

# Prof. Mahmoud Abdel-Aty

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## Personal Details

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 Web page <http://www.abdelaty.com>  
 Date of Birth 6 Nov. 1967

## Academic Career

YEAR	DEGREE
1990	B.Sc. Excellent with Honor Degree
1995	M.Sc. Applied Mathematics, Quantum Information
1999	Ph. D. Applied Mathematics, Quantum Information
2007	D. Sc. Mathematics and Physics

## Substantive Positions Held

YEAR	POST	INSTITUTION
1990-1995	Assistant Lecturer	Assuit University
1995-1997	Lecturer	South Valley University
1997-1999	Ph. D. Student	Max-Plank-Institute, Munch, Germany
1999-2001	Assistant Professor	South Valley University
2001-2003	Post Doc.	Flensburg University, Germany
<b>2004</b>	<b>Associate Professor</b>	<b>South Valley University, Egypt</b>
2004	Visiting Ass. Professor	International Islamic University, Malaysia
2006	Visiting Ass. Professor	MIMOS, Information Security Cluster, Malaysia
2006,2007	Visiting Ass. Professor	King Abdel-Aziz City for Science and Tech. KSA
2006, 2007	Visiting Ass. Professor	Institute of Nuclear Physics, Tashkent
2009	Regular Visiting Professor	Universite Paul Sabatier, France
2009	Visiting Professor	SQIG-IT Research group, Lisbon, Portugal
<b>2009</b>	<b>Professor</b>	<b>Sohag University, Egypt</b>
2010--	Visiting Professor	Lunds University, Sweden
2007---	Director of NSP	
2011--2014	Head of Scientific Publishing Center	UOB, Kingdom of Bahrain
2013 ---	Vice President (Elected)	African Academy of Sciences, Kenya
2014 ---	National Math. Committee	Egyptian Academy of Science and Technology
2017—	Dean of Research and Graduate Studies	Appl. Sci. Uni. Bahrain

## Awards and Prizes

Year	Award or Fellowship
2011	National award for Excellency in Basic Sciences, : Awarded by the the Egyptian Academy of Sciences and Technology, Egypt
2009	Prof. Fayza Al-Khoraphy Prize in Physic, : Awarded by the the Egyptian Academy of Sciences and Technology, Egypt

- 2005 *Abdul Hameed Shoman Prize for Young Arab Researchers in Mathematics and Computer Science, Jordan*
- 2005 *Third World Academy's Prize in Mathematics (2005), supported by ICTP, Italy*
- 2003 *Awarded State Prize of Distinction in Mathematical Sciences: Awarded by the the Egyptian Academy of Sciences and Technology, Egypt*
- 2003 *Amin Lotfy's Prize for Basic Science: Awarded by the Egyptian Academy of Science and Technology, Egypt.*

### Funded Research Projects

Year	
2004	<i>HEEP, Electronic Materials for Medicen Education. Sohag University EB 150,000.</i>
2008	<i>Security Using Superconducting Charge Qubit, RESEARCH PROJECT GRANT No. 11/2008, University of Bahrain BD 1400 .</i>
2009	<i>Mathematical Models and Quantum Networks, RESEARCH PROJECT GRANT No. 15/2009, University of Bahrain BD 1600.</i>
2009	<i>Mathematical Model of Measuring H1N1 swine flu Propagation in Bahrain, Minstry of Health, Bahrain BD 15000.</i>
2010	<i>Geometric Phase of Multi-Level Systems, RESEARCH PROJECT GRANT No. 5/2010, University of Bahrain BD 1800.</i>
2010	<i>Erasmus Mundus program (External Cooperation Window Lot 2, EU), Lund University, Sweden (€ 10 800).</i>

### Followships

Year	Award or Fellowship
2010	<i>Fulbright scholarship: Council for International Exchange of Scholars and United States Department of State, USA</i>
2010	<i>Erasmus Mundus Scholarship (The Eurpean Union Program), Lund University, Sweden.</i>
2009	<i>Universite Paul Sabatier Recognition, France</i>
2008	<i>Regular Associate, 2008-2013, ICTP, Italy</i>

### Editorial Roles for Refereed Journals

No.	JOURNALS	COUNTRY
1.	<i>Applied Mathematics &amp; Information Sciences (International Journal) (Editor-in-Chief)</i>	U.S.A.
2.	<i>Transactions of Applied Mathematics-Modeling and Simulation (International Journal) Editor</i>	Canada
3.	<i>Transactions on Information Technology- Theory and Applications (International Journal) Editor</i>	Canada
4.	<i>International Journal of Modern Mathematics (International Journal) (Editor)</i>	U.S.A.
5.	<i>Entropy (International Journal) (Guest Editor)</i>	Switzerland

6. [Arab Journal of Mathematics and Mathematical Sciences](#) (International Journal) Jourdan  
Editor
7. [Journal of Atomic and Molecular Sciences](#) (International Journal) Editor Hong Kong

## Refereeing for International Publishing Houses / Societies

- 2010 - External referee for AY2011-2012 International Fulbright Science and Technology Ph.D. Program (4) and the Fulbright Student Program (1)
- 2009– American Association for the Advancement of Science.
- 2007– American Journal of Physics.
- 2005– Rinton Press.
- 2004– Kluwer Academic Publishers.
- 2004– European Physical Society / European Optical Society.
- 2004– Taylor and Francis Publishing.
- 2003– Institute of Physics Publishing, IOP, UK.
- 2003– Elsevier Science.
- 2003– American Physical Society.

## Executive Service on Professional Committees

- Chair for the one-day meeting of Egyptian Mathematical Society, March 2004, South Valley University
- Chair of the Scientific Committee of the first International Conference on Mathematics and Information Security, at Sohag University, Egypt 13-15 Nov. 2009.
- Organizer of the first International Conference on Mathematics and Information Security, at Sohag University, Egypt 13-15 Nov. 2009
- Organizer of the Second International Conference on Mathematics and Information Science, will be held at Sohag University, Egypt 10-13 Sep. 2011
- Chair of the 1st International Workshop “Information Transfer Security” Manama 13-15 March 2007, Kingdom of Bahrain
- I have organized a series of Quantum Optics and Quantum Information meetings, at South Valley University, October 2003, April 2004 and May 2005.
- I have served as an Organizing Secretary Member, Programm’s Coordinator and conf. web site supervisor of the International Conference on Recent Trends in Mathematical Sciences (ICRMS 2008 ), November 10th – 12th , 2008, Kingdom of Bahrain
- I have organized a workshop on “Information Security Using Superconducting Materials” Bahrain University 20-21 April 2009, Kingdom of Bahrain

## Main Research Interests

- Quantum Information
- Mathematical Modeling
- Applied Mathematics
- Quantum computing and decoherence

- Quantum circuits, particularly those based on superconducting devices.
- Quantum computation and quantum information processing.
- Entanglement/separability in multi-partite and open quantum systems.
- Realisations of condensed matter and photonic band gap systems for quantum technologies.
- Transition state spectroscopy and Laser control of physical systems
- Strong field phenomena in atoms and molecules
- Quantum theory of elementary exchange reactions
- Foundations of quantum mechanics

## TEACHING EXPERIENCE

### a) Undergraduate Courses

Calculus with Applications I, II and III --- Introduction to Probability and Statistics --- Mathematics for Computer Science --- Analytical Dynamics (Math 385) --- Math 499, Math 103, Math 104, Math 107, Stat 273, Stat 105 --- Quantum Mechanics --- Mathematical Modeling--- Differential Equations and Computer Algebra --- Computer Applications in Mathematics., -- Quantum Physics I, II and III, --- Classical Mechanics.

### b) Graduate Courses

Mathematical Methods for Engineers I, --- Introduction to Numerical Methods --- Nonlinear Dynamics and Waves, --- Quantum Computation, Computer Algebra.  
Quantum Theory I, II, --- Quantum Information Science, --- Statistical Mechanics I: Statistical Mechanics of Particles

## Languages

Language	Reading	Writing	Speaking
Arabic	<b>Mother Tongue</b>		
English	Very good	Very good	Very good
German	Very good	Good	Good

## M. Sc. and Ph. D. Dissertations Supervised

N	NAME OF STUDENT	YEAR (TYPE)	TITLE OF THE THESIS
1.	S. Abdel-Khalek (Egypt)	2001 (M. Sc.)	Some models of quantum optics
2.	Mohamed Ateto (Egypt)	2004 (Ph. D.)	Properties of particles-field interaction
3.	H. F. Abdel-Hameed (Egypt)	2004 (Ph. D.)	Interaction between trapped ions with laser field
4.	Hasna Rabeeh (Egypt)	2007 (M. Sc.)	Two-level trapped ion interacting with a laser field
5.	Same saker (Egypt)	2004 (M. Sc.)	Image processing and filtration
6.	Yasser H. Saman (Egypt)	2005 (M. Sc.)	Quantum geometric phase
7.	Gamal Ahmed (Egypt)	2005 (M. Sc.)	Some problems in differential geometry
8.	Gamal Amin (Egypt)	2006 (M. Sc.)	Problems in statistics and probability
9.	Ilham Rasolove (Uzbekistan)	2007 (M. Sc.)	Kinetic equations of ultra-cold atoms

10.	T. A. Mokhiemer (Sudia Arabia)	2007 (M. Sc.)	Three-level atom interacting with a laser field
11.	M. Abdel-Kareem Kalil (Bahrain)	2008 (Ph. D.)	Statistical properties of pulsed driven atoms
12.	N. Yosef Hassan (Bahrain)	2008(Ph. D.)	Stability analysis of some mathematical models of quantum optics
13.	N. M. Mohamed (Sudia Arabia)	2008 (Ph. D.)	Emission spectrum of a single qubit
14.	Chan Yeen Chia (Malaysia )	2016 (M. Sc.)	Quantum System Behavior of Jaynes-Cummings Model with Kerr-Like Medium

### Mahmoud Abdel-Aty: LIST OF PUBLICATIONS Int. Journals

#### 2018

- [1] R. I. Mohamed, Ahmed Farouk, A. H. Homid, O. H. El-Kalaawy, Abdel-Haleem Abdel-Aty, M. Abdel-Aty and S. Ghose, *Squeezing dynamics of a nanowire system with spin-orbit interaction*, **Springer Nature: Scientific Reports** (2018) 8:10484 / DOI:10.1038/s41598-018-28607-3
- [2] Saima Arshed, Anjan Biswas, Mahmoud Abdelaty, Qin Zhou, Seithuti P. Moshokoa, Milivoj Belic, *Optical soliton perturbation with Kundu–Eckhaus equation by  $\exp(-\phi(\xi))$ -expansion scheme and  $G'/G^2$ -expansion method*, **Optik - International Journal for Light and Electron Optics**, Vol. 172 (2018) 79–85
- [3] Jian-Song Zhang, Liu-Juan Zhang, Ai-Xi Chen and **M. Abdel-Aty**, *Analytical solution and applications of three qubits in three coupled modes without rotating wave approximation*, **Quantum Information Process** 17: 125 (2018) <https://doi.org/10.1007/s11128-018-1891-0>
- [4] Anwar Jaafar, Mohamad Jawada, Anjan Biswas, Mahmoud Abdel-Aty, Qin Zhou, Seithuti P. Moshokoa, Milivoj Belic, *Chirped singular and combo optical solitons for Gerdjikov–Ivanov equation using three integration forms*, **Optik - International Journal for Light and Electron Optics** Volume 172, November 2018, Pages 144-149 <https://doi.org/10.1016/j.ijleo.2018.07.013>
- [5] D. A. M. Abo-Kahla, **M. Abdel-Aty**, A. Farouk, *The Population Inversion and the entropy of a moving Two-level Atom in Interaction with a quantized Field*, **International Journal of Theoretical Physics** (2018) <https://doi.org/10.1007/s10773-018-3754-y>
- [6] M. Abu-Ghanem, A. H. Homid, **M. Abdel-Aty**, *Cavity control as a new quantum algorithms implementation treatment*, **Frontiers of Physics**, 13(2), 130303 (2018) <https://doi.org/10.1007/s11467-017-0709-3>
- [7] A. H. Homid, **M. Abdel-Aty**, T. El-Shahat, H. Eleuch, and A.-S. F. Obada, *Dynamical Controls for Improving Quantum Search Algorithm Through Flux Qubits System*, **Frontiers of Physics**, 13(4), 2018, 1700080 <http://doi:10.1002/prop.201700080>
- [8] M. Zidan, A. Abdel-Aty, A. Younes, E. A. Zanaty, I. El-khayat and **M. Abdel-Aty**, *A Novel Algorithm based on Entanglement Measurement for Improving Speed of Quantum Algorithms*, **Appl. Math. Inf. Sci.** Volume 12, No. 1, PP:265-269 (2018) <https://doi:10.18576/amis/120127>
- [9] A. Farouk, Josep Batle, Nanrun Zhou, Mosayeb Naseri, Ming-Ming Wang, **M. Abdel-Aty**, *Robust General N User Authentication Scheme in a Centralized Quantum Communication Network via Generalized States*, **Frontiers of Physics** 13(2), 130306 (2018) <https://doi.org/10.1007/s11467-017-0717-3>
- [10] R. I. Mohamed, M. R. Sakr, Isa Al-Khayat and **M. Abdel-Aty**, *Geometric Phase of Spin-Orbit Interaction in Multigated Nanowires*, **Quantum Physics Lett.** 7, No. 1, 1-6 (2018)
- [11] S. Abdel-Khalek, Y. Elsaman and **M. Abdel-Aty**, *Entanglement of a nonlinear two two-level atoms interacting with deformed fields in Kerr medium*, **Pramana – J. Phys.** (2018)
- [12] M. Zidan, A. Abdel-Aty, A. S. A. Mohamed, I. El-khayat and **M. Abdel-Aty**, *Solving Deutsch's Problem using Entanglement Measurement Algorithm*, **Appl. Math. Inf. Sci. Lett.** 6, No. 3, 1-5 (2018)

#### 2017

- [13] **M. Abdel-Aty**, M. Fouad, M. M. Sallam, E. A. Elgohary, A. Ismael, A. Nawara, B. Hawary, M. Tag-Adeen, S. Khaled, *Incidence of HCV induced Esophageal varices in Egypt: Valuable Knowledge Using Data Mining Analysis*, **Medicine**, 96(4): e5647 (2017)
- [14] A. Bhrawy, M. Zaky, and **M. Abdel-Aty**, *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**, Volume: 18 Issue: 1 Pages: 17-24 Published: JAN-MAR 2017
- [15] S. Abdel-Khalek, Y. S. El-Saman, I. Mechai, **M. Abdel-Aty**, *Geometric Phase and Entanglement of a Three-Level Atom With and Without Rotating Wave Approximation*, **Braz J Phys** 1-7 (2017)
- [16] S. Abdel-Khalek, Y. S. El-Saman, **M. Abdel-Aty**, *Entanglement of a nonlinear two two-level atoms interacting with deformed fields in Kerr medium*, **Pramana – J. Phys.** 1-6 (2017) M. Zidan, A. Abdel-Aty, A. El-Sadek, E. A. Zanaty and **M. Abdel-Aty**, *Low-cost autonomous perceptron neural network inspired by quantum computation*, **AIP Conference Proceedings** **1905**, 020005 (2017); **Publisher name: American Institute of Physics**
- 2016**
- [17] **M. Abdel-Aty**, *Comment on “Towards a unified approach in the modeling of fibrosis: A review with research perspectives” by Martine Ben Amar and Carlo Bianca*, **Physics of Life Reviews**, Vol. 17 pp. 86-87 (2016)
- [18] Y. S. El-Saman, S. Abdel-Khalek, A. Badawi, **M. Abdel-Aty**, *New Perspectives on Nonlinear Multi-Atoms Interacting with a Cavity Field*, **Applied Mathematics and Information Sciences**, Vol. 10, No. 2, pp. 421-429 (2016).
- [19] J. Batle, A. Bagdasaryan, **M. Abdel-Aty**, S. Abdalla, *Generalized Thomson problem in arbitrary dimensions and non-euclidean geometries*, **Physica A: Statistical Mechanics and its Applications**: Vol. 451, No. 1, pp. 237–250 (2016).
- [20] S. Araci, Ugur Duran, Mehmet Acikgoz, and **M. Abdel-Aty**, *Theorems on q-Frobenius-Euler polynomials under SYM*, **Utilitas Mathematica** Vol 101, pp. 129-137 (2016).
- 2015**
- [21] Hari M. Srivastava, Theodore E. Simos, and **M. Abdel-Aty**, *Computational Methods in Sciences and Engineering*, **Journal Computational, Theoretical and Nanoscience**, Vol. 12, pp. 6094-6095 (2015)
- [22] S. Abdel-Khalek and **M. Abdel-Aty**, *Effects of Squeezing Parameter and Time Dependent Coupling on the Evaluation of the Entanglement Between Two Two-Level Atoms*, **Applied and Computational Mathematics**, Vol. 14 No. 3 pp. 328-335 (2015):
- [23] J. Batle, **M. Abdel-Aty**, C. H. Raymond, Abdalla, Y. Al-hedeethi: *Locality and classicality: role of entropic inequalities*, **Quantum Information Processing**, Vol. 14 pp.3115–3137 (2015): DOI 10.1007/s11128-015-1028-7
- [24] Rasha Montaser, A. Younes, **M. Abdel-Aty**: *Improving the quantum cost of NCT-based reversible circuit*, **Quantum Information Processing**, Vol. 14 pp.1249–1263 (2015) DOI 10.1007/s11128-015-0929-9
- [25] A. H. Homid, A. Abdel-Aty, **M. Abdel-Aty**, A. Badawi and A.-S. F. Obada: *Efficient realization of quantum search algorithm using quantum annealing processor with a dissipation*, **Journal of the Optical Society of America B** (2015)
- [26] D. A. M. Abo-Kahla, S. A. Aly, **M. Abdel-Aty**, *Analytical Solution of The Two-Qubit Quantum Rabi Model*, **Int. J. Quant Inf.** arXiv preprint arXiv:1506.01903
- [27] Y. S. El-Saman, S. Abdel-Khalek and Mahmoud **M. Abdel-Aty**, *Entanglemen Sudden Death and Sudden Birth of a Nonlinear Two Two-Level Atoms*, **International Journal Quantum Information**, 2015
- [28] A. H. Homid, **M. Abdel-Aty** and A.-S. F. Obada, *Multi-Qubit Dynamical Quantum Search Algorithm with Dissipation*, **Phys. Rev. A** Sub 2015
- [29] A. H. Homid, **M. Abdel-Aty** and A.-S. F. Obada,, *Efficient realization of quantum search algorithm using quantum annealing processor with a dissipation* **J. Opt. Soc. America B**, in press
- 2014**
- [30] H. Kadry, N. Zakaria, Lee Yen Cheong, **Mahmoud Abdel-Aty**, *"Entropy squeezing of multi-photon field interacting with a single-Cooper-pair box"* **Optik**, *International Journal for Light and Electron Optics* Volume 125, Issue 18, (2014), Pages 5134–5140 DOI: 10.1016/j.ijleo.2014.05.010
- [31] J. Batle and **Mahmoud Abdel-Aty**, *A geometrical approach to the distribution of quantum states in bipartite physical systems*, **Journal of the Optical Society of America: J. Opt. Soc. Am. B / Vol. 31, No. 11 / November 2014**
- [32] **Mahmoud Abdel-Aty**, M. Bouchen and A. McGurn, *Entanglement rebirth of multi-trapped ions with trap phonon modes*, **Quantum Information Processing**, Vol. 13, No. 9, (2014) pp 1937-1950 DOI 10.1007/s11128-014-0787-x



- [33] A. Younes and **Mahmoud Abdel-Aty**, "Collapsing a Perfect Superposition to a Chosen Quantum State without Measurement" **Plos One**, Vol. 9 No. 8 (2014) e103612
- [34] **Mahmoud Abdel-Aty**, "New Index for Quantifying an Individual's Scientific Research Output", **Computer Technology and Application**, Vol. 5 (2014) 44-50
- [35] S. Abdel-Khaleka, K. Berradaa, H. Eleuchb, **Mahmoud Abdel-Aty**, "Engineering Geometric Phase in Semiconductor Microcavities", **Physica E: Low-dimensional Systems and Nanostructures** **64** (2014) 112–116
- [36] **Mahmoud Abdel-Aty**, "Linear Entropy of a Driven Central Spin Interacting with an Antiferromagnetic Environment", **Natural Science**, Vol. 6 No. 7 (2014) PP. 532-539 DOI: [10.4236/ns.2014.67052](https://doi.org/10.4236/ns.2014.67052)
- [37] A. Chafik, K. Berrada, H. Eleuch, and **Mahmoud Abdel-Aty**, "M-Flip Concurrence in the Framework of Multipartite Spin Coherent States", **Journal of Computational and Theoretical Nanoscience** **11**, 2091 (2014).
- 2013**
- [38] **M. Abdel-Aty**, "Geometric Phase in a Multi-Level Superconducting Artificial Atom", **Laser Physics**, **23**, 055202 (2013).
- [39] A. Younes and **M. Abdel-Aty**, "Amplitudes Distribution Over Two Copies of Small Quantum Subsystems", **Quantum Information Processing**, **12** (9), pp. 2977-2991 (2013)
- [40] N. Metwally, **M. Abdel-Aty** and A.-S. F. Obada, "Coherent and incoherent behaviors of qubits interacting with a spin-path particle", **International Journal of Modern Physics B**, Vol. 27, No. 17 (2013) 1350076
- [41] N. Metwally, A. Mannai and **M. Abdel-Aty**, "Skew Information for a single Cooper Pair Box interacts with a single cavity Mode", **Communication in Theoretical Physics**, **59** (2013) 769
- [42] H. Kadry, N. Zakaria, L. Y. Cheong and **M. Abdel-Aty**, "Dynamical Properties of Multi-Photon Interaction Between a Cavity Field and a Single-Qubit", **International Journal of Quantum Information**, Vol. 11, No. 4 (2013) 1350038
- [43] **M. Abdel-Aty**, D. Abu-Kahla and A.-S. Obada, "Spatial Dependence of Moving Three-Level Atoms Interacting with a Three-Laser Beam", **Canadian Journal of Physics**, 29 July 2013, 10.1139/cjp-2013-0138
- [44] **M. Abdel-Aty**, "Entanglement of a Driven Central Spin Interacting with an Antiferromagnetic Environment", **J. Opt. Soc. Am. B**, Sub. (2013)
- 2012**
- [45] J.S. Zhang, L. Chen, **M. Abdel-Aty** and A.X. Chen, "Sudden death and robustness of quantum correlations in the weak- or strong-coupling regime", **The European Physical Journal D** **66**: 2 (2012) pp. 1-8.
- [46] D. Abo-Kahlaa and **M. Abdel-Aty**, "Dynamics of a Tri-Beam Laser Interacting with a Three-Level Atom", **Laser Physics**, Vol. 22, No. 12, (2012) pp. 1803–1807.
- [47] **M. Abdel-Aty**, "Indices to Quantify Arabic Journal Ranks and Research output", **Information Sciences Letters**, Vol. 1, No. 2 (2012), pp. 103-106
- [48] **M. Abdel-Aty**, "Statistical Properties of a Two-Ion System with a Laser Field", **Journal of Fractional Calculus and Applications**, Vol. 3, No. 1 (2012), PP:1-7
- [49] N. Zidan, S. Abdel-Khalek and **M. Abdel-Aty**, "Geometric Phase and Disentanglement of a Moving Four-Level Atom in the Presence of Nonlinear Medium", **International Journal of Quantum Information**, Vol. 10, No. 1 (2012) 1250007
- [50] S. Abdel-Khalek, K. Berrada, Y. S. El-Saman, **M. Abdel-Aty**, "Pancharatnam and total phases for one-dimensional photonic band gaps", **Journal of Russian Laser Research**, Vol. 33, No.5 (2012) pp. 437-447
- 2011**
- [51] S. Abdel-Khalek, K. Berrada, H. Eleuch and **M. Abdel-Aty**, "Dynamics of Wehrl entropy of a degenerate two-photon process with a nonlinear medium", **Opt. Quant. Electron.** (2011) 42:887–897
- [52] **M. Abdel-Aty** and M. Aziz Bouchene, "Magnetic Flux sensitivity of the Population and the Pancharatnam Phase for a Single Cooper-Pair Box", **International Journal of Quantum Information** Vol. 9 No. 3 (2011)
- [53] S. Abdel-Khalek, Y. Hassouni and **M. Abdel-Aty**, "Wehrl entropy of a mixed state three-level atom interacting with a cavity field", **International Journal of Nanoscience**, Vol. 9, No. 6 (2011) 623-630
- [54] A.-S. F. Obada, D. Abo-Kahla and **M. Abdel-Aty**, "Entanglement dynamics for two atoms inside a cavity", **Nonlinear Optics & Quantum Optics: Concepts in Modern Optics** Vol. 42, No. 1 (2011) pp. 61-78
- [55] **M. Abdel-Aty** and W. Alnasser, "Pancharatnam phase of two Cooper-pair boxes in a dissipative cavity", **Philosophical Magazine**, Vol. 91, No. 23, (2011) pp. 3192–3202
- [56] S. Abdel-Khalek, NourZidan, **M. Abdel-Aty**, "Dynamics of von Neumann entropy for moving three-level atom in the presence of decoherence terms", **Physica E: Low-Dimensional Systems and Nanostructures**, Vol. 44, No. 1 (2011) pp. 6–11
- [57] **M. Abdel-Aty**, J. Larson, H. Eleuch and A.-S. F. Obada, "Multi-particle entanglement of charge qubits coupled to a nanoresonator", **Physica E: Low-Dimensional Systems and Nanostructures**, Vol. 43, No. 9, (2011) pp. 1625-1630
- [58] A.-S.F. Obada, D.A.M. Abo-Kahla, N. Metwally, **M. Abdel-Aty**, "The quantum computational speed of a single Cooper-pair box", **Physica E: Low-dimensional Systems and Nanostructures**, Vol. 43, No. 10, (2011) pp. 1792-1797
- [59] **M. Abdel-Aty**, and A.-S. F. Obada, "Advances in Entanglement and Quantum Information Theory", **Lambert Academic Publishing**, Germany (2011) ISBN: 978-3-8433-9360-7 (**Book**)
- 2010**
- [60] J.-S. Zhang, A.-X. Chen and **M. Abdel-Aty**, "Two atoms in dissipative cavities in dispersive limit: entanglement sudden death and long-lived entanglement", **Journal of Physics B: At. Mol. Opt. Phys.** **43**,025501 (2010)
- [61] S. Abdel-Khalek, Y. S. El-Saman and **M. Abdel-Aty**, "Geometric phase of a moving three-level atom", **Optics Communications**, **283**, 1826-1831 (2010)

- [62] M. Aziz Bouchene, **M. Abdel-Aty** and S. Mandal, *Control of the population dynamic and the Pancharatnam phase of an effective two-level trapped ion*, **Physical Review A** 82, 023409 (2010)
- [63] A.-S. F. Obada and **M. Abdel-Aty**, *Anabiosis of the entanglement for excitons in coupled quantum dots*, **Physica A** 389 (2010) 3375-3381
- [64] **M. Abdel-Aty** and M. Everitt, *Delayed creation of entanglement in superconducting qubits interacting with a microwave field*, **European Physical Journal B**, **74**, 81–89 (2010)
- [65] M. M. Nassar, H. Eleuch, **M. Abdel-Aty**, A.-S. F. Obada, *Entropy squeezing of a three-level 2 atom interacting with a cavity field*, **Journal of Atomic and Molecular Sciences**, **1**, 54-61 (2010)
- [66] **M. Abdel-Aty**, *Entanglement sudden death and sudden birth of an atom coupled to a bimodal lossy cavity*, **Journal of Modern Optics**, Volume 57, Numbers 14-15, pp. 1281-1286(6) (2010)
- [67] **M. Abdel-Aty**, A. Azzeer, M.S. Abdalla, *Anabiosis of phase distribution of a three-level atom*, **Physica A: Statistical Mechanics and its Applications**, Available online 2 May 2010
- [68] M. S. Abdalla, M.A. Bouchene, **M. Abdel-Aty**, T. Yu and A.-S. F. Obada, *Dynamics of an atom coupled through a parametric frequency converter with quantum and classical fields*, **Optics Communications**, **283**, 2820-2823 (2010).
- [69] **M. Abdel-Aty**, et al "Mathematical Modeling of H1N1 " **J. of the Association of Arab Univ. for Basic and Applied Science**, Vol. 8, 2010, 25-60
- [70] N. Metwally, M. SebaweAbdalla, **M. Abdel-Aty**, *Enhancement non Classical Properties of a Pair of Qubit via Deformed Operators*, **International Journal of Theoretical Physics** **49** (2010) 2051–2064
- [71] A. Abdel-Aty, **M. Abdel-Aty**, M. R. Wahiddin and A.S. F. Obada, *Quantum Entanglement*, Ed. by Frank Columbus (Nova Science Publishers, Inc. NY, USA) pp. 1-60 (Book Chapter )

## 2009

- [72] M. A. Bouchene and **M. Abdel-Aty**, *Phase control of the Pancharatnam phase*, **Physical Review A** 79, 055402 (2009)
- [73] J. Larson, **M. Abdel-Aty**, *Cavity QED nondemolition measurement scheme using quantized atomic motion*, **Physical Review A**, 80 (2009) 053609.
- [74] **M. Abdel-Aty**, *Berry phase in superconducting charge qubits interacting with a cavity field*, **Physics Letter A**, 373 (2009) 3572–3576.
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