Contents

Part I Quantum in Network Cryptology

Quantum Information Protocols for Cryptography ...................... 3
Bassem Abd-El-Atty, Salvador E. Venegas-Andraca
and Ahmed A. Abd El-Latif

Applications of Quantum Mechanics in Secure Communication ....... 25
Mosayeb Naseri, Negin Fatahi, Ahmed Farouk, O. Tarawneh
and M. Elhoseny

Different Architectures of Quantum Key Distribution Network ....... 41
Ahmed Farouk, O. Tarawneh, Mohamed Elhoseny, J. Batle,
Mosayeb Naseri, Aboul Ella Hassanien and Muzaffar Lone

Quantum Computing and Cryptography: An Overview ................. 63
Ahmed Farouk, O. Tarawneh, Mohamed Elhoseny, J. Batle,
Mosayeb Naseri, Aboul Ella Hassanien and M. Abedl-Aty

Quantum Key Distribution Over Multi-point Communication System:
An Overview .......................................................... 101
Ahmed Farouk, O. Tarawneh, Mohamed Elhoseny, J. Batle,
Mosayeb Naseri, Aboul Ella Hassanien and M. Abedl-Aty

IPsec Multicast Architecture Based on Quantum Key Distribution,
Quantum Secret Sharing and Measurement .......................... 123
Ahmed Farouk, O. Tarawneh, Mohamed Elhoseny, J. Batle,
Mosayeb Naseri, Aboul Ella Hassanien and M. Abedl-Aty

Multi-parties Quantum Secure Direct Communication with
Authentication ......................................................... 143
Ahmed Farouk, O. Tarawneh, Mohamed Elhoseny, J. Batle,
Mosayeb Naseri, Aboul Ella Hassanien and M. Abedl-Aty
Quantum Cryptography, Quantum Communication, and Quantum Computing in a Noisy Environment .............................................. 185
Koji Nagata, Tadao Nakamura and Ahmed Farouk

An Efficient Scheme for Video Delivery in Wireless Networks ....... 207
Abdulaziz Shehab, Mohamed Elhoseny and Aboul Ella Hassanien

Part II Quantum in Physics

QFT + NP = P Quantum Field Theory (QFT): A Possible Way of Solving NP-Complete Problems in Polynomial Time .................. 229
Vladik Kreinovich, Luc Longpré and Adriana Beltran

(Hypothetical) Negative Probabilities Can Speed Up Uncertainty Propagation Algorithms ................................................. 251
Andrzej Pownuk and Vladik Kreinovich

New Method of Obtaining the Kochen-Specker Theorem ............... 273
Koji Nagata, Tadao Nakamura and Ahmed Farouk

Proposal for a Quantum-Based Memory for Storing Classical Information and the Connection Between Molecular Dynamics Simulations and the Landauer’s Principle ......................... 291
Josep Batle, Mohamed Elhoseny and Ahmed Farouk

Morphogenetic Sources in Quantum, Neural and Wave Fields: Part 1 ................................................................. 317
G. Resconi, K. Nagata, O. Tarawneh and Ahmed Farouk

Morphogenetic Sources in Quantum, Neural and Wave Fields: Part 2 ................................................................. 351
G. Resconi, K. Nagata, O. Tarawneh and Ahmed Farouk

Part III Quantum in Intelligent Applications

Quantum Inspired Evolutionary Algorithm in Load Frequency Control of Multi-area Interconnected Thermal Power System with Non-linearity ................................................................. 389
K. Jagatheesan, Sourav Samanta, Alokeparna Choudhury, Nilanjan Dey, B. Anand and Amira S. Ashour

Optimal Distributed Generation Allocation Using Quantum Inspired Particle Swarm Optimization ............................................. 419
Morteza Nazari-Heris, Sajad Madadi, Mahmoud Pesaran Hajiabbas and Behnam Mohammadi-Ivatloo
A Boosting-Based Decision Fusion Method for Learning from Large, Imbalanced Face Data Set ................................................. 433
Xiaohui Yuan, Mohamed Abouelenien and Mohamed Elhoseny

Automatic Construction of Aerial Corridor from Discrete LiDAR Point Cloud ......................................................... 449
Xiaohui Yuan, Dengchao Feng and Zejun Zuo

SVD-DCT Based Medical Image Watermarking in NSCT Domain .... 467
Siddharth Singh, Rajiv Singh, Amit Kumar Singh and Tanveer J. Siddiqui

The Utilization of Quantum Inspired Computational Intelligent in Power Systems Optimization .................................. 489
Mahmoud Pesaran Hajiabbas, Morteza Nazari-Heris, Sajad Madadi and Behnam Mohammadi-Ivatloo
Quantum Computing: An Environment for Intelligent Large Scale Real Application
Hassanien, A.E.; Elhoseny, M.; Kacprzyk, J. (Eds.)
2018, IX, 505 p. 203 illus., Hardcover
ISBN: 978-3-319-63638-2