Curriculum Vitae

Mohra Abdullah Zayed
Associate Professor
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EDUACATION

- Doctor of Philosophy in Mathematics, Western Michigan University, USA, December 2018.
- Master of Art in Mathematics, Western Michigan University, USA, 2018.
- Master of Sciences Degree in Mathematics, King Khalid University, Saudi Arabia, 2009.
- Bachelor of Science and Education in Mathematics, King Khalid University, Saudi Arabia, 2005.

PROFESSIONAL EXPERIENCE

- 2023-now: Vice Dean of the Deanship of Research and Gradate Studies.
- 2023-now: Associate Professor, Mathematics department, College of Science, King Khalid University.
- 2023-Now: Consultant for the Vice Rector for Graduate Studies and Scientific Research
- 2022-2023: Consultant at the Deanship of Gradate Studies.
- 2022-2023: Consultant at the scholarship administration.
- 2019- 2023: Assistant Professor, Mathematics Department, College of Sciences, King Khalid University.
- 2020-2022: Assistance General Director of the Scholarship administration, King Khalid University
- 2014-2018: Ph.D. Student at Western Michigan University, United States of America.
- Teaching Linear Algebra for undergraduate students at Western Michigan University, Spring 2018.
- 2009-2013: Vice Dean at collegiate center for Girls at Alsamer.
- Teaching courses (Calculus – Linear Algebra – Differential equations- Graph theory and Combinatorics - Complex Analysis).
- Teaching Postgraduate courses: Linear Algebra.

PUBLICATIONS

1. **M. Abul-Ez and M. Zayed**; **(2009)** "*On the convergence of power similar bases of polynomials in Clifford analysis*", Int. J. Contemp. Math. Sci. vol 4(1),(2009) 1-15.
2. **M. Abul-Ez, and M. Zayed; (2009)** "*Similar transposed bases of polynomials in*

Clifford analysis", Applied Math. & Information Science. 4(1) (2009) P. 63-78.

3. **M. Abul-Ez, D. Constales and M. Zayed; (2010)** "*Order of magnitude of coefficients of Clifford polynomials in simple bases*", Inter. Conf. on Analysis and Appl., Jan 24-26, Sultan Qabus Univ., Oman.
4. **M. Saleem, M. Abul-Ez and M. Zayed (2011)** "*On polynomial series expansions of Cliffordian functions*" (Extended Abstract), AIP Proceeding (ICNAAM **2010**, Rodes, Greece, Sept. 2010), p.1523-1526. Full paper appeared in Mathematical Methods in Applied Sciences, vol. 35, Iss. 2, pp.134-143., 2011.
5. **M. Abul-Ez**, **D. Constales, M. Zayed, (2012),** "*The μ-th root base of non-algebraic simple base of polynomials in Clifford setting"*, ICNPAA **2012** Congress, Vienna 10-14 July **2012**, AIP Proceeding.
6. **M**. **Zayed, M. Abul-Ez and J. Morais, (2012)** "*Generalized Derivative and primitive of Cliffordian bases of polynomials constructed through Appell monomials*", Computational Methods and Function Theory 12, 2012, p.501-512.
7. **M. Abul-Ez, D. Constales, J. Morais and M. Zayed**; **(2014),** "*Hadamard Three-Hyperballs Type Theorem and Overconvergence of Special Monogenic Simple Series"*, Journal of Mathematical Analysis and Applications. 412 (2014) 426–434.
8. **A. Byers, K. Alhulwah, Z. Bi, M. Zayed and P. Zhang, (2018)** *"Schwenk graphs of cages"*, Bulletin of the Institute of Combinatorics and its Applications, 82, 61-76.
9. **K. H. Alhulwah, M. Zayed and P. Zhang,** (**2019)** "On the Planarity of Generalized Line Graphs", Theory and Applications of Graphs, Vol. 6 : Iss. 1, Article 2.
10. **M. Zayed and P. Zhang,** *"4-path graphs: a generalization of line graphs"*, accepted at Congressus Numernatium.
11. **A. Byers, D. Olejniczak, M. Zayed and P. Zhang**, *"Spanning Trees and Hamiltonicity"*, Journal of Combinatorial Mathematics and Combinatorial Computing.
12. **M. Zayed and P. Zhang**, *"A note on outerplanar 3-path graphs",* accepted at Ars Combinatoria.
13. **A. Byers, D. Olejniczak, M. Zayed and P. Zhang**, *"Planar 3-path graphs"* accepted at Ars Combinatoria.
14. **A. Byers, D. Olejniczak, M. Zayed and P. Zhang**, *"Hamiltonian Walks and Hamiltonian-Connected 3-Path Graphs"*, (submitted)
15. **J. Hallas, M. Zayed, and P. Zhang**, "*On Tree-Connection of Generalized Line Graphs*", (accepted at Journal of Combinatorial Mathematics and Combinatorial

PUBLICATIONS

Computing. (JCMCC).

16. **M. Zayed, B. Wang and G. L. Johns Saginaw**, *"The 3-Xline Graph of a Given Graph"*, accepted at Journal of Combinatorial Mathematics and Combinatorial Computing. (JCMCC).
17. **M. Zayed**, **(2020)** "*Generalized Hadamard product of special monogenic polynomials*", Adv. Appl. Clifford Algebras 30: 10. https://doi.org/10.1007/s00006-019-1035-3.
18. **M. Zayed, M. Abul-Ez, M. Abdalla and N. Saad (2020)** "*On the fractional order Rodrigues formula for the Legendre-type matrix polynomials*" Mathematics 8, 136.
19. **M. Zayed**, "*Lower Growth of Generalized Hadamard Product Functions in Clifford Setting*". Bull. Malays. Math. Sci. Soc. 44, 805–826 (2021) https://doi.org/10.1007/s40840-020-00983-y
20. **M. Zayed, M. Hidan, M. Abdalla, M. Abul-Ez (2020) "***Fractional order of Legendre-type matrix polynomials*." Adv Differ Equ 2020, 506 https://doi.org/10.1186/s13662-020-02975-5
21. **M. Abul-Ez, M. Zayed, A. Yousef, M. De La Sen, (2020)** "*On conformable fractional Legendre polynomials and their convergence properties with applications",* Alexandria Engineering Journal 59(6), 5231-5245. https://doi.org/10.1016/j.aej.2020.09.052
22. **M. Abul-Ez, M. Zayed (2020)** "*Criteria in Nuclear Fréchet Spaces and Silva Spaces with Refinement of the Cannon-Whittaker Theory*"**,** Journal of Function Spaces, 2020, 2020, Article ID 8817877, 15 pages.
23. **M. Zayed (2021)** *"Certain Bases of Polynomials Associated with Entire Functions in Clifford Analysis"*. Adv. Appl. Clifford Algebras 31, https://doi.org/10.1007/s00006-021-01128-5
24. **M. Abul-Ez, M. Zayed, A. Yousef (2021)** *"Further study on the conformable fractional Gauss hypergeometric function*", AIMS Mathematics, 2021, 6(9): 10130-10163.
25. **, G. M. Ismail, M. Abul-Ez Zayed, H., Ahmad, & M. El-Moshneb (2021).** "*Highly accurate analytical solution for free vibrations of strongly nonlinear Duffing oscillator"*. Journal of Low Frequency Noise, Vibration and Active Control, 14613484211034009.
26. **M. Abul-Ez, M. Zayed, A. Yousef (2021)** *"Further Developments of Bessel Functions via Conformable Calculus with Applications*." Journal of Function Spaces 2021.
27. **Y. El Haoui, M. Zayed (2021),** "*A new uncertainty principle related to the generalized quaternion Fourier transform*". *J. Pseudo-Differ. Oper. Appl.* **12,** 58. https://doi.org/10.1007/s11868-021-00431-w
28. **G. M. Ismail, M. Abul-Ez, M. Zayed, N. M. Farea (2021).** *"Analytical accurate solutions of nonlinear oscillator systems via coupled homotopy-variational approach".* Alexandria Engineering Journal,
29. ***M. Abdalla, H. Abd-Elmageed, M. Abul-Ez, M. Zayed (2022)*** *"Further investigations on the two variables second Appell hypergeometric matrix function",* Quaestiones Mathematicae, DOI: 10.2989/16073606.2022.2034680
30. **Y. El Haoui, M. Zayed** (**2022**)*"Generalization of Titchmarsh's Theorems for the Minkowski Algebra."* Integral Transforms and Special Functions, DOI:

10.1080/10652469.2022.2087062

31. **N. M. Farea, M. Zayed, G. M. Ismail (2022),** *"Accurate analytical solution of the circular sector oscillation by the modified harmonic balance method"*, Journal of Low Frequency Noise, Vibration and Active Control. doi: 10.1177/14613484221104646.
32. **G. Hassan, M. Zayed (2022)** "*Approximation of monogenic functions by hypercomplex Ruscheweyh derivative bases*", Complex Variables and Elliptic Equations, DOI: 10.1080/17476933.2022.2098279
33. **M. Zayed, Ali Ahmad, Muhammad Faisal Nadeem, Muhammad Azeem (2022).** *"The comparative study of resolving parameters for a family of ladder networks"*. AIMS Mathematics, 7(9): 16569-16589. doi: 10.3934/math.2022908
34. **H. Hammad, M. Zayed (2022)**. *"Solving a System of Differential Equations with Infinite Delay by Using Tripled Fixed Point* Techniques on Graphs" *Symmetry* 14, no. 7: 1388. https://doi.org/10.3390/sym14071388
35. **Abdl-Rahim, Hamdy R., M. Zayed, and G. M. Ismail (2022).** *"Analytical Study of Fractional Epidemic Model via Natural Transform Homotopy Analysis Method"*, Symmetry 14, no. 8: 1695. https://doi.org/10.3390/sym14081695
36. **M. Zayed, Y. El Haoui (2022),** *"The uncertainty principle for the octonion Fourier transform"*. Math Meth Appl Sci. 2022; 1- 16. doi:10.1002/mma.8667
37. **H. Hammad, Habib Ur Rehman, M. Zayed. (2022)** "*Applying faster algorithm for obtaining convergence, stability, and data dependence results with application to functional-integral equations"*. AIMS Mathematics, 7(10): 19026-19056. doi: 10.3934/math.20221046
38. **H. Hammad, M. Zayed. (2022)** "New Generalized Contractions by Employing Two Control Functions and Coupled Fixed-Point Theorems with Applications" Mathematics 10, no. 17: 3208. https://doi.org/10.3390/math10173208
39. **Gamal M. Ismail, Maha M. El-Moshneb, M. Zayed. (2023)** A modified global error minimization method for solving nonlinear Duffing-harmonic oscillators[J]. AIMS Mathematics, 8(1): 484-500. doi: 10.3934/math.2023023
40. **M. Zayed, Y. El Haoui (2022),** *"Real Paley-Wiener Theorems for the Space-Time Fourier Transform"*. Acta Mathematica Scientia,
41. **M. Zayed, J. Morais (2022)** On Hadamard's Three-hyperballs Theorem and its Applications to Whittaker-Cannon Hypercomplex Theory. Math Meth Appl Sci. 2022; 1- 14. doi:10.1002/mma.8861
42. **H. A. Hammad, H. Aydi, M. Zayed. (2023)** Involvement of the topological degree theory for solving a tripled system of multi-point boundary value problems[J]. AIMS Mathematics, 8(1): 2257-2271. doi: 10.3934/math.2023117
43. **H. Hammad, M. Zayed, (2022).** Solving systems of coupled nonlinear Atangana–Baleanu-type fractional differential equations. Bound Value Problems 2022, 101 (2022). https://doi.org/10.1186/s13661-022-01684-0
44. S A. Wani; S. Shaikh; P. Alam; S. Tamboli; **M. Zayed**; Javid G. Dar; M. Y. Bhat, An Algebraic Approach to the Δh-Frobenius–Genocchi–Appell Polynomials, Mathematics 2023, 11, 2029. https://doi.org/10.3390/math11092029
45. M.Y. Bhat, A.H. Dar, **M. Zayed**, S. Araci, Octonion Special Affine Fourier Transform: Pitt's Inequality and the Uncertainty Principles. Fractal Fract. 2023; 7(5):356. https://doi.org/10.3390/fractalfract7050356
46. **M. Zayed**, G. Hassan Equivalent Base Expansions in the Space of Cliffordian Functions. Axioms. 2023; 12(6):544. https://doi.org/10.3390/axioms12060544
47. M.Y. Bhat, A.H. Dar, M. Zayed, Convolution, Correlation and Uncertainty

Principle in the One-Dimensional Quaternion Quadratic-Phase Fourier Transform Domain. Mathematics. 2023; 11(13):3002. https://doi.org/10.3390/math11133002

48. M.Y. Bhat, S. Rafiq, **M. Zayed**, Wigner–Ville Distribution Associated with Clifford Geometric Algebra Cln,0, n=3(mod 4) Based on Clifford–Fourier Transform. Symmetry. 2023; 15(7):1421. https://doi.org/10.3390/sym15071421
49. **M. Zayed**, S.A. Wani, A.M. Mahnashi Certain Properties and Characterizations of Multivariable Hermite-Based Appell Polynomials via Factorization Method. Fractal and Fractional. 2023; 7(8):605.https://doi.org/10.3390/fractalfract7080605
50. **M. Zayed**, SA. Wani, Y. Quintana Properties of Multivariate Hermite Polynomials in Correlation with Frobenius–Euler Polynomials. Mathematics. 2023; 11(16):3439. https://doi.org/10.3390/math11163439
51. **M. Zayed**, SA Wani, MY. Bhat Unveiling the Potential of Sheffer Polynomials: Exploring Approximation Features with Jakimovski–Leviatan Operators. Mathematics. 2023; 11(16):3604. https://doi.org/10.3390/math11163604
52. Y. El Haoui, **M. Zayed** (2023). Beurling's Theorem Associated with Octonion Algebra Valued Signals. In: Hitzer, E., Papagiannakis, G., Vasik, P. (eds) Empowering Novel Geometric Algebra for Graphics and Engineering. ENGAGE 2022. Lecture Notes in Computer Science, vol 13862. Springer, Cham. https://doi.org/10.1007/978-3-031-30923-6_9
53. **M. Zayed**, Y. El Haoui (2023) Fractional Fourier transform for space–time algebra-valued functions. J. Pseudo-Differ. Oper. Appl. 14, 58. https://doi.org/10.1007/s11868-023-00553-3
54. A. Bakhet, **M. Zayed.** Incomplete exponential type of R-matrix functions and their properties [J]. AIMS Mathematics, 2023, 8(11): 26081-26095. doi: 10.3934/math.20231329
55. G. Hassan, **M. Zayed**. Expansions of generalized bases constructed via Hasse derivative operator in Clifford analysis[J]. AIMS Mathematics, 2023, 8(11): 26115-26133. doi: 10.3934/math.20231331
56. **M. Zayed**, S.A. Wani, A Study on Generalized Degenerate Form of 2D Appell Polynomials via Fractional Operators. *Fractal Fract.* **2023**, *7*, 723. https://doi.org/10.3390/fractalfract7100723
57. M.Y. Bhat, **M. Zayed**, A.H. Dar, Short-time free metaplectic transform: its relation to short-time Fourier transform in L2(Rn) and uncertainty principles
58. Y. El Haoui, **M. Zayed** (2023) On the Fractional Space-Time Fourier Transforms, Accepted at Integral Transforms And Special Functions.

BOOKS

Co-author of the book entitled "Functions of a Complex Variable", 2009 (with **M. Abul-Ez**)

SCIENTIFIC CONFERENCES

1. Presenting a scientific paper in the Saudi Science conference 2010.
2. Attending and presenting a scientific paper in the Fourth Saudi Science Conference 21-24/ 3/2010.
3. Presenting a scientific paper entitled "On the representation near a point of Clifford valued functions by infinite series of polynomials" at the 9th International Conference on Clifford Algebras and their Applications, ICCA9, Weimar, Germany, July, 15-20, 2011

4. Presenting a scientific paper in the Fifth Saudi Science Conference 2012.
5. Presenting a scientific paper entitled "On Planirity of Generalized Line Graphs" in the 31st Midwestern Conference on Combinatorics and Combinatorial Computing (MCCCC31) held on October 20-22, 2017 at the University of West Georgia in Carrollton, GA, USA.
6. Presenting a scientific paper entitled "Generalized Line Graphs", in the 49th southeastern international conference on Combinatorics, Graph Theory and Computing held on March 5-9, 2018 at Florida Atlantic University, Boca Raton, FL, USA.
7. Presenting a scientific talk entitled "Minimum Rate of Growth of Generalized Hadamard Product of Two Entire Axially Monoginic Functions", The 9th International Conference on Pure and Applied Mathematics (ICPAM 2020), Virtual Event, July 14-17, 2020.
8. Presenting a scientific talk entitled "Certain Bases of Polynomials Associated with Entire Functions in Clifford Analysis", 12th conference on Clifford algebras and their applications in mathematics and physics, University of Science and Technology of China (USTC) in Hefei, Anhui, China, Virtual Event, August 3 - 7, 2020.
9. Attending the 5th conference on Mathematical sciences and applications (CMSA 2021), King Abdullah University of Science and Technology & King Saud University, Virtual Event, November 17-18, 2021.
10. Scientific committee and organizing committee membership of the Second International Conference of Mathematics and its Applications (ICMA2021), held at King Khalid University, Abha, Saudi Arabia, October 19-20, 2021.
11. Presenting a scientific talk entitled "Beurling's theorem associated with octonion algebra valued signals", Conference of Computer Graphics International 2022, Virtual event, 12-16 September 2022.
12. Presenting a scientific talk entitled "Approximation of special monogenic functions by equivalent bases of polynomials in Frechet modules" International Conference of Numerical Analysis and Applied Mathematics 2022 (ICNAAM 2022) Galaxy Hotel, Heraklion, Crete, Greece, 19-25 September 2022.

FUNDED PROJECTS

1. Research group member (Researcher), Group title: Complex & Clifford Analysis Group, Project's title: "On the matrix versions of special functions theory and their applications" Funded by Scientific Research Deanship, King Khalid University, Arabia Saudi, 2019 Grant #: R.G.P. 1/148/40
2. The PI of a general research program, entitled: Monogenic Functions in the Theory of partial differential equations with Applications in Signal and Image

Processing. Funded by Scientific Research Deanship, King Khalid University, Arabia Saudi, 2020, Grant #: GRP-82-41.

3. The PI of research project- small group, Project's title: New Contributions to Clifford and Fractional Analysis with applications, Funded by Scientific Research Deanship, King Khalid University, Arabia Saudi, 2020, Grant #: RGP.1/86/42
4. Research group member (Researcher), Project's title: On some topics in hyper-complex function theory and hyper-transcendental functions with applications, funded by the Academy of Scientific c Research and Technology Science UP grant No. (6479), Egypt, 2021
5. The PI of research project-Large gruop, Project's title: Applications of fractional analytical methods for solving bio-mathematical models.fractional methods, Funded by Scientific Research Deanship, King Khalid University, Arabia Saudi, 2022, Grant #: RGP.2/207/43

PARTICIPATING AT PROFESSIONAL MEETINGS

1. Workshop on "Qualitative Research Methods" by Brunel University and AlQassim University from 16 to 18 / 5 / 2009.
2. Workshop on "Evaluating performance tasks by using rules Rubries" by Umm Al-Qura University from 19-21/1/2010.
3. Workshop on "Preparing Data Using SPSS" by King Saud university from 1-2/ 11/2010.
4. Workshop on "Working Toward Program Accreditation" by Prince Naif institute for Research and consulting Services from 16-18/1/1431H (2 - 4/ 1/2010).
5. Workshop on "Strategic planning in higher education" 20-21- December 2011.
6. Workshop on "Institutional Accreditation standards", 26 November 2011.
7. Taking a short course on "Research Ethics" offered by The Research Development Office (RDO) and the American Association for the Advancement of Science (AAAS), Abha, 27-28 March, 2019.
8. Participating and organizing the workshop entitled "Preparation for studying PhD program abroad" within the Scholarship administration, November 7-11, 2021.
9. Presenting a workshop entitled "How to prepare a professional presentation in Latex using Beamer?", February 2, 2022.
10. Organizing Scholarship online Gathering 2020 under the patronage of KKU president, Wednesday April 7, 2021.
11. Organizing five initiatives of the Scholarship Administration as a part of the Summer 2021 Mobaderoon program 2.
12. Organizing two initiatives of the Scholarship Administration as a part of the Summer 2022 Mobaderoon program 3.
13. Organizing the Sixth Scientific and Cultural Day of the Mathematics Department