

Curriculum Vitae

Personal Information

Name: Mostafa Hashem Ibrahim Hessian

Born: February, 26, 1979

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Nationality: Egyptian

Religion: Muslim

Gender: Male

Marital status: Married

Place of birth: Assiut



Research Information:

Documents:	23
H Index:	7 Since 2019
I 10 index:	6
Citations:	226
Google Scholar:	https://scholar.google.com/eg/citations?hl=en&user=ubVnuQQAAAAJ
orcid	https://orcid.org/my-orcid?justRegistered
Scopus	https://www.scopus.com/authid/detail.uri?authorId=57190838946
ResearchGate	https://www.researchgate.net/publications/create?publicationType=article
Web of Science Researcher ID	ABC-7042-2020

Awards			
	Award	Award giver	Year
1	Prof. Dr. Bahaa El-Din Helmy Ismail Prize for the Best Master's Thesis.	Egyptian Mathematical Society	2010
2	Prof. Dr. Bahaa El-Din Helmy Ismail Prize for the best PhD dissertation.	Egyptian Mathematical Society	2016
3	Faculty of Science award for scientific research with the highest impact Factor in mathematics.	Egyptian Mathematical Society	2016
4	Faculty of Science award for scientific research with the highest of impact Factor in mathematics.	Faculty of Science - Assiut University.	2020
5	Late Mohamed Amin Lotfi Award in the field of Mathematical Sciences	Academy of Scientific Research and Technology	2021

<u>Qualifications</u>
• Bachelor of Science in Mathematics 2003, with a general grade of excellent with honors.
• Master's degree in Mathematics 2009.
• PhD degree in Mathematics 2015.
• The degree of Associate Professor in Mathematics 2021

Career				
1	Job title	Time period		Place work
2	Teaching Assistant	2003	2009	Department of Mathematics - Faculty of Science - Assiut University
3	assistant teacher	2009	2015	Department of Mathematics - Faculty of Science - Assiut University
4	teacher	2015	2021	Department of Mathematics - Faculty of Science - Assiut University
5	Associate Professor	2021	Until now	Department of Mathematics - Faculty of Science - Assiut University

a mandate	Time period		Mandate party
Secondment to the degree of director of the Egyptian University for e-learning, Assiut branch	1-9-2021	30 -1- 2023	The Egyptian University for E-learning, Assiut branch (EELU).
Associate Professor of Applied Mathematics at Badr University (a mandate position) teaching mathematics in the College of Artificial Intelligence, Pharmacy and Biotechnology	1-10-2023	Until now	Badr University

Associations
Member of the Egyptian Mathematics Association from 2004 until now.

Supervision of scientific theses				
Name	Title	theses	year	Register
Moataz Mustafa Ali	Quantum information in natural and artificial atoms systems which proposed as Qubits and Qutrits of Quantum Computer.	Ph.D.	2020	Assiut University - Faculty of Science - Department of Mathematics
Seif El Din Adel Rizk	Mathematical modeling for some quantum systems: Quantum information resources	Master	2022	Assiut University - Faculty of Science - Department of Mathematics

Ayatollah Ahmad Nazir	Preliminary master	Master	2022	Assiut University - Faculty of Science - Department of Mathematics
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Scientific conferences

The second regular conference for young researchers at the Faculty of Science - Assiut University, from 10/18/2008 AD to 10/19/2008 AD.

The third conference for young researchers - Faculty of Science - Assiut University, from 4/19/2011 to 4/20/2011.

International Scientific Conference in Mathematics - Cairo from 12/27/2012 AD to 12/29/2012 AD

Funded research projects

Name of project	Time period		Funded research
Quantum correlations in systems of natural and artificial atoms proposed as units of information for a quantum computer.	2019	2021	Academy of Scientific Research and Technology (Science UP).

Computer Skills

- Programming with Fortran and MATLAB -Writing with Word and Win Edit.

- Using Digital Platforms: Gourmet, Microsoft teams, Zoom,
Microsoft Teams,.
- Microsoft office (word, excel, power point).
- IT, OS.

Training programmes		
Name of Program	Time period	
Credit hours system	29-3-2008	31-3-2008
Financial and legal aspects of university business	4-7-2009	6-7-2009
Profession behavior	7-7-2009	9-7-2009
Use of technology in teaching	25-7-2009	27-7-2009
How to write a competitive research project	1-8-2009	3-8-2009
Research team management	1-9-2013	3-9-2013
Organize Scientific conferences	7-9-2013	9-9-2013
Scientific publishing	14-9-2013	16-9-2013
General pedagogy for the Faculty of Education, Assiut University	9-11-2013	14-11-2013
Quality standards in the teaching process	2-8-2014	3-8-2014
University administration	2-8-2014	3-8-2014
effective display	5-8-2014	6-8-2013
Analytical thinking and creativity in teaching	28-6-2020	30-6-2020
Publishing research in international journals	28-6-2020	30-6-2020
Scientific research ethics	12-7-2020	14-7-2020
Examination systems and student calendar	19-7-2020	21-7-2020
Effective management of time and work pressure	21-7-2020	23-7-2020
Crisis Management	26-7-2020	28-7-2020

Contribution to teaching the following courses:

- Quantum Mechanics, Quantum Optics, Analysis Mechanics, Applied Maths.
- Algebra (Introductory), Linear Algebra.
- Calculus, Advanced Calculus, Differential Equations
- Analytical Geometry (Planar and Solid), Special Functions.

Field of Interest

- Interaction between atomic system with some states of light.
- Influence of noise on quantum coherence and entanglement generation in quantum information.
- Study the dynamics of these important real models with presence of quantum dissipation is an open point.
- The effect of the dissipation of the system which has multi-level qubit.
- The effect of the dissipation of the system which has multi two-level qubits, such as, the model consists of two quantum dots that are placed in a single-mode cavity.
- My research interests currently and in the future focus on Applied Maths [Quantum mechanics. Quantum Optics, Mathematical Analysis, Entanglement, quantum information, quantum computing. Quantum Information Theory, Mathematical Physics, Quantum Discord, Mathematical Computing, Mechanical Engineering....].

.Scientific meetings

Egypt's Future Media Program, Yara Nabil, on the Egyptian satellite channel : <https://youtu.be/ncb51RSjUUA>

References

1. Jamal Mahmoud

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2. Abdel Baset Mohamed

Job Title: professor of applied mathematics

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university

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List of Publications

(2009)

1. Quantum phase properties and Wigner function of two 2-level atoms in the presence of the Stark shift for Tavis-Cummings model, A.-S. F. Obada, H. A. Hessian and *M. Hashem*, published in *J. Phys. B* 42 (2009) 175502 .
2. Entanglement for the system of two 2-level atoms interacting with a single-mode through cooperative interaction, A.-S. F. Obada, H. A. Hessian and *M. Hashem*, published in *Int. J. Theor.Phys.* 48 (2009) 3643.

(2010)

3. Quantum entanglement in a system of two moving atoms interacting with a single mode field, A.-S. F. Obada, H. A. Hessian and *M. Hashem*, published in *Phys. Scr.* 81 (2010) 055303.

(2011)

4. Entanglement and purity loss for the system of two 2-level atoms in the presence of the Stark shift, A.- S.F. Obada, H. A. Hessian and *M. Hashem*, published in *Quantum Information Processing* 10 (2011) 543.

(2012)

5. Death of entanglement and purity in two qubits-field system induced by phase damping, A.-S. F. Obada, H. A. Hessian, A.-B.A. Mohamed and *M. Hashem*, published in *Journal of Russian Laser Research*, 33 (2012) 32.
6. Wigner function and phase properties for two qubits-field system under pure phase noise, A.-S. F. Obada, H. A. Hessian, A.-B.

A.Mohamed and M. Hashem, published in *Journal of Russian Laser Research*, 33 (2012) 328.

7. Control of purity and entanglement for two spatially two-separated qubits via phase damping, A.-S. F. Obada, H. A. Hessian, A.-B. A. Mohamed and *M. Hashem*, published in *Chinese Physics B*, 21 (2012) 100310.

(2013)

8. Influence of the phase damping for two-qubits system in the dispersivereservoir, A.-S. F. Obada, H. A. Hessian, A.-B. A. Mohamed and *M. Hashem*, published in *Quantum Information Processing* , 12 (2013) 1947.

(2015)

9. Stationary discord and non-local correlations via qubit damping, A.-S.F. Obada, H.A. Hessian, A.-B.A. Mohamed and *M. Hashem*, published in *Journal of Modern Optics*, 62 (2015) 918.
10. Effects of a phase-damping cavity on entanglement and purity loss in two-qubit system, A.-S.F. Obada, H.A. Hessian, A.-B.A. Mohamed and *M. Hashem*, published in *Quantum Inf. Process*, 14 (2015) 2043.
11. Effect of the phase damping of two qubits on both the quantum discord and non-local correlation, A.-S.F. Obada, H.A. Hessian, A.-B.A. Mohamed and *M. Hashem*, published in *Optik* , 126 (2015) 3432.

(2018)

12. The behavior of the generated quantum correlations in two –SC- qubit system strongly coupled with a SC cavity in the presence of local noise . A.-B.A. Mohamed and M. Hashem, published in *Quantum Information Processing*, 17 (2018) 217.

13. Entropy Squeezing of a qubit interacting with two-mode Kerr nonlinear coupler due to intrinsic damping A.-B.A. Mohamed and M. Hashem , published in (International Journal of Theoretical Physics), 57 (2018) 2968.

(2019)

14. Enhancing the generated stable correlation in a dissipative system of two coupled qubits inside a coherent cavity via their dipole-dipole interplay A.-B.A. Mohamed, Hichem Eleuch and, M. Hashem published in (Entropy), 21 (2019) 672.

(2020)

15. Generating non-classical correlations between two superconductor qubits confined in a transmission cavity in dispersive limit under intrinsic noise, A.-S. F. Obada, A.-B.A. Mohamed, M. Hashem, and M.M. Elkhateeb, published in *Physica E: Low-dimensional Systems and Nanostructures* 117, (2020) 113854.

16. Trace distance discord and Bell-function correlations beyond entanglement in two SC-qubits interacting with a dissipative SC-cavity, A.-S. F. Obada, A.-B.A. Mohamed, M. Hashem, and M.M. Elkhateeb, published in *Laser Phys.* 30, (2020) 055203.

17. Dynamics of quantum coherence and entanglement in an intrinsic noise model of a V-type qutrit system interacting with a coherent field, A.-S. F. Obada, A.-B.A. Mohamed, M. Hashem, and M.M. Elkhateeb, published in *Physica Scripta* 95, (2020) 085101.

18. Generating non-locality correlation via 2-photon resonant interaction of dissipative two-qubit system with coherent field , A.-B.A. Mohamed, M. Hashem, M.M. Elkhateeb, and A.-S. F. Obada published in *Eur.phys.J.D* (74) (2020) 130.

19. Quantum dynamics of a qutrit in a cavity field with Kerr-like medium and intrinsic noise, A.-B.A. Mohamed, M.M. Elkhateeb, M. Hashem, A.-S. F. Obada, and Hichem Eleuch, published in *Modern Physics Letters A* (2020) 2050287.

(2021)

20. Intrinsic decoherence effect on dynamics of a Λ -type qutrit interacting nonlinearly with a coherent field, A.-B.A. Mohamed, M.M. Elkhateeb, M. Hashem, A.-S. F. Obada published in *Alexandria Engineering Journal* (2021).

(2022)

21. Bell nonlocality, entanglement, and entropic uncertainty in a Heisenberg model under intrinsic decoherence: DM and KSEA interplay effects. M. Hashem, A.-S. F. Obada (10) 2, *Applied Physics B*.

(2023)

22. The effect of intrinsic decoherence on the dynamics of an Ξ -Type qutrit system interacting with a coherent field, A.-S.F. Obada, M. Hashem, M.M. Elkhateeb and S.-E. A. Rizk, *Physica Scripta*. 98 (2023) 075106.

23. Distribution dynamics of Fisher and Wigner–Yanase information correlations of two qubits coupled to an open superconducting cavity, November 2023, *Modern Physics Letters A* 38(34n35), F. M. Aldosari, A.-B. A. Mohamed, A. Rahman, and M. Hashem.

Books

Effects of the environment on quantum correlations in proposed systems for quantum bits. (LAMBERT).

(Academic publishing) 978-3-8465-3166-2.