

Research Group 7

Group Name	Quantum Computation
Academic Year	2021

Basic Information	
Department	Mathematics
Location	Sohag University

Group Members				
No. of Prof.	No. of Ass. Prof.	No. of Lect.	No. of Ass. Lect. & Demonst.	
3	1	-	1	

Staff members

#	Name	Scientific degree	e-mail	Specializations	C.V
1	Mahmoud Abdel-Aty	Professor	amisaty@gmail.com	Quantum Mechanics	https://scholar.google.com/eg/citations?hl=en&user=1m5qGCQAAAAJ
2	S. Abdel-Khalek Mohamed	Professor	sabotalb@tu.edu.sa	Quantum Mechanics	https://scholar.google.com/eg/citations?hl=en&user=TYghjaIAAAJ
3	Nour Zidan	Professor	nazidan@yahoo.com	Quantum Mechanics	https://scholar.google.com/eg/citations?hl=en&user=YsbQg6gAAAAJ
4	Hamada F. Abdel-Hameed	Ass. Professor	hf_elsheikh@yahoo.com	Quantum Mechanics	https://www.scopus.com/authid/detail.uri?origin=resultslist=&authorId=6506377845&zone

Ass. Lecturers & Demonstrators

#	Name	Scientific degree	e-mail	Specializations	C.V
1	Haytham Bakry	Ass. Lecturer	haitham.bakry@yahoo.com	Quantum Mechanics	https://scholar.google.com/eg/citations?user=ghQSDEEAAAAJ&hl=en

Theses produced by the Lab			
M. Sc Thesis			
#	Name	Title	Approval date
1	Haytham Bakry	Some Quantum Models in the Weak- or Strong-Coupling Regimes	17/12/2019
2			
Ph.D. Thesis			
#	Name	Title	Approval date
1	محمد عبد اللطيف عبد العال	إقتراح وتطوير بعض الخوارزميات فى الكمبيوتر الكمى والذكاء الاصطناعى الكمى	2019/12/30
2			

Articles produced by the Lab		
#	Title	Journal information
1.	Incidence of HCV induced-esophageal varices in Egypt valuable knowledge using data mining analysis	Medicine (United States), 2017, 96(4), e5647
2.	A fast and precise numerical algorithm for a class of variable-order fractional differential equations	Proceedings of the Romanian Academy Series A - Mathematics Physics Technical Sciences Information Science, 2017, 18(1), pp. 17–24
3.	Low-cost autonomous perceptron neural network inspired by quantum computation	AIP Conference Proceedings, 2017, 1905, 020005
4.	Fourier Decomposition and Anisotropic Diffusion Filtering of Forced Turbulence	International Journal of Applied Mechanics, 2017, 9(8), 1750121
5.	Entanglement of a nonlinear two two-level atoms interacting with deformed fields in Kerr medium	Pramana - Journal of Physics, 2018, 90(1), 1
6.	A novel algorithm based on entanglement measurement for improving speed of quantum algorithms	Applied Mathematics and Information Sciences, 2018, 12(1), pp. 265–269
7.	Cavity control as a new quantum algorithms implementation treatment	Frontiers of Physics, 2018, 13(1), 130303
8.	Geometric Phase and Entanglement of a Three-Level Atom With and Without Rotating Wave Approximation	Brazilian Journal of Physics, 2018, 48(1), pp. 9–15
9.	A study of normality and continuity for mixed integral equations	Journal of Fixed Point Theory and Applications, 2018, 20(1), 5
10.	Robust general N user authentication scheme in a centralized quantum communication network via generalized GHZ states	Frontiers of Physics, 2018, 13(2), 130306
11.	Dynamical Controls for Improving Quantum Search Algorithm Through Flux	Fortschritte der Physik, 2018, 66(5), 1700080

Qubits System		
12.	Analytical solution and applications of three qubits in three coupled modes without rotating wave approximation	Quantum Information Processing, 2018, 17(6), 125
13.	The Population Inversion and the Entropy of a Moving Two-Level Atom in Interaction with a Quantized Field	International Journal of Theoretical Physics, 2018, 57(8), pp. 2319–2329
14.	Analytical discussion for the mixed integral equations	Journal of Fixed Point Theory and Applications, 2018, 20(3), 115
15.	Optical soliton perturbation with Kundu–Eckhaus equation by $\exp(-\phi(\xi))$-expansion scheme and G'/G^2-expansion method	Optik, 2018, 172, pp. 79–85
16.	Chirped singular and combo optical solitons for Gerdjikov–Ivanov equation using three integration forms	Optik, 2018, 172, pp. 144–149
17.	Sub pico-second chirp-free optical solitons with Kaup-Newell equation using a couple of strategic algorithms	Optik, 2018, 172, pp. 766–771
18.	Squeezing dynamics of a nanowire system with spin-orbit interaction	Scientific Reports, 2018, 8(1), 10484
19.	Optical soliton perturbation for Gerdjikov–Ivanov equation via two analytical techniques	Chinese Journal of Physics, 2018, 56(6), pp. 2879–2886
20.	Higher-Order convolutions for apostol-bernoulli, apostol-euler and apostol-genocchi polynomials	Mathematics, 2018, 6(12), 329
21.	A NEW GENERAL FRACTIONAL-ORDER DERIVATIVE WITH RABOTNOV FRACTIONAL-EXPONENTIAL KERNEL APPLIED TO MODEL THE ANOMALOUS HEAT TRANSFER	Thermal Science, 2019, 23(3), pp. 1677–1681
22.	New Design of Reversible Full Adder/Subtractor Using R Gate	International Journal of Theoretical Physics, 2019, 58(1), pp. 167–183
23.	Reflection and refraction of incident p-, T-, and SV-waves at interface between magnetized two solid-liquid media with	Journal of Thermal Stresses, 2019, 42(2), pp. 233–253

	heat sources and initial stress with and without thermal relaxation times	
24.	Quantum classification algorithm based on competitive learning neural network and entanglement measure	Applied Sciences (Switzerland), 2019, 9(7), 1277
25.	Trace-norm correlation beyond entanglement in InAs nanowire system with spin-orbit interaction and external electric field	Journal of the Optical Society of America B: Optical Physics, 2019, 36(4), pp. 926–934
26.	Rashba control to minimize circuit cost of quantum Fourier algorithm in ballistic nanowires	Physics Letters, Section A: General, Atomic and Solid State Physics, 2019, 383(12), pp. 1247–1254
27.	An independent set degree condition for fractional critical deleted graphs	Discrete and Continuous Dynamical Systems - Series S, 2019, 12(4-5), pp. 877–886
28.	Direct Observation of Dissipation in Dynamical Search Algorithm using Transmon Qubits	Annalen der Physik, 2019, 531(8), 1900022
29.	Controlling steady-state entanglement and quantum discord through squeezing angle	Chaos, Solitons and Fractals, 2019, 128, pp. 382–389
30.	Cluster synchronization of stochastic neural networks with delay via pinning impulsive control	Neurocomputing, 2019, 366, pp. 109–117
31.	A quantum algorithm based on entanglement measure for classifying Boolean multivariate function into novel hidden classes	Results in Physics, 2019, 15, 102549
32.	An analytical solution for fractional oscillator in a resisting medium	Chaos, Solitons and Fractals, 2020, 130, 109395
33.	A novel Lyapunov theorem on finite/fixed-time stability of discontinuous impulsive systems	Chaos, 2020, 30(1), 013139
34.	A new techniques applied to Volterra–Fredholm integral equations with discontinuous kernel	Journal of Computational Analysis and Applications, 2020, 29(1), pp. 11–24
35.	Distributed aggregate tracking of heterogeneous thermostatically controlled	Journal of Intelligent and Fuzzy Systems, 2020, 38(3), pp. 2539–2550

	load clusters	
36.	A quantum classification algorithm for classification incomplete patterns based on entanglement measure	Journal of Intelligent and Fuzzy Systems, 2020, 38(3), pp. 2817–2822
37.	Computing the Laplacian Spectrum of Linear Octagonal-Quadrilateral Networks and Its Applications	Polycyclic Aromatic Compounds, 2020
38.	Mathematical prospective of coronavirus infections in bahrain, saudi arabia and egypt	Information Sciences Letters, 2020, 9(2), pp. 51–64
39.	On the new explicit solutions of the fractional nonlinear space-time nuclear model	Fractals, 2020
40.	Entanglement control of two-level atoms in dissipative cavities	Applied Sciences (Switzerland), 2020, 10(4), 1510
41.	Investigation of soliton solutions with different wave structures to the (2 + 1)-dimensional Heisenberg ferromagnetic spin chain equation	Communications in Theoretical Physics, 2020, 72(3), 035002
42.	Dynamics of a nonlinear time-dependent two two-level atoms in a two-mode cavity	International Journal of Quantum Information, 2020, 18(3), 2050003
43.	New optical solitary wave solutions of Fokas-Lenells equation in optical fiber via Sine-Gordon expansion method	Alexandria Engineering Journal, 2020, 59(3), pp. 1191–1196
44.	Fixed-Time Passification Analysis of Interconnected Memristive Reaction-Diffusion Neural Networks	IEEE Transactions on Network Science and Engineering, 2020, 7(3), pp. 1814–1824, 8906166
45.	A fractional model for estimating the hole geometry in the laser drilling process of thin metal sheets	Chaos, Solitons and Fractals, 2020, 136, 109843
46.	Set Stabilization of Boolean Control Networks with Impulsive Effects: An Event-Triggered Approach	IEEE Transactions on Circuits and Systems II: Express Briefs, 2020, 67(7), pp. 1244–1248, 8762123
47.	Analytical results for quadratic integral equations with phase-lag term	Journal of Applied Analysis and Computation, 2020, 10(4), pp. 1588–1598
48.	Numerical study of integer-order	European Physical Journal Plus, 2020, 135(9),

	hyperbolic telegraph model arising in physical and related sciences	759
49.	A survey on sharp oscillation conditions of differential equations with several delays	Mathematics, 2020, 8(9), 1492
50.	Theoretical and numerical discussion for the mixed integro–differential equations	Journal of Computational Analysis and Applications, 2020, 29(5), pp. 880–892
51.	Distributed Neuro-Adaptive Formation Control for Uncertain Multi-Agent Systems: Node-and Edge-Based Designs	IEEE Transactions on Network Science and Engineering, 2020, 7(4), pp. 2656–2666, 9007519
52.	A novel mathematical approach of COVID-19 with non-singular fractional derivative	Chaos, Solitons and Fractals, 2020, 139, 110048
53.	Some features of the geometric phase and entanglement of three-level atom under cavity damping effects	Indian Journal of Physics, 2020, 94(11), pp. 1691–1698
54.	Event-Triggered Synchronization for Neutral-Type Semi-Markovian Neural Networks with Partial Mode-Dependent Time-Varying Delays	IEEE Transactions on Neural Networks and Learning Systems, 2020, 31(11), pp. 4437–4450, 8937786
55.	Response of quantum Fisher information, variance entropy squeezing and entanglement to the intrinsic decoherence of two non-degenerate fields interacting with two qubits	Alexandria Engineering Journal, 2020, 59(6), pp. 5147–5154
56.	Bures and trace-distance correlations of quantum wells in open microcavities linked by an optical waveguide	Optik, 2021, 225, 165744
57.	Pancharatnam phase of non-hermitian hamiltonian	Information Sciences Letters, 2021, 10(1), pp. 25–32
58.	Modeling of diffusive patterns in predator–prey system using turing instability and amplitude equations	Information Sciences Letters, 2021, 10(1), pp. 5–16
59.	On the theory of the fractal scaling-law elasticity	Meccanica, 2021
60.	A Novel Efficient Quantum Random Access Memory	IEEE Access, 2021, 9, pp. 151775–151780
61.	Intermittent Event-Triggered Optimal	IEEE Transactions on Neural Networks and

	Leader-Following Consensus for Nonlinear Multi-Agent Systems via Actor-Critic Algorithm	Learning Systems, 2021
62.	Non-classical computing problems: Toward novel type of quantum computing problems	Results in Physics, 2021, 21, 103536
63.	Optimizing quantum cloning circuit parameters based on adaptive guided differential evolution algorithm	Journal of Advanced Research, 2021, 29, pp. 147–157
64.	A multi-vehicle communication system to assess the safety and mobility of connected and automated vehicles	Transportation Research Part C: Emerging Technologies, 2021, 124, 102887
65.	Fractional order biological snap oscillator: Analysis and control	Chaos, Solitons and Fractals, 2021, 145, 110763
66.	Entanglement of a Nanowires System with Rashba Interaction	International Journal of Theoretical Physics, 2021, 60(5), pp. 1651–1661
67.	Topological Structure, Reachability, and Stabilization of Constrained Boolean Control Networks via Event-Triggered Control	IEEE Transactions on Systems, Man, and Cybernetics: Systems, 2021, 51(6), pp. 3565–3574, 8799008
68.	Fixed-Time Synchronization of Second-Order MNNs in Quaternion Field	IEEE Transactions on Systems, Man, and Cybernetics: Systems, 2021, 51(6), pp. 3587–3598, 8791003
69.	Fractional chaotic cryptovirology in blockchain - analysis and control	Chaos, Solitons and Fractals, 2021, 148, 110989
70.	Hyperchaotic and quasiperiodic behaviors of a two-photon laser with multi-intermediate states	Chaos, Solitons and Fractals, 2021, 152, 111316
71.	Synchronization analysis for complex dynamical networks with coupling delay via event-triggered delayed impulsive control	IEEE Transactions on Cybernetics, 2021, 51(11), pp. 5269–5278
72.	Efficient quantum gates and algorithms in an engineered optical lattice	Scientific Reports, 2021, 11(1), 15402
73.	Quantum computational speed of a nanowires system with Rashba interaction	Scientific Reports, 2021, 11(1), 22726

	in the presence of a magnetic field	
74.	Entropic uncertainty for two coupled dipole spins using quantum memory under the dzyaloshinskii–moriya interaction	Entropy, 2021, 23(12), 1595
75.	The Probe Attack on the Bennett-Brassard 1984 Protocol in the Presences of Noisy Amplitude Damping Channel	International Journal of Theoretical Physics, 2017, 56(7), pp. 2231–2242
76.	Properties of Two Two-level Atoms Interacting with Intensity-Dependent Coupling	International Journal of Theoretical Physics, 2018, 57(2), pp. 539–548
77.	Quantum Fisher information of two superconducting charge qubits under dephasing noisy channel	International Journal of Modern Physics B, 2018, 32(22), 1850245
78.	Dynamics of the entanglement and teleportation of thermal state of a spin chain with multiple interactions	Chaos, 2019, 29(1), 013138
79.	Quantum Fisher information of atomic system interacting with a single cavity mode in the presence of Kerr medium	Scientific Reports, 2019, 9(1), 2699
80.	Entropic uncertainty in Spin XY model with long-range interactions	Entropy, 2020, 22(8), 837
81.	Control-based verification of multiatoms in a cavity	Pramana - Journal of Physics, 2020, 94(1), 96
82.	The optimal estimation state of one-axis twisting model	Optik, 2021, 226, 165934
83.	The entangling-probe attack on the bennett-brassard 1984 protocol	Applied Mathematics and Information Sciences, 2020, 14(5), pp. 909–912