- Uncertainty Principle:**
 - Measuring quantum states disturbs them. <https://www.youtube.com/watch?v=urNW4Ezisc>
 - Used to detect interception attempts.
- No-Cloning Theorem:**
 - It's impossible to create an identical copy of an unknown quantum state.
 - This principle is critical for security: an eavesdropper (Eve) cannot copy the quantum key without altering the original state, which the legitimate parties can detect. https://www.youtube.com/channel/UCIBnq7mCMf5xmBae_VMI3A

Participants (14)

Search

- Alka R (Guest)
- Anuraksha (Guest)
- Anubhavi V (Guest)
- anubhavi v (Guest)
- chanchurembatic (Guest)
- Dr-11 Dhavathi (Guest)
- Dr-S Rajalakshmi (Guest)
- Dr-A.SriKrishnan (Guest)
- Dr.K.SARADWARI (Guest)
- Dr.M.Janaki Rani (Guest)
- Dr.S.Aarthi (Guest)
- Dr.S.Elakkiya (Guest)
- FATHIMA K (Guest)
- Harithansa (Guest)

Information - Entropy - Energy

- Entropy is thermodynamic: A measure of disorder or randomness in a physical system.
- Entropy is information theory: A measure of reduction in uncertainty when an observer or receiver is present.

More entropy = Less information (more uncertainty)
Less entropy = More information (less uncertainty)

Entropy - Energy

- When entropy increases, the system absorbs or releases energy.
- Entropy is a measure of how much energy is no longer available to do work.

Information - Energy

- Information is an energy cost: Storing, moving, or processing information physically consumes energy and therefore entropy.

Speaker: Anandaraman

Dr. V. Amutha /Dr. A. SriKrishnan