Curriculum Vitae

Hesham Khalaf Abdelazeem Ahmed

Department of Mathematics, Faculty of Science, Assiut University, Egypt

Mobile: +201060332296, **E-mail:** hesham@aun.edu.eg

ORCID: 0000-0003-3975-5059, **Scopus ID:** 57226431066

Education:

September 2019 - October 2023	**Doctor of philosophy of Pure Mathematics,** Faculty of Science, Assiut University, Egypt.
September 2014 - January 2019	**Master of Pure Mathematics,** Faculty of Science, Assiut University, Egypt.
September 2009 - July 2013	**Bachelor of Mathematics**, Faculty of Science, Assiut University, Egypt, Credit Hours' System. **GPA:** 3.38 / 4 **Department Rank:** 1st

Positions:

October 2023 - Present	**Assistant Professor** at Department of Mathematics, Faculty of Science, Assiut University, Egypt.
February 2018 -September 2023	**Assistant lecturer** at Department of Mathematics, Faculty of Science, Assiut University, Egypt.
December 2014 -January 2018	**Demonstrator** at Department of Mathematics, Faculty of Science, Assiut University, Egypt.

Computer Skills & Software:	• Languages: Matlab, Spss, Latex, Mathematica, Visio. • International Computer Driving License (ICDL).
Languages:	• Arabic: Mother tongue. • English: Good, written and spoken (**ELPT; overall band score of 88%**).
Prizes	• College of Science Award for Research with Highest Impact Factor 2022 in Mathematics. • The best oral presentation prize during the 7th conference for young scientists in basic and applied sciences held in Faculty of science, Assiut University, 10-11 May 2022.

Publications:

1. M. Abdel-Megied, M. A. Soliman, & **H. Khalaf** (2018). Position vectors of a partially null and pseudo null W-curves in Minkowski space-time, journal of Mathematics and Computer science 47, n. 1, 1–9. https://doi.org/ 10.21608/AUNJ.2018.221197.
2. G. M. Mahmoud, T. M. Abed-Elhameed & **H. Khalaf** (2021). On fractional and distributed order hyperchaotic systems with line and parabola of equilibrium points and their synchronization. Physica Scripta, 96(11), 115201. https://doi.org/10.1088/1402-4896/ac0f3c.
3. G. M. Mahmoud, T. M. Abed-Elhameed & **H. Khalaf** (2021). Synchronization of hyperchaotic dynamical systems with different dimensions. Physica Scripta, 96(12), 125244. https://doi.org/10.1088/1402-4896/ac3152.
4. G. M. Mahmoud, **H. Khalaf**, M. M. Darwish & T. M. Abed-Elhameed (2022). Different kinds of modulus-modulus synchronization for chaotic complex systems and their applications. Acta Physica Polonica B, 53(6), 1-28. https://doi.org/10.5506/APhysPolB.53.6-A2.
5. G. M. Mahmoud, **H. Khalaf**, M. M. Darwish & T. M. Abed-Elhameed (2023). On the fractional order simplified Lorenz model: dynamics, synchronization and medical image encryption. Mathematical methods in the applied science, 46(14), 15706-15725. https://doi.org/10.1002/mma.9422.
6. G. M. Mahmoud, **H. Khalaf**, M. M. Darwish & T. M. Abed-Elhameed (2023). Synchronization and desynchronization of chaotic models with integer, fractional and distributed-orders and a color image encryption application. Physica Scripta, 98(9), 095211. https://doi.org/10.1088/1402-4896/aceb3c.

Conferences:

1. M. Abdel-Megied, M. A. Soliman, & **H. Khalaf** (2018). On partially null and pseudo null W-curves in Minkowski space-time, has been presented in the second international conference on multidisciplinary research (ICMR), 28-30 January, Red Sea, Egypt, (2018), (Oral Presentation).
2. G. M. Mahmoud, **H. Khalaf**, M. M. Darwish & T. M. Abed-Elhameed (2021). The complete modulus-modulus synchronization for chaotic complex systems and its applications has, been presented in the 7^{th} conference for young scientists in basic and applied sciences, 10-11 May. Faculty of science, Assiut univeristy, Egypt, (2022), (Oral Presentation).

Training:

January 2018	Attended training courses in Faculty and Leadership Development Center (FLDC) of Assiut University about: -Credit Hour System.
January 2015	Attended training courses in Faculty and Leadership Development Center (FLDC) of Assiut University. -International Publishing of Research. -Code of Ethics.
February & September 2014	Attended training courses in Faculty and Leadership Development Center (FLDC) of Assiut University about: - Effective Presentation. - Strategic Planning. - Research Ethics.
January 2018	Attended teacher preparation course on public and private teaching in Faculty of Education at Assiut University.
March 2019	Attended training courses in Faculty and Leadership Development Center (FLDC) of Assiut University about: - Publishing research in international journals. - Technical aspects of designing and conducting scientific research. - Analytical and creative thinking in teaching.
November 2021	Attended a work shop entitled 'An Introduction to Computer Science' This training was held and organized by the DiGen team under supervision of the Mathematics Department, Faculty of Science at Assiut University.
June 2020	Attended training courses in Faculty and Leadership Development Center (FLDC) of Assiut University about: - Exam systems and student assessment. - Organizing scientific conferences. - Effective management of time and work stress.
July 2023	Attended training courses in Measurement and Evaluation Center Assiut University about: -The foundations of measurement and evaluation and its ethics

Referee for Scientific Journals

- Physica Scripta (Phys. Scr.)

Research Interests

Ordinary Differential Equations, Nonlinear Dynamical Systems, Chaos Synchronization, Fractional derivatives, Distributed Derivatives, Control Theory, MATLAB Simulation, System Dynamics Modeling, Chaos Theory, Numerical Analysis, Numerical Simulation, Complex Systems, Stability Analysis, Bifurcation Analysis, Applied Mathematics.

Teaching Responsibilities

Responsible for teaching of the following practical courses at the department of Mathematics of Assiut University: Calculus, Linear Algebra, Ordinary Differential Equations, Partial Differential Equations, Differential Geometry, Analytical Geometry, Space Geometry, Fourier and Laplace Transforms, Multiple Integrations, Complex Analysis, Statistics and Numerical Analysis.

A brief introduction of research experience

Hesham holds a B. Sc. degree (June 2013) in Mathematics from the Department of Mathematics, Faculty of Science, Assiut University, Egypt. His graduation first project entitled: “On real and complex dynamical systems”. It represents some properties of real and complex Happiness system. Also, his graduation second project entitled: “Some special functions”. It studied some special Functions as Bessel, Legender and Lagrange functions.

Also, Hesham holds a M. Sc. degree (January 2019) in Pure Mathematics from the Department of Mathematics, Faculty of Science, Assiut university, Egypt. His thesis entitled: “Null curves in Minkowski space-time. During his M. Sc., he learned how to characterize null curves in Minkowski space-time, and he discussed the relationship between some associated curves as Bertrand, Mannheim and Involute-Evolute curves in Minkowski space. Also, he studied W-curves in Minkowski space-time.

(September 2023) Hesham holds a Ph. D. in Pure Mathematics from the Department of Mathematics, Faculty of Science, Assiut University, Egypt. His thesis entitled: “A study of nonlinear dynamical systems with different dimensions”. He studied the dynamics of nonlinear systems such as: symmetry, fixed points, stability analyses and coexisting chaotic and hyperchaotic attractors. Also, he presented other types of synchronization between chaotic (or hyperchaotic) systems with different dimensions. These types of synchronization appear in many applications in applied sciences such as circuits implementation, neural networks, physics, biological models, secure communications and images encryption. The observed results are new and published in good international journals with impact factors.