CURRICULUM VITAE

PERSONAL DATA

Name	Ramy Mahmoud Mohamed Hafez
Nationality	Egyptian
Position	Associate Professor
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EDUCATION

Year	Academic Degree	Institution
2014	PH.D.	Faculty of Science, Beni-Suef University, Egypt
2011	M.SC.	Faculty of Science, Beni-Suef University, Egypt
2005	B.Sc.	Faculty of Science, Beni-Suef University, Egypt

WORK EXPERIENCE

Period	Position	Address
10-2025 until Now	Associate Professor	Imam Mohammad Ibn Saud Islamic University
2022-2025	Associate Professor	Matrouh University, Egypt
2019-2022	Assistant Professor	Matrouh University, Egypt
2014-2019	Assistant Professor	Modern Academy For Computer Science and Management Technology in Maadi, Egypt
2011-2014	Lecturer	Modern Academy For Computer Science and Management Technology in Maadi, Egypt
2007-2011	Demonstrator	Modern Academy For Computer Science and Management Technology in Maadi, Egypt

RESEARCH INTERESTS

Numerical analysis and scientific computing; Spectral methods and their applications in linear and nonlinear

ordinary differential equations, system of ordinary differential equations, nonlinear partial differential .equations. System of nonlinear partial differential equations

Developing spectral methods for solving ordinary/partial functional Differential equations, system of functional Differential equations, nonlinear ordinary/partial fractional differential equations and functional Differential equations

Constructing new orthogonal polynomials based on classical orthogonal polynomials like Legendre, Chebyshev, Ultraspherical and Jacobi polynomial.

PUBLICATIONS

1. **R. M. Hafez**, Y. Youssri, E.H. Doha, M. Hammad, Exponential/fractional Jacobi spectral Galerkin and collocation schemes for the multi-dimensional time-fractional diffusion equations on the semi-infinite domain, Hacettepe Journal of Mathematics and Statistics, 55 (2025) 1-20.
2. H. M. Ahmed, **R. M. Hafez,** A spectral collocation approach based on shifted Viet Lucas polynomials for microscale heat transfer modeling in thin metal films, International Journal of Modern Physics C, (2025).
3. N. Firouzi, **R. M. Hafez**, K. N. Salloomi, M. A. Abdelkawy, R. R. Hussain, Graph-FEM/ML framework for inverse load identification in thick-walled hyperelastic pressure vessels, Symmetry , 17 (2025) 2021.
4. **R. M. Hafez**, M. A. Abdelkawy, H. M. Ahmed, A Refined Spectral Galerkin Approach Leveraging Romanovski–Jacobi Polynomials for Differential Equations, Mathematics, 13 (2025) 1461.
5. R. I Mohamed, **R. M. Hafez**, A. F. Hashem, M. Abdel-Aty, Fractional Dynamics of Information Entropy in Quantum Wire System Under Rashba Interaction, Fractal and Fractional, 9 (2025) 741.
6. **R.M. Hafez**, M.A. Abdelkawy, A. Biswas, H.M. Ahmed, A Galerkin algorithm leveraging Bernoulli polynomials for accurate solutions of time-fractional diffusion-wave equations, Journal of Computational Science, 90 (2025) 102607.
7. **R. Hafez**, S. Boulaaras, H.Abd El-Wahed Khalifa, Matrix Algorithms Based on Jacobi and Romanovski-Jacobi Polynomials for Solving the FitzHugh-Nagumo Nonlinear Equation, Rev. int. métodos numér. cálc. diseño ing, 41 (2025).
8. M.S. T. Brahim, Y.H. Youssri, A. Alburaikan, H. Khalifa, T. Radwan, **R. Hafez**, A Refined Galerkin Approach for Solving Higher-Order Differential Equations via Bernoulli Polynomials, Fractals, (2025).
9. **R. Hafez**, M. Haiour, S. Tantawy, A. Alburaikan, H. Khalifa, A Comprehensive Study on Solving Multitype Differential Equations Using Romanovski-Jacobi Matrix Methods, Fractals, (2025).
10. **R. M. Hafez**, H. M. Ahmed, O. M. Alqubori, A. K. Amin, W. M. Abd-Elhameed, Efficient Spectral Galerkin and Collocation Approaches Using Telephone Polynomials for Solving Some Models of Differential Equations with Convergence Analysis, Mathematics, 13 (2025) 918.
11. A. G. Atta, Y. H. Youssri, **R.M. Hafez,** An innovative pseudo-spectral Galerkin algorithm for the time-fractional Tricomi-type equation**,** Physica Scripta, 99 (2024) 105238.
12. W.M. Abd-Elhameed, **R.M. Hafez**, A. Napoli**, A. G. Atta, A New Generalized Chebyshev Matrix Algorithm for Solving Second-Order and Telegraph Partial Differential Equations,** Algorithms, 18 (2024) 2.
13. W.M. Abd-Elhameed, H.M. Ahmed, M.A. Zaky**, R.M. Hafez, A new shifted generalized Chebyshev approach for multi-dimensional sinh-Gordon equation,** Physica Scripta, 99 (2024) 095269.
14. **R.M. Hafez**, **Y.H. Youssri, Review on Jacobi-Galerkin Spectral Method for Linear PDEs in Applied Mathematics,** Contemporary Mathematics, 5 (2024) 2503-2540.
15. Y.H. Youssri, M.A. Zaky, **R.M. Hafez, Romanovski-Jacobi spectral schemes for high-order differential equations,** Applied Numerical Mathematics, 198 (2024) 148-159.
16. **R.M. Hafez**, Y. H. Youssri, **Fully Jacobi-Galerkin Algorithm for Two-dimensional Time-dependent PDEs Arising in Physics,** International journal of Modern physics C, 35 (2024) 1-24.
17. H.M. Ahmed**, R. Hafez,** W. Abd-Elhameed**, A computational strategy for nonlinear time-fractional generalized Kawahara equation using new eighth-kind Chebyshev operational matrices,** Physica Scripta, (2024) ,**DOI** 10.1088/1402-4896/ad3482.

18. **R.M. Hafez**, Y. H. Youssri, A. G. Atta, **Jacobi Rational Operational Approach for Time-Fractional Sub-Diffusion Equation on a Semi-Infinite Domain , Contemporary Mathematics: Contemporary Mathematics,** 4 (4) (2023) 853-877.
19. D. Mostafa, M. A. Zaky, **R.M. Hafez**, A.S. Hendy, M. A. Abdelkawy, A. A. Aldraiweesh, **Tanh Jacobi spectral collocation method for the numerical simulation of nonlinear Schrödinger equations on unbounded domain,** Mathematical Methods in the Applied Sciences, 46 (2023) 656-674.
20. **R.M. Hafez**, Y. H. Youssri, **Shifted Gegenbauer-Gauss Collocation Method for Solving Fractional Neutral Functional-Differential Equations with Proportional Delays,** Kragujevac Journal of Mathematics, 46 (2022) 981–996.
21. **R. M. Hafez**, M. Hammad, E. H. Doha, **Fractional Jacobi Galerkin spectral schemes for multi-dimensional time fractional advection–diffusion–reaction equations,** Engineering with Computers, 38 (2022) 2769-2769.
22. M. A. Zaky, H. Abo-Gabal, **R. M. Hafez**, E.H. Doha, **Computational and theoretical aspects of Romanovski-Bessel polynomials and their applications in spectral approximations,** Numerical Algorithms, **89** (2022) 1567–1601.
23. M. A. Abdelkawy, A. Z.M. Amin, M. M. Babatin, A. S. Alnahdi, M.A. Zaky, **R. M. Hafez**, **Jacobi Spectral Collocation Technique for Time-Fractional Inverse Heat Equations,** Fractal and Fractional, 5 (2021) no. 3: 115. https://doi.org/10.3390/fractalfract5030115
24. **R. M. Hafez**, M. A. Zaky, A. S. Hendy, **A novel spectral Galerkin/Petrov–Galerkin algorithm for the multi-dimensional space–time fractional advection–diffusion–reaction equations with nonsmooth solutions,** Mathematics and Computers in Simulation, 190 (2021) 678-690.
25. A.s. Hendy, M. A. Zaky, **R. M. Hafez**, R.H.D. Staelen, **The impact of memory effect on space fractional strong quantum couplers with tunable decay behavior and its numerical simulation,** Scientific Reports, 11 (2021) 1–15.
26. **R.M. Hafez**, Y.H. Youssri, **Spectral Legendre-Chebyshev treatment of 2D linear and nonlinear mixed Volterra-Fredholm integral equation,** Math. Sci. Lett, 9 (2020) 37-47.
27. H. Abo-Gabal, M. A. Zaky, **R. M. Hafez**, E. H. Doha, **On Romanovski–Jacobi polynomials and their related approximation results,** Numerical Methods for Partial Differential Equations, 36 (2020) 1982-2017.
28. Y.H. Youssri, **R.M. Hafez, Chebyshev collocation treatment of Volterra–Fredholm integral equation with error analysis,** Arabian Journal of Mathematics, 9 (2020) 471-480.
29. H. Magda, **R. M. Hafez**, Y. H. Youssri, E. H. Doha, **Exponential Jacobi-Galerkin method and its applications to multidimensional problems in unbounded domains,** Applied Numerical Mathematics, 157 (2020) 88-109.
30. **R.M. Hafez**, Y.H. Youssri, **Shifted Jacobi collocation scheme for multi-dimensional time-fractional order telegraph equation,** Iranian Journal of Numerical Analysis and Optimization, 10 (2020) 195-223.
31. **R.M. Hafez**, Y.H. Youssri, **Jacobi spectral discretization for nonlinear fractional generalized seventh-order KdV equations with convergence analysis,** Tbilisi Mathematical journal, 13 (2020) 129-148.
32. **R. M. Hafez**, M.A. Abdelkawy, M. A. Zaky, **Jacobi spectral Galerkin method for distributed-order fractional Rayleigh- Stokes problem for generalized second grade,** Frontiers in Physics, 7 (2020) Article 240.
33. **R. M. Hafez**, M. A. Zaky, **High-order continuous Galerkin methods for multi-dimensional advection–reaction–diffusion problems,** Engineering with Computers, 36 (2020) 1813–1829.
34. **R.M. Hafez**, Y.H. Youssri, **Legendre-collocation spectral solver for variable-order fractional functional differential equations,** Computational Methods for Differential Equations, 8 (2020) **99-110.**
35. E.H. Doha, **R.M. Hafez**, Y.H. Youssri, **Shifted Jacobi spectral-Galerkin method for solving hyperbolic partial differential equations,** Computers & Mathematics with Applications, 78 (2019) 889-904.
36. Y.H. Youssri, **R.M. Hafez, Exponential Jacobi spectral method for hyperbolic partial differential equations,** Mathematical Sciences, **13 (2019) 347–354**.
37. F. Mallawi, J.F. Alzaidy, **R.M. Hafez, Application of a Legendre collocation method to the space–time variable fractional-order advection–dispersion equation,** Journal of Taibah University for Science, 13 (2019) 324-330.
38. **R.M. Hafez**, **Numerical solution of linear and nonlinear hyperbolic telegraph type equations with variable**

coefficients using shifted Jacobi collocation method, Computational and Applied Mathematics, 37 (2018) 5253-5273.

39. **R.M. Hafez**, Y.H. Youssri, Jacobi collocation scheme for variable-order fractional reaction-subdiffusion equation, Computational and Applied Mathematics, 37 (2018) 5315-5333 .
40. A.A. EL-Kalaawy, E.H. Doha, S.S. EZZ-Eldien, M.A. Abdelkawy, **R.M. Hafez**, A.Z.M. Amin, D. Baleanu, M.A. Zaky, A computationally efficient method for a class of fractional variational and optimal control problems using fractional gegenbauer functions, Rom. Rep. Phys.,70 (2018) 109.
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44. S.S. Ezz-Eldien, **R.M. Hafez**, A.H. Bhrawy, D. Baleanu, A.A. El-Kalaawy, New numerical approach for fractional variational problems using shifted Legendre orthonormal polynomials, **Journal of Optimization Theory and Applications,** 174 (2017) 295-320.
45. **R.M. Hafez**, M.A. Abdelkawy, E.H. Doha, A.H. Bhrawy, A new collocation scheme for solving hyperbolic equations of second order in a semi-infinite domain, **Romanian Reports in Physics,** 1 (2016) 112-127.
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58. E.H. Doha, D. Baleanu, A.H. Bhrawy, **R.M. Hafez**, **A Jacobi collocation method for troesch's problem in plasma physics**, **PROCEEDINGS OF THE ROMANIAN ACADEMY, Series A**, (2014) Volume 15, Number 2/2014, pp. 130–138
59. E.H. Doha, A.H. Bhrawy, **R.M. Hafez**, R.V. Gorder, **Jacobi rational-Gauss collocation method for Lane-Emden equations of astrophysical significance, Nonlinear Analysis: Modeling and Control,** 19 (2014) 1-14.
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61. E.H. Doha, A. H. Bhrawy, D. Baleanu, **R. M. Hafez** , **Efficient Jacobi-Gauss collocation method for solving initial value problems of Bratu type**, **Computational Mathematics and Mathematical Physics** , (2013) Volume 53, Issue 9, pp 1292-1302.