جامعة المجمعة
Majmaah University

Curriculum Vitae of Mathematics Faculty Members

1447

2025/2026

DR. AHMED EZZAT MOHAMED MATOUK

Associate Professor
Mathematics Department
Faculty of Science, Zulfi
Majmaah university

Street Address: **Main Campus** **Zulfi Saudi Arabia**

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E-Mails:	ae.mohamed@mu.edu.sa & aematouk@hotmail.com
Office:	Main Campus, Faculty of Engineering, Majmaah
Link to Homepage:	http://faculty.mu.edu.sa/

Research Interests:

Dynamical Systems, Complex Networks, Mathematical Modelling, Fractional Calculus

Language Skills

Arabic (mother tongue), English (very good command)

Qualification (Career and University Education)

1996-1999	B. Sc. Degree (Mathematics)	**Faculty of Science, Mansoura University, Egypt**
2001-2005	MS.. Degree (Mathematics)	**Faculty of Science, Mansoura University, Egypt**
2008-2013	PhD Degree (Mathematics)	**Faculty of Science, Mansoura University, Egypt**

Career

May 2023-Now	Associate Professor, Mathematics Department, Faculty of Science, Majmaah University, Saudi Arabia
2017-May, 2023	Assistant Professor, Mathematics Department, Faculty of Science, Majmaah University, Saudi Arabia
2015-2016	Assistant Professor, Cairo Higher Institute for Engineering, Computer Sciences & Management
2007-2015	Lecturer at Mathematics Department, Faculty of Science, Hail University, KSA
2001-2005	Teaching Math, Delta Academy of Science

Short Visits

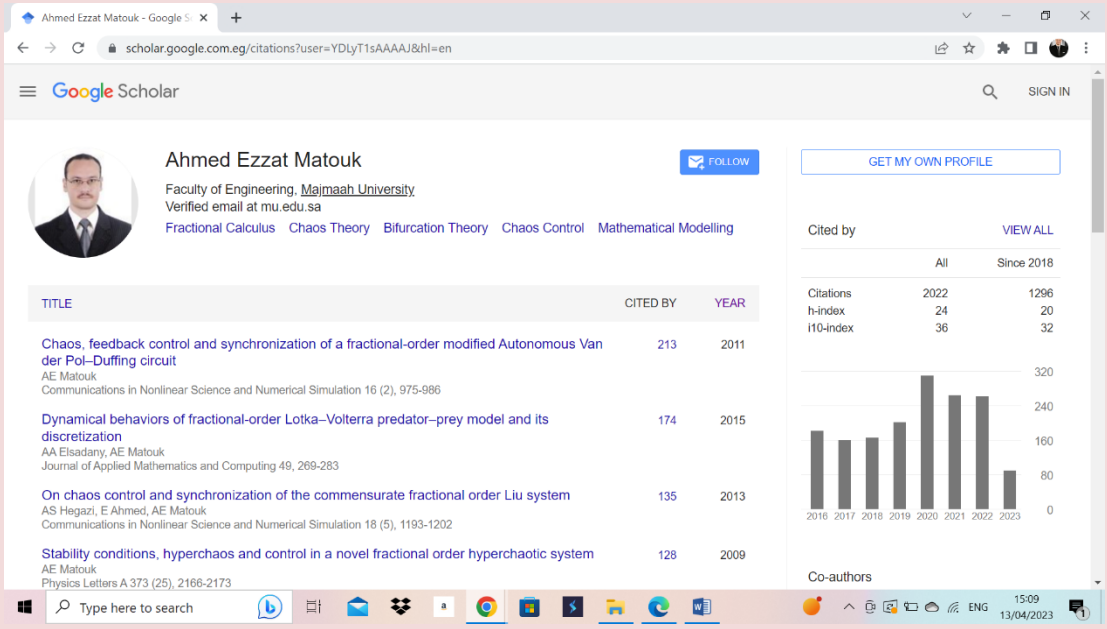
Publication

Research gate **https://www.researchgate.net/profile/Ahmed_Matouk4**

Scopus research profile: **https://www.scopus.com/authid/detail.uri?authorId=8850777100**

My current Google based H-index **is 29, and citations more than 2600.** to check this please visit

http://scholar.google.com.eg/citations?user=OkYtXzgAAAAJ&hl=en



- *Books:*
- **A. E. Matouk, (2020). *Advanced Applications of Fractional Differential Operators to Science and Technology*. IGI Global. http://doi:10.4018/978-1-7998-3122-8**
- *Journal papers:*

Accepted papers:

- **A. E. Matouk, 'Chaos and bifurcations in a discretized fractional model of quasi-periodic plasma perturbations,'** ***International Journal of Nonlinear Sciences and Numerical Simulation*****, https://doi.org/10.1515/ijnsns-2020-0101**

(2025)

- **A. E. Matouk**, 'Studying changes in the dynamical patterns in two physical models involving new Caputo operator' Journal of Advanced Research, Volume 67, (2025), 173-184.
- **A. E. Matouk**, Monica Botros, 'Hidden chaotic attractors and self-excited chaotic attractors in a novel circuit system via Grünwald–Letnikov, Caputo-Fabrizio and Atangana-Baleanu fractional operators' Alexandria Engineering Journal, Volume 116, (2025), 525-534.
- **A. E. Matouk**, 'Fractional Routh-Hurwitz conditions and nonlinear dynamics in some 3D and 4D dynamical systems modeled by Caputo-Fabrizio operator' Results in Applied

Mathematics, Volume 26, (2025), 100588.

- **A. E. Matouk**, 'Chaos and hidden chaos in a 4D dynamical system using the fractal fractional operators' AIMS Mathematics, Volume 10(3), (2025), 6233-6257.

- **A. E. Matouk,** Monica Botros, Sanjay Kumar, A. B. Albidah, 'Hidden Attractors,ChaosControlandSynchronizationinTwo Fractional Systems Governed by Caputo–Fabrizio Derivatives' Discrete Dynamics in Nature and Society, Volume 2025, Article ID 7471599, 14 pages

- W. W. Mohammed, M. W. Alshammary, **A. E. Matouk**, N. Iqbal 'Abundant Solitary Solutions for the Fractional Unidirectional Wave Model Using in Oceanography, Coastal engineering, and Meteorology' EUROPEAN JOURNAL OF PURE AND APPLIED MATHEMATICS, Volume 18(3), (2025) Article Number 6422.

- Padder, S. Qureshi, **A. E. Matouk**, K. Dehingia, 'Dynamical analysis of a vector-borne disease model with control function strategies' Discover Applied Sciences, Volume 7. (2025), 1031.

- A. Padder, **A. E. Matouk**, S. Qureshi, K. Dehingia, T. Ui Rahman Shah, 'Analyzing the impact of single feedback control strategy on the dynamics of fractional order tumor model' Discover Applied Sciences, Volume 7. (2025), 1301.

(2021)

- E. Ahmed, **A. E. Matouk**, 'Complex dynamics of some models of antimicrobial resistance on complex networks,' Math. Meth. Appl. Sci., Volume 44, no. 2, (2021), 1896-1912. Doi: 10.1002/mma.6889

- S. Kumar, **A. E. Matouk**, H. Chaudhary, S. Kant, 'Control and synchronization of fractional-order chaotic satellite systems using feedback and adaptive control techniques,' *International Journal of Adaptive Control and Signal Processing*, Volume 35, (2021), 484-497. https://doi.org/10.1002/acs.3207

- **A. E. Matouk**, A Novel Fractional-Order System: Chaos, Hyperchaos and Applications to Linear Control. J. Appl. Comput. Mech., 7(2) (2021) 701-714

- Mahmoud Owais, **Ahmed E. Matouk**, A factorization scheme for observability analysis in transportation networks, Expert Systems With Applications 174 (2021) 114727

- Wael W. Mohammed, E.S. Aly, **A. E. Matouk**, S. Albosaily, E.M. Elabbasy, An analytical study of the dynamic behavior of Lotka-Volterra based models of COVID-19, Results in Physics 26 (2021) 104432

- Ahmed M. Sayed, **A. E. Matouk**, Sanjay Kumar, Vakkar Ali, Lahcene Bachioua, 'Chaotic Dynamics and Chaos Control in a Fractional-Order Satellite Model and Its Time-Delay Counterpart' Discrete Dynamics in Nature and Society, Volume 2021, Article ID 5542908, 11 pages

(2020)

- **A. E. Matouk**, I. Khan. Complex dynamics and control of a novel physical model using nonlocal fractional differential operator with singular kernel. J Advanced Research 2020;24:463–474.
  (Elsevier, Journal impact factor = 6.99). Quartile: Q1 Multidisplinary.

- **A. E. Matouk**, Complex dynamics in susceptible-infected models for COVID-19 with multi-drug resistance. ***Chaos Solitons & Fractals,*** Volume 140 (2020) 110257.
  Elsevier, Journal impact factor = 3.764). Quartile: Q1 Applied Mathematics.

(2019)

- A. Al-khedhairi, **A. E. Matouk**, I. Khan, Chaotic dynamics and chaos control for the fractional-order geomagnetic field model, ***Chaos Solitons & Fractals,*** Volume 128 (2019), Pages 390-401.
  (Elsevier, Journal impact factor = 3.764). Quartile: Q1 Applied Mathematics.

- **A. E. Matouk**, Dynamics and control in a novel hyperchaotic system. *International Journal of Dynamics and Control*, 7(1) (2019) 241-255.
  (Springer, Journal). Quartile: Q3 Modeling and Simulation.

- Al-khedhairi, **A. E. Matouk**, S. S. Askar, Bifurcations and chaos in a novel discrete economic system, Advances in Mechanical Engineering, Vol. 11(4) (2019) 1-15.
  (SAGE Journals, Journal impact factor = 1.161). Quartile: Q3 Mechanical Engineering.

- A. Al-khedhairi, **A. E. Matouk**, S. S. Askar, Computations of synchronization conditions in some fractional-order chaotic and hyperchaotic systems, *Pramana Journal of physics* Vol. 92:72 (2019).
  (Springer, Journal impact factor = 0.699). Quartile: Q3 Physics and Astronomy (Miscellaneous).

(2018)

- A. Al-Khedhairi, S. S. Askar, **A. E Matouk**, A. Elsadany, M Ghazel, Dynamics, Chaos Control, and Synchronization in a Fractional-Order Samardzija-Greller Population System with Order Lying in (0, 2), *Complexity*, (2018) 2018.
  (Hindawi). Quartile: Q1 Multidisplinary.

- A. Elsadany, **A. E. Matouk**, A. G. Abdelwahab, H. S. Abdallah, Dynamical analysis, linear feedback control and synchronization of a generalized Lotka-Volterra system, *International Journal of Dynamics and Control*, Vol. 6 (2018) 328–338.
  (Springer, Journal). Quartile: Q3 Modeling and Simulation.

(2017)

- **A. E. Matouk**, A. A. Elsadany, B. Xin, Neimark–Sacker bifurcation analysis and complex nonlinear dynamics in a heterogeneous quadropoly game with an isoelastic demand function, *Nonlinear Dynamics*. Vol. *89 (2017),* 2533–2552.
  (Springer, Journal impact factor = 4.540). Quartile: Q1 Applied Mathematics.

- E. M. Elsayed, Malek Ghazel, **A. E. Matouk**, Dynamical Analysis Of The Rational Difference Equation $x_{n+1} = \frac{\alpha x_{n-3}}{A + B x_{n-1} x_{n-3}}$, *J. COMPUTATIONAL ANALYSIS AND APPLICATIONS*, VOL. 23, NO.3, (2017).
  Quartile: Q3 Computational Mathematics.

- Malek Ghazel, E. M. Elsayed, **A. E. Matouk**, A. M. Mousallam, Investigating dynamical behaviors of the difference equation $x_{n+1} = \frac{Cx_{n-5}}{A + Bx_{n-2}x_{n-5}}$, Journal of Nonlinear Sciences & Applications (JNSA) . (2017), Vol. 10 Issue 9, p4662-4679.

(2016)

- **A. E. Matouk**, Chaos synchronization of a fractional-order modified Van der Pol-Duffing system via new linear control, backstepping control and Takagi-Sugeno fuzzy approaches, *Complexity*. Vol. *21 (2016),* 116-124.
  (Wiley, Journal impact factor = 3.514). Quartile: Q1 Multidisplinary.

- **A. E. Matouk**, A. A. Elsadany, Dynamical analysis, stabilization and discretization of a chaotic fractional-order GLV model, *Nonlinear Dynamics*. Vol. *85 (2016),* 1597-1612.
  (Springer, Journal impact factor = 4.540). Quartile: Q1 Applied Mathematics.

- M. A. El-Sayed, H. M. Nour, A. Elsaid, **A. E. Matouk**, A. Elsonbaty, Dynamical Behaviors, Circuit Realization, Chaos Control and Synchronization of a New Fractional Order Hyperchaotic System, *Applied Mathematical Modelling*. Vol. *40 (2016),* 3516-3534.
  (Elsevier, Journal impact factor = 2.251). Quartile: Q1 Applied Mathematics.

- M. A. El-Sayed, A. Elsonbaty, A. A. Elsadany, **A. E. Matouk**, Dynamical analysis and circuit simulation of a new fractional-order hyperchaotic system and its discretization, *International Journal of Bifurcation and Chaos*. Vol. 26 (2016) 35 pages.
  (World Scientific, Journal impact factor = 1.355). Quartile: Q2 Applied Mathematics.

(2015)

- **A. E. Matouk**, A.A. Elsadany, E. Ahmed, H. N. Agiza, Dynamical behavior of fractional-order Hastings–Powell food chain model and its discretization, *Communications in Nonlinear Science and Numerical Simulation*, Vol. *27 (2015),* 153-167.
  (Elsevier, Journal impact factor = 2.569). Quartile: Q1 Applied Mathematics.

- **A. E. Matouk**, On the periodic orbits bifurcating from a fold Hopf bifurcation in two hyperchaotic systems, Optik-International Journal for Light and Electron Optics, Vol. 126 (2015), 4890–4895.
  (Elsevier, Journal impact factor = 0.677). Quartile: Q2 Electrical and Electronic Engineering.

- A. A. Elsadany, **A. E. Matouk**, Dynamical behaviors of fractional-order Lotka–Volterra predator–prey model and its discretization, *Journal of Applied Mathematics and Computing*, Vol. 49 (2015) 269-283.
  (Springer Journal). Quartile: Q3 Applied Mathematics.

(2014)

- **A. E. Matouk**, A.A. Elsadany, Achieving synchronization between the fractional-order hyperchaotic Novel and Chen systems via a new nonlinear control technique, *Applied Mathematics Letters* Vol. 29 (2014) 30–35.
  (Elsevier, Journal impact factor = 1.480). Quartile: Q2 Applied Mathematics.

- A.M.A. El-Sayed, H.M. Nour, A. Elsaid, **A.E. Matouk**, A. Elsonbaty, Circuit realization, bifurcations, chaos and hyperchaos in a new 4D system, *Applied Mathematics and Computation* Vol. 239 (2014), 333-345.
  (Elsevier, Journal impact factor = 1.6). Quartile: Q2 Applied Mathematics.

- A.A. Elsadany, **A. E. Matouk**, Dynamic Cournot duopoly game with delay, *Journal of Complex Systems* Volume 2014 (2014), Article ID 384843, 7 pages.

- A. Qayyum, M. Shoaib, **A. E. Matouk**, M.A. Latif, On New Generalized Ostrowski Type Integral Inequalities, *Abstract and Applied Analysis* Volume 2014 (2014), Article ID Article ID 275806, 8 pages.

  (**Hindawi** Publishing Corporation). **Quartile: Q3 Applied Mathematics.**

- A.M.A. El-Sayed, **A.E. Matouk**, H.M. Nour, A. Elsaid, A. Elsonbaty, NONLINEAR DYNAMICS OF A MODIFIED AUTONOMOUS VAN DER POL-DUFFING CHAOTIC CIRCUIT, *Electronic Journal of Mathematical Analysis and Applications* Vol. 2(2) July 2014, pp. 199-213.

(2013):

- A.S. Hegazi, E. Ahmed, **A. E. Matouk**, On chaos control and synchronization of the commensurate fractional order Liu system, *Communications in Nonlinear Science and Numerical Simulation*, Vol. *18 (2013),* 1193-1202.
  (Elsevier, Journal impact factor = 2.569). Quartile: Q1 Applied Mathematics.

- M. A. Latif, S. Dragomir, **A. E. Matouk**, New inequalities of OSTROWSKI type for co-ordinated s-convex functions via fractional integrals, *Journal of Fractional Calculus and Applications, Vol. 4 (2013)* 1-15.

(2011):

- **A. E. Matouk**, Chaos, feedback control and synchronization of a fractional-order modified Autonomous Van der Pol-Duffing circuit, *Communications in Nonlinear Science and Numerical Simulation*, Vol. *16 (2011),* 975-986.
  (Elsevier, Journal impact factor = 2.569). Quartile: Q1 Applied Mathematics.

- A. S. Hegazi, **A. E. Matouk**, Dynamical behaviors and synchronization in the fractional order hyperchaotic Chen system. *Applied Mathematics Letters,* Vol. *24 (2011),* 1938-1944.
  (Elsevier, Journal impact factor = 1.480). Quartile: Q1 Applied Mathematics.

- A. S. Hegazi, E. Ahmed, **A. E. Matouk**, The effect of fractional order on synchronization of two fractional order chaotic and hyperchaotic systems. *Journal of Fractional Calculus and Applications, Vol. 1 (2011)* 1-15.

(2010):

A. E. Matouk, Dynamical behaviors, linear feedback control and synchronization of the fractional order Liu system, *Journal of Nonlinear Systems and Applications*, Vol. 1, No. 3 (2010) 135-140.

(2009):

- **A. E. Matouk**, Stability conditions, hyperchaos and control in a novel fractional order hyperchaotic system, *Physics Letters A*, Volume 373, Pages 2166-2173.
  (Elsevier, Journal impact factor = 1.626). Quartile: Q2 Physics and Astronomy

(miscellaneous).

- **A. E. Matouk**, Chaos synchronization between two different fractional systems of Lorenz family, *Mathematical Problems in Engineering*, Volume 2009, Article ID 572724, 11 pages
  (Hindawi Publishing Corp. IF = 0.777). Quartile: Q3 Mathematics (miscellaneous).

(2008):

- **A. E. Matouk**, H. N. Agiza, Bifurcations, chaos and synchronization in ADVP circuit with Parallel resistor, *Journal of Mathematical Analysis and Applications,* Volume 341, Issue 1,Pages 259-269.
  (Elsevier, Journal impact factor = 1.119). Quartile: Q1 Applied Mathematics.

- **A. E. Matouk**, Dynamical analysis, feedback control and synchronization of Liu dynamical System, *Nonlinear Analysis*: Theory methods & applications, Volume 69, Pages 3213-3224.
  (Elsevier, Journal impact factor = 1.612). Quartile: Q1 Applied Mathematics.

(2006):

- H. N. Agiza, **A. E. Matouk**, Adaptive synchronization of Chua's circuits with fully unknown parameters, *Chaos Solitons & Fractals*, Volume 28, Pages 219-227.
  (Elsevier, Journal impact factor = 1.503). Quartile: Q2 Mathematics (Miscellaneous)

Book Chapters

1) Book chapter, A.S. Hegazi, E. Ahmed, **A. E. Matouk**, On Dynamical Behaviors and Chaos Control of the Fractional-order Financial System, *In: Santo Banerjee (Ed.), Chaos and Complexity Theory for Management: Nonlinear Dynamics.* (pp. 34-49). IGI Global, USA, Year 2013.

2) Book chapter, **A. E. Matouk**, Synchronization in integer and fractional order chaotic systems, *In: Santo Banerjee (Ed.), Chaos Synchronization and Cryptography for Secure Communications: Applications for Encryption.* (pp. 127-151). IGI Global, USA, Year 2011.

3) Book chapter, A.S. Hegazi, **A. E. Matouk**, Chaos Synchronization of the Modified Autonomous Van der Pol-Duffing Circuits via Active Control, *In: Santo Banerjee (Ed.),* Springer-Verlag Berlin Heidelberg, Year 2013.

Teaching Experience

Calculus I	Math 101	Faculty of Science	University of Hail, KSA
Calculus II	Math 102	Faculty of Science	University of Hail, KSA
Calculus III	Math 201	Faculty of Engineering	University of Hail, KSA
Pre-Calculus	Math 001 Math 002	Prep-Year	University of Hail, KSA
Foundation of Mathematics		Faculty of Science	University of Hail, KSA
Introduction to applied calculus	Math 121	Faculty of computer Science	University of Hail, KSA
Engineering Mathematics		Cairo Higher Institute for Engineering, Computer Sciences & Management	New Cairo, Egypt
Algebra and Analytic Geometry	Math 107	Faculty of Engineering,	Majmaah University, KSA
Statistics and probability	Stat 201	Faculty of Engineering,	Majmaah University, KSA

Differential Calculus	Math 105	Faculty of Engineering,	Majmaah University, KSA
Integral Calculus	Math 106	Faculty of Engineering,	Majmaah University, KSA
Numerical Methods	**Math 254**	Faculty of Engineering,	Majmaah University, KSA

Conferences

A.E. Matouk, Dynamical behaviors, linear feedback control and synchronization of the fractional order Liu system, in: Proceedings of the 3rd international conference ICCSA 2009, 29-July 02 2009.	LeHavre-Normandy, France, on June	2009
A.E. Matouk, On some stability conditions and hyperchaos synchronization in the new fractional order hyperchaotic Chen system, in: Proceedings of the 3rd international conference ICCSA 2009, LeHavre-Normandy, France, on June 29-July 02 2009	LeHavre-Normandy, France, on June	2009

Training Experience

Training " **Math zone workshop** ", by McGraw-Hill at **Computer lab of PY College, UOH, Ha'il** , Saudi Arabia, 2010

Training " **Follow-up Workshop for Educators & Administrators** " by PFCE **(Partners for Competitive Egypt)** + USAID at **Virg'i Tech, Alexandria, Egypt, June 20th till June 24th 2004**

Training " Keys to effective learning " by PFCE (Partners for Competitive Egypt) + USAID at Virg'i Tech, Alexandria, Egypt, at 23 Dec. 2004.

Practical Skills & Soft skills

1 My web of science profile is https://www.webofscience.com/wos/author/record/AFR-9826-2022
2 I am a member of the editorial board in many mathematical and engineering journals.
3 I am also a referee for many highly reputable journals (Elsevier, Springer, IOP, Wiley, Hindawi, etc.). **My publons** account is **https://publons.com/researcher/1522576/ahmed-matouk/**
4 My ORCID number is 0000-0001-5834-4234
5 I have the ability to teach in excellent way using the effective learning strategies like, Cooperative learning, Critical thinking, Problem Solving, Classroom Management, IT rubrics, inside the classrooms provided with technology and computers.
6 I was a member of the "quality control committee" in my department of UOH.
7 I have a very good command of the English language. I am also ICDL certified.
8 I have very good communication skills with my students inside classroom and outside it. **https://www.youtube.com/channel/UCgs5oq3uM4yfE2dxDLJp0tA**
9 I was the coordinator of Prep Year seminar, so I organized many scientific seminars for the UOH PY.
10 I am able to work in groups and have the team spirit.
11 I always show **High Competency** with highest levels in skills, knowledge and attitude.
12 I was a member of the successful team at college of engineering of Majmaah university who achieve **Abet** accreditation on 2018.

Reviewer in many highly respected international journals (for example):

1- Applied Mathematics Letters (Elsevier)
2- Communications in Nonlinear Science and Numerical Simulations (Elsevier)
3- Chaos Solitons and Fractals (Elsevier)
4- Nonlinear Dynamics (Springer)
5- Applied Mathematics and computation (Elsevier)
6- Nonlinear Analysis (Elsevier)
7- Physics Letters A (Elsevier)
8- International Journal of Control, Automation and Systems (Springer)
9-IEEE Transactions on Circuits and Systems I

10-Mathematical Methods in the Applied Sciences (John Wiley & Sons)
11- Advances in difference equations (Springer)
12- International Journal of computer Mathematics (John Wiley & Sons)

Scientific society of Professional organization

Member of the editorial board for the following journals;

1) 'Discrete Dynamics in Nature and Society'; Academic Editor: https://onlinelibrary.wiley.com/page/journal/3059/homepage/editorial-board
2) "Journal of Fractional Calculus and Applications": https://jfca.journals.ekb.eg/journal/editorial.board
3) "Electronic Journal of Mathematical Analysis and Applications": https://ejmaa.journals.ekb.eg/journal/editorial.board
4) 'International Journal of Robotics and Automation Engineering': https://kosmospublishers.com/board-members-international-journal-of-robotics-and-automation-engineering/

I have edited the following special issues;

- Acted as a lead guest editor for the special issue '***Chaos and Synchronization in Discrete Systems***' in the Journal Discrete Dynamics in Nature and Society; The link is https://onlinelibrary.wiley.com/doi/toc/10.1155/3059.si.857064

Rewards & Prizes

- ***I have been included in the World's Top 2% Scientists 2020 (released by Stanford University) that is published in PLOS Journal. For more details, please click*** https://bit.ly/3n6dQ2R
- ***I have been included in the World's Top 2% Scientists 2021 (released by Stanford University) that is published in Elsevier BV. For more details, please click*** **https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/3**
- ***I have been included in the World's Top 2% Scientists 2022 (released by Stanford University) that is published in Elsevier BV. For more details, please click***

https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/4?fbclid=IwAR1wIzXD83bsLxOhFPbAHqw7A194qNt-60KGpdgmz1KHI9eXT5my8zd5Jhc

- ***In MARCH 2023, Scientific Distinction Award from Majmaah University (MU) for being among the most cited scientists in MU.***
- ***I have been included in the World's Top 2% Scientists 2023 (released by Stanford University) that is published in Elsevier BV. For more details, please click https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/7***
- ***I have been selected as distinguished researcher in University of Ha'il in the academic years 2013/2014 and 2014/2015.***

Research Projects

	SM14006	**DSR**	University of Hail, KSA (2014/2015)
	1439-40	**DSR**	Majmaah University, KSA (2018/2019)
	1440-42	DSR	Majmaah University, KSA (2019/2020)
	R-2022-106	**DSR**	Majmaah University, KSA (2022)