

FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] Introduction to Quantum Computing



Prof. Anirban Pathak JIT Noida



February 3, 2025

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007



Technology Patna

Prof. Anirban Pathak, a distinguished theoretical physicist, earned his Ph.D. from Visva-Bharati, Santiniketan, followed by a postdoctoral fellowship at Freie University, Berlin. Currently at JIIT, Noida, he leads a research group focusing on quantum optics, quantum information, and quantum cryptography. He is a Fellow of NASI, IETE, and OSI and serves as an editor for Quantum Information Processing (Springer-Nature) and Quantum Review Letters. Prof. Pathak has guided seven Ph.D. scholars and numerous postdoctoral fellows, completing several DST, MeitY, and DRDO-funded projects. His work includes the design of Rocca-S, a cipher proposed for TLS protocol standardization, supported by KDDI Research, Japan. Actively collaborating with national and international research groups, he has authored influential books and publications on quantum computation and communication.









ON (February 3 - 9, 2025) [Hybrid Mode] Vector Space and Ensor Prooler

FACULTY DEVELOPMENT PROGRAMME **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY**

SPEAKER

Dr. SURENDRA KUMAR

ASSITANT PROFESSOR, DEPARTMENT OF MATHEMATICS, UNIVERSITY OF DELHI **February 3, 2025**



Technology Patna

Dr. Surendra Kumar, Assistant Professor at the University of Delhi, holds a Ph.D. from IIT Roorkee (2013). Specializing in Control Theory, Functional Differential Equations, and Optimal Control, he has published extensively in reputed journals and presented at international conferences. With expertise in advanced mathematics, he teaches courses like Matrix Analysis and Functional Analysis and supervises Ph.D. and M.Phil. research. Dr. Kumar is a CSIR-UGC NET-JRF and GATE-qualified scholar, recognized for his contributions to mathematical

sciences.

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FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] **Device Independence in Quantum Cryptographic Protocols**

<u>SPEAKER</u>

Dr. ARPITA MAITRA

Associate Professor, TCG CREST, Kolkata

February 3, 2025

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007



Technology Patna

Dr. Arpita Maitra is an Associate Professor at TCG CREST, with expertise in Quantum Computation Kolkata, and Communication. She holds a PhD in Computer Science & Engineering from Jadavpur University and has completed post-doctoral work at IIM Calcutta and IIT Kharagpur. Dr. Maitra has taught courses on Security, Cryptology, and Quantum Information at various institutes, including IIM and IIT. She has authored over 25 papers in Quantum Secure Communication and is involved in Secure Quantum Communication, Quantum research ON Cryptanalysis, and Quantum Key Distribution protocols.











FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] Basic Quantum Gates



Prof. RAJIV CHOPRA

Dronachraya College of Engineering,



Gurugram **February 4, 2025**

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007



Technology Patna



Dr. Rajiv Chopra is a distinguished Professor in the Department of Computer Science and Engineering at Dronacharya College of Engineering, Gurugram. He is a prolific author with several books to his credit, including his latest publication, Quantum Computing and Techniques (Theory and Practice). Dr. Chopra has an extensive record of research, with numerous publications in prestigious national and international journals. He is a sought-after speaker and has delivered lectures at various Faculty Development Programs (FDPs), seminars, conclaves, and symposiums. His contributions to academia and his expertise in emerging technologies have earned him widespread recognition in the field of computer science.









FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] Deutsch & Deutsch-Jozsa Algorithm



Dr. OM PAL

Associate Professor, Department of Computer Science, University of Delhi

February 4, 2025



Technology Patna

Dr. Om Pal is an Associate Professor in the Department of Computer Science at the University of Delhi with over 20 years of academic and research experience. He holds a B.E. in Computer Science, an MBA from IGNOU, an MS (Research) in Cryptography from IIT Bombay, and a Ph.D. in Cyber Security from Jamia Millia Islamia.

He has previously served as a Scientist at MeitY, contributing to projects in Cryptography, Cyber Security, Blockchain, and Quantum Computing, and as a Senior Technical Officer at C-DAC. With numerous research publications, two Indian patents, and books on Blockchain and Cyber Security, Dr. Pal's expertise spans Cryptography, Post-Quantum Cryptography, Cyber Law, Artificial Intelligence for Cyber Security, and High-Performance Computing. He is also a certified ethical hacker and an AICTE & C-DAC certified Master Trainer.

plays a significant role in advancing the theory and practical applications of cryptographic techniques in various emerging technologies. Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007









FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] From Quantum Utility to Quantum Advantage

SPEAKER

Dr. L Venkata Subramaniam

IBM Quantum India Lead **February 4, 2025**

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007



Technology Patna

Dr. L. Venkata Subramaniam, the IBM Quantum India Lead, earned his PhD from IIT Delhi in 1999 and is recognized as an IBM Master Inventor. He has been granted 38 patents and published over 150 research papers in fields such as quantum computing, Al, machine learning, and data analytics. His recent book, Quantum Nation, became a bestseller on Amazon India. With a vision to position India as a global leader in quantum computing, Dr. Subramaniam spearheads initiatives to drive innovation and research in quantum technologies, contributing significantly to the advancement of this transformative field.









FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] Simon's Algorithm



Dr. ON PAL

Associate Professor, Department of Computer Science, University of Delhi

February 6, 2025

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007

Technology Patna

Dr. Om Pal is an Associate Professor in the Department of Computer Science at the University of Delhi with over 20 years of academic and research experience. He holds a B.E. in Computer Science, an MBA from IGNOU, an MS (Research) in Cryptography from IIT Bombay, and a Ph.D. in Cyber Security from Jamia Millia Islamia. He has previously served as a Scientist at MeitY, contributing to projects in Cryptography, Cyber Security, Blockchain, and Quantum Computing, and as a Senior Technical Officer at C-DAC. With numerous research publications, two Indian patents, and books on Blockchain and Cyber Security, Dr. Pal's expertise spans Cryptography, Post-Quantum Cryptography, Cyber Law, Artificial Intelligence for Cyber Security, and High-Performance Computing. He is also a certified ethical hacker and an AICTE & C-DAC certified Master Trainer. He plays a significant role in advancing the theory and practical applications of cryptographic techniques in various emerging technologies.

FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] Quantum Machine Learning Algorithms

SPEAKER Dr. GURMOHAN SCIENTIST-E

C-DAC February 6, 2025

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007

Technology Patna

Dr. Gurmohan Singh, Joint Director and Scientist-E at the Centre for Development of Advanced Computing (C-DAC), Mohali, is a renowned expert in quantum computing and cybersecurity with over 19 years of research and development experience. He holds a Ph.D. from NIT Jalandhar, focusing on Quantum-Automata Based Circuits, and has made significant contributions to quantum algorithms, machine learning, and VLSI design. Dr. Singh has held pivotal roles at C-DAC, driving innovation in quantum computing, quantum machine learning models, circuit optimization, and application development. He has supervised 1 Ph.D. and over 50 Master's theses, published more than 60 research papers in reputed journals and conferences, and played a key role in organizing national and international quantum computing workshops. Recipient of the prestigious C-DAC Award in 2020 for leading a high-value project, his work continues to shape advancements in quantum computing and cybersecurity in India.

FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] Quantum Machine Learning Algorithms

SPEAKER Dr. TARUN KUMAR PROJECT ENGINEER

C-DAC February 6, 2025

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007

Technology Patna

Dr. Tarun Kumar is a Project Engineer at the Centre for Development of Advanced Computing (C-DAC), Mohali, with expertise in quantum computing. With over five years of research experience, he has made significant contributions to quantum computing, quantum machine learning, and quantum circuit optimization. Dr. Kumar holds a Ph.D. from SLIET Longowal, Punjab (CFTI), where his thesis focused on "Exploration of Quantum Search and Machine Learning Models." His research has positioned him as a promising contributor to advancements in quantum technologies, and he continues to explore innovative solutions in this rapidly evolving field.

FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode]

SPEAKER Dr. TARUN KUMAR PROJECT ENGINEER

C-DAC February 6, 2025

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field.

Grover's Search Algorithm

FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] **Quantum Acceleration on**

ABHISHEK TIWARI

Joint Director at CDAC, Noida

February 6, 2025

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007

Technology Patna

Abhishek Tiwari, Member of IEEE and ICEIT, holds an M.Tech in Applied Electronics from Anna University, Chennai. With over 18 years of industry experience, he specializes in VLSI, Quantum Computing, AI, Industrial IoT, HPC, and Semiconductor Ecosystem design. Currently, he serves as Scientist E at the Centre for **Development of Advanced Computing (CDAC)**, under the Ministry of Electronics & Information Technology, Government of India. He has authored 18+ research papers and received several awards for his contributions to VLSI and Embedded Systems. Additionally, he is actively involved in mentoring start-ups and guiding research

projects.

FPC Platforms

FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] **Privacy-Preserving Quantum Authentication**

SPEAKER Dr. Pankaj Kumar

Assistant Professor

CUHP Dharmashala February 6, 2025

Technology Patna

Dr. Pankaj Kumar, an Assistant Professor, holds a PhD along with an M.A. in Mathematics, M.E. in Software Engineering, and multiple prestigious qualifications, including CSIR JRF (Mathematics), GATE (Mathematics), and UGC JRF (Computer Science). His expertise lies in Network Security and Pure Mathematics, with research interests spanning Cryptography, Digital Signature, Authentication, Wireless Sensor Networks, Number Theory, Algebra, Indian History of Mathematics, and Vedic Mathematics. He has authored over 75+ research papers in reputed journals and conferences, with significant contributions to certificateless signature schemes, cryptography, and network security. Dr. Kumar's work has advanced secure and efficient cryptographic protocols for vehicular networks, IoT, healthcare wireless sensor networks, and flying ad-hoc networks. A recognized academic and researcher, he has delivered invited talks and collaborated extensively in national and international Venue: G-12, Ground Floor, Maharishi Kanad Bharani^c Gifi Clasity Road, Faculty of Science, University of Delhi, Delhi - 110007

FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] **Quantum Teleportation for** Secured Communication

Dr. KUMAR GAUTAM

Founder QRACE & Egreen Quanta

February 7, 2025

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007

Technology Patna

Dr. Kumar Gautam is the Founder and President of Quantum Research And Centre of Excellence (QRACE) and EGREEN QUANTA. He is an Associate Professor with a Ph.D. from Delhi University, specializing in quantum gate design using Schrödinger Dynamics. With expertise in Quantum Computation, Matlab, Python, and Algorithms, his work focuses on advancing quantum technologies, including ion trap experiments and quantum computation algorithms.

Dr. Gautam's mission is to drive innovation in quantum research, addressing national priorities like technology development, workforce training, and societal applications in Al, cryptography, blockchain, and energy. He aims to establish incubation centers to foster research, entrepreneurship, and a global community of decentralized researchers.

FACULTY DEVELOPMENT PROGRAMME ON (February 3 - 9, 2025) [Hybrid Mode] Quantum Fourier Transform (QFT)

QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY

SPEAKER

Dr. P. Venkata Subba Reddy

Associate Professor, NIT Warangal

February 7, 2025

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007

Technology Patna

Dr. P. Venkata Subba Reddy, Associate Professor in the Department of Computer Science and Engineering at NIT Warangal, holds a PhD from NIT Tiruchirappalli, supported by a TCS Scholarship. With 13 years of teaching experience, he specializes in Quantum Algorithms and Graph Theory. He has published 28 journal papers, 24 conference papers, and guided two PhD scholars, with three currently under his supervision. Dr. Reddy has also undertaken international research at the University of Cádiz, Spain, under the SERB SIRE scheme, and organized a GIAN workshop on Quantum Computing with Prof. Rahul Jain.

FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] Shor's Alogorithum & Quantam Cryptanalysis

Dr. P. Venkata Subba Reddy

Associate Professor,

NIT Warangal

February 7, 2025

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007

Technology Patna

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FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode]

ASSISTANT PROFESSSOR

February 8, 2025

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007

Technology Patna

Dr. Ravi Anand is an assistant professor in the Department of Computer Science at IIIT Delhi. He earned his PhD from the Indian Institute of Technology Kharagpur. He completed his postdoctoral studies at the RCBOSE Centre at the ISI Kolkata, and thereafter at the University of Hyogo, Japan. His research focuses on the design and cryptanalysis of symmetric ciphers, using both classical and quantum frameworks. He has also begun to explore the emerging field of quantum malwares, as well as the application of machine learning (quantum) techniques to cryptanalysis.

Quantum Cryptanalysis of Symmetric Ciphers

FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode]

SPEAKER

Dr. N. SUBRAMANIAN **EXECUTIVE DIRECTOR** SETS CHENNAI

February 8, 2025

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007

Technology Patna

Dr. N. Subramanian, Executive Director of SETS, leads initiatives in cybersecurity, cryptography, and AI for cybersecurity, driving national projects like Post-Quantum Cryptography and IoT Security. Previously, as Head of Corporate R&D at C-DAC, he contributed to key missions like 6G research and Al-driven cybersecurity. With over 25 years of experience, a Ph.D. from IIIT Bangalore in intrusion detection, numerous publications, patents, and contributions to global standards, Dr. Subramanian is a recognized leader and sought-after speaker in digital security and innovation.

PQC Transition

FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode] Post-Quantum DNSSEC and Its Security Extensions

Prof. Mahavir Jhawar

Associate Professor, Department of Computer Science,

Ashoka University **February 8, 2025**

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007

Technology Patna

Dr. Mahavir Jhawar completed his PhD in Computer Science from the Indian Statistical Institute, Kolkata, in 2011, and later pursued a postdoctoral fellowship at the University of Calgary, Canada, from 2012 to 2014. His research focuses on cryptography, particularly in public-key cryptography, lattice-based cryptography, blockchain technology, and applied cryptographic protocols. He also works on network security, contributing to the development of secure systems for modern digital communication and computation. His work plays a significant role in advancing the theory and practical applications of cryptographic techniques in various emerging technologies.

FACULTY DEVELOPMENT PROGRAMME ON **QUANTUM COMPUTING & POST-QUANTUM CRYPTOGRAPHY** (February 3 - 9, 2025) [Hybrid Mode]

SPEAKER Prof. NEELIMA GUPTA

Head and Dean of Department of Computer Science, Faculty of Mathematical Sciences,

University of Delhi

February 9, 2025

Venue: G-12, Ground Floor, Maharishi Kanad Bhawan, University Road, Faculty of Science, University of Delhi, Delhi - 110007

Technology Patna

Dr. Neelima Gupta is the Head and Dean of the Department of Computer Science, Faculty of Mathematical Sciences, University of Delhi, where she has been a Professor since December 2006. She holds a Ph.D. in Computer Science (1998), an M.Tech. in Computer Applications (1989), and an M.Sc. in Mathematics (1987) from IIT Delhi, as well as a Bachelor's degree in Mathematics Honors from Hindu College, University of Delhi (1985). Her primary research interests lie in Theoretical Computer Science, with prior work in bioinformatics and ad hoc networks. She has published extensively in high-impact journals and renowned international conferences. Dr. Gupta has supervised seven Ph.D. scholars, with four currently pursuing their doctorates under her guidance, and has overseen more than 30 Master's projects. Before her academic career, she briefly worked with HCL

Technologies in 1989.

Pecacocv

