

CURRICULUM VITAE

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Personal information

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Employment:

2020 – **Assistant Professor in Mathematical and Physics Engineering Dep. at Faculty of Engineering,**

2015 – 2020 **Teaching Assistant Mathematical and Physics Engineering Dep. at faculty of engineering, Zagazig university.**

2012 – 2015 **Teaching staff member in physics and engineering mathematics Dep.**

Short-term positions:

Fall 2020 Higher Technological Institute.
Fall 2015 Obour Institutes.

Education:

2015 – 2020 **PhD degree in engineering mathematics.**
2012 – 2015 **Master's degree in engineering mathematics.**
2011 – 2012 **Diploma in mathematics.**
2010 – 2011 **Diploma in communication engineering.**

Research Interests:

Partial, Ordinary, Fractional differential equations, Lie Symmetry, Analytical solutions, Soliton theorem, Algebraic, Descriptive Geometry, and physics. In particular: total positivity, cluster algebras, statistical mechanics, tropical geometry, Machin Learning, Artificial Intelligence, Mathematics Software's programs.



Publications: available at
<https://www.researchgate.net/profile/Rahma-Sadat>

- [1] Baleanu, D., **R. Sadat**, Ali, M.R. The method of lines for solution of the carbonnanotubes engine oil nanofluid over an unsteady rotating disk. *Eur. Phys. J. Plus* 135, 788 (2020). <https://doi.org/10.1140/epjp/s13360-020-00763-4>.
- [2] **Ali, M. R., R. Sadat**, Lie symmetry analysis, new group invariant for the(3 + 1)-dimensional and variable coefficients for liquids with gas bubbles models, *Chinese Journal of Physics*, Volume 71, (2021), Pages 539-547, ISSN 0577-9073.
- [3] **Ali, M.R., R. Sadat**, Construction of Lump and optical solitons solutions for (3 + 1) model for the propagation of nonlinear dispersive waves in inhomogeneous media. *Opt Quant Electron* 53, 279 (2021). <https://doi.org/10.1007/s11082-021-02916-w>
- [4] **Ali, M. R., R. Sadat**, New exact solutions of Bratu Gelfand model in twodimensions using Lie symmetry analysis, *Chinese Journal of Physics*, Volume 65, 2020, Pages 198-206, ISSN 0577-9073, <https://doi.org/10.1016/j.cjph.2020.01.008>.
- [5] Ayub, A., Sabir, Z., Altamirano, **Ali, M. R., R. Sadat**, Characteristics of melting heat transport of blood with time-dependent cross-nanofluid model using Keller–Box and BVP4C method. *Engineering with Computers* (2021). <https://doi.org/10.1007/s00366-021-01406-7>.
- [6] **Ali, M. R., & R. Sadat**, (2021). Lie symmetry analysis, new group invariant for the (3+ 1)-dimensional and variable coefficients for liquids with gas bubbles models. *Chinese Journal of Physics*, 71, 539-547.
- [7] **Ali, M. R., R. Sadat**, The Method of Lines Analysis of Heat Transfer of Ostwald-de Waele Fluid Generated by a Non-uniform Rotating Disk with a Variable Thickness, *Journal of Applied and Computational Mechanics* 7 (2), pages 432-44, (2021).
- [8] **Ali, M.R., R. Sadat**, Ma, WX. Investigation of new solutions for an extended (2 + 1)-dimensional Calogero-Bogoyavlenskii-Schif equation. *Front. Math. China* 16, 925–936 (2021). <https://doi.org/10.1007/s11464-021-0952-3>.
- [9] **Ali, M. R., Ma, W. X., & R. Sadat**, (2022). Lie symmetry analysis and invariant solutions for (2+ 1) dimensional Bogoyavlensky-Konopelchenko equation with variable-coefficient in wave propagation. *Journal of Ocean Engineering and Science*, 7(3), 248-254.
- [10] **Ali, M. R., and Wen-Xiu Ma , and R. Sadat**, Lie Symmetry Analysis and Wave Propagation in Variable-Coefficient Nonlinear Physical Phenomena, *East Asian Journal on Applied Mathematics*, (2022), 12, 1, 201-212.
- [11] **R. Sadat**, Praveen Agarwal, R. Salah, **Ali, M. R.**, Lie symmetry analysis and invariant solutions of 3D Euler equations for axisymmetric, incompressible and inviscid flow in the cylindrical coordinates. *Adv Differ Equ*, 2021, 486 (2021).
- [12] Sabir, Z., Raja, M.A.Z., Shoaib, M., **Ali, M.R.** A novel design of a sixth-order nonlinear modeling for solving engineering phenomena based on neuro intelligence algorithm. *Engineering with Computers* (2022). <https://doi.org/10.1007/s00366-021-01596-0>.
- [13] Sabir, Z., **Ali, M.R. & R. Sadat**, Gudermannian neural networks using the optimization procedures of genetic algorithm and active set approach for the three- species food chain nonlinear model. *J Ambient Intell Human Comput* (2022). <https://doi.org/10.1007/s12652-021-03638-3>.
- [14] Sabir, Z., **Ali, M.R., R. Sadat**, Fathurrochman, I. et al. Dynamics of multi-point singular fifth- order Lane–Emden system with neuro-evolution heuristics. *Evolving Systems* (2022). <https://doi.org/10.1007/s12530-021-09413-1>.
- [15] Sabir, Z., Raja, M.A.Z., Nguyen, T.G., **Ali, M.R., R. Sadat**, Applications of neural networks for the novel designed of nonlinear fractional seventh order singular system. *Eur. Phys. J. Spec. Top.* (2022). <https://doi.org/10.1140/epjs/s11734-022-00457-1>.
- [16] Ayub, A., sabir, Z., Wahab, H.A., **Ali, M.R., R. Sadat**, Analysis of the nanoscale heat transport and Lorentz force based on the time-dependent Cross nanofluid. *Engineering with Computers* (2022). <https://doi.org/10.1007/s00366-021-01579-1>.
- [17] Botmart, T., Sabir, Z., Raja, M. A. Z., **Ali, M. R., R. Sadat**, Aly, A. A., & Saad, A. (2022). A hybrid swarming computing approach to solve the biological nonlinear Leptospirosis system. *Biomedical Signal Processing and Control*, 77, 103789.
- [18] Singkibud, P., Sabir, Z., Al Nuwairan, M., **R. Sadat**, **Ali, M. R.**, (2022). Cubic autocatalysis-based activation energy and thermophoretic diffusion effects of steady micro-polar nano-fluid. *Microfluidics and Nanofluidics*, 26(7), 1-12.
- [19] Sabir, Z., **Ali, M. R.**, Alhazmi, S. E., Raja, M. A. Z., **R. Sadat**, (2022). Numerical treatment for the nonlinear fifth kind of multi-singular differential model: a neuro-swarming approach. *Physica Scripta*, 97(7), 075203.
- [20] Sabir, Z., Wahab, H. A., Nguyen, T. G., Altamirano, G. C., **R. Sadat**, **Ali, M. R.** (2022).



- Intelligent computing technique for solving singular multi-pantograph delay differential equation. *Soft Computing*, 1-13.
- [21] Sabir, Z., Botmart, T., Raja, M. A. Z., **R. Sadat, Ali, M. R.**, Alsulami, A. A., & Alghamdi, A. (2022). Artificial neural network scheme to solve the nonlinear influenza disease model. *Biomedical Signal Processing and Control*, 75, 103594.
- [22] Wang, F., Sajid, T., Ayub, A., Sabir, Z., Bhatti, S., **R. Sadat, ... & Ali, M. R.** (2022). Melting and entropy generation of infinite shear rate viscosity Carreau model over Riga plate with erratic thickness: a numerical Keller Box approach. *Waves in Random and Complex Media*, 1-25.
- [23] Sabir, Z., Wahab, H. A., **Ali, M. R., & R. Sadat**, (2022). Neuron analysis of the two-point singular boundary value problems arising in the thermal explosion's theory. *Neural Processing Letters*, 1-28.
- [24] Sabir, Z., **Ali, M. R.**, Raja, M. A. Z., Shoaib, M., Núñez, R. A. S., & **R. Sadat**, (2021). Computational intelligence approach using Levenberg–Marquardt backpropagation neural networks to solve the fourth-order nonlinear system of Emden–Fowler model. *Engineering with Computers*, 1-17.
- [25] Ayub, A., Wahab, H. A., Balubaid, M., Mahmoud, S. R., **Ali, M. R., & R. Sadat**, (2022). Analysis of the nanoscale heat transport and Lorentz force based on the time-dependent Cross nanofluid. *Engineering with Computers*, 1-20.
- [26] Sabir, Z., Raja, M. A. Z., **R. Sadat**, Ahmed, K. S., **Ali, M. R.**, & Al-Kouz, W. (2022). Fractional Meyer neural network procedures optimized by the genetic algorithmto solve the bagley-torvik model. *Journal of Applied Analysis & Computation*, 0-0.
- [27] Ayub, A., Shah, S. Z. H., Sabir, Z., Rao, N. S., **R. Sadat, Ali, M. R.** (2022). Spectral relaxation approach and velocity slip stagnation point flow of inclined magnetized cross-nanofluid with a quadratic multiple regression model. *Waves in Random and Complex Media*, 1-25.
- [28] Botmart, T., Sabir, Z., Raja, M. A. Z., Weera, W., **R. Sadat, Ali, M. R.** (2022). A numerical study of the fractional order dynamical nonlinear susceptible infected and quarantine differential model using the stochastic numerical approach. *Fractal and Fractional*, 6(3), 139.
- [29] Sabir, Z., **Ali, M. R.**, Raja, M. A. Z., **R. Sadat**, Baleanu, D. (2022). Dynamics of three-point boundary value problems with Gudermannian neural networks. *Evolutionary Intelligence*, 1-13.
- [30] Sabir, Z., Baleanu, D., **Ali, M. R., & R. Sadat**, (2022). A novel computing stochastic algorithm to solve the nonlinear singular periodic boundary value problems. *International Journal of Computer Mathematics*, 1-14.
- [31] Sabir, Z., Raja, M. A. Z., Nguyen, T. G., Fathurrochman, I., **R. Sadat, Ali, M. R.** (2022). Applications of neural networks for the novel designed of nonlinear fractional seventh order singular system. *The European Physical Journal Special Topics*, 1-15.
- [32] Ayub, A., Sabir, Z., Shah, S. Z. H., Mahmoud, S. R., Algarni, A., **R. Sadat, Ali, M. R.** (2022). Aspects of infinite shear rate viscosity and heat transport of magnetized Carreau nanofluid. *The European Physical Journal Plus*, 137(2), 1-17.
- [33] Sabir, Z., **Ali, M. R., & R. Sadat**, (2022). Gudermannian neural networks using the optimization procedures of genetic algorithm and active set approach for the three-species food chain nonlinear model. *Journal of Ambient Intelligence and Humanized Computing*, 1-10.
- [34] Sabir, Z., **Ali, M. R.**, Fathurrochman, I., Raja, M. A. Z., **R. Sadat**, Baleanu, D. (2022). Dynamics of multi-point singular fifth-order Lane–Emden system with neuro-evolution heuristics. *Evolving Systems*, 1-12.
- [35] Ayub, A., Sabir, Z., Shah, S. Z. H., Wahab, H. A., **R. Sadat & Ali, M. R.** (2022). Effects of homogeneous-heterogeneous and Lorentz forces on 3-D radiative magnetized cross nanofluid using two rotating disks. *International Communications in Heat and Mass Transfer*, 130, 105778.
- [36] Sabir, Z., Raja, M. A. Z., Baleanu, D., **R. Sadat & Ali, M. R.** (2022). Investigations of nonlinear induction motor model using the Gudermannian neural networks. *Thermal Science*, (00), 261-261.
- [37] Muhammad Umar, Fazli Amin, **R. Sadat , Ali, M. R.**, A stochastic computing procedure to solve the dynamics of prevention in HIV system, *Biomedical Signal Processing and Control*, Volume 78, 2022, 103888, ISSN 1746-8094, <https://doi.org/10.1016/j.bspc.2022.103888>.
- [38] Kanit Mukdasai, Zulqurnain Sabir, Muhammad Asif Zahoor Raja , **R. Sadat , Ali, M. R.**, Peerapongpat Singkibud, (2022). A numerical simulation of the fractional order Leptospirosis model using the supervise neural network, *Alexandria Engineering Journal*, Volume 61, Issue 12.
- [39] Sabir, Z., et al. (2022). "Numerical treatment for the nonlinear fifth kind of multi-singular differential model: a neuro-swarming approach." *Physica Scripta* **97**(7): 075203.
- [40] Singkibud, P., Sabir, Z., Al Nuwairan, M. et al. Cubic autocatalysis-based activation energy and thermophoretic diffusion effects of steady micro-polar nano-fluid. *Microfluid Nanofluid* **26**, 50 (2022). <https://doi.org/10.1007/s10404-022-02554-y>
- [41] Sabir, Z., Raja, M.A.Z., Mumtaz, N. et al. An Investigation Through Stochastic Procedures for Solving the Fractional Order Computer Virus Propagation Mathematical Model with Kill Signals. *Neural Process Lett* (2022). <https://doi.org/10.1007/s11063-022-10963-x>
- [42] Ma, WX., Seoud, E.Y.A.E., Ali, M.R. et al. Dynamical Behavior and Wave Speed Perturbations in the (2 + 1) pKP Equation. *Qual. Theory Dyn. Syst.* **22**, 2 (2023). <https://doi.org/10.12346/022-00683-x>



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- [44] Wen-Xiu Ma, Mohamed R. Ali, R. Sadat, "Analytical Solutions for Nonlinear Dispersive Physical Model", *Complexity*, vol. 2020, Article ID 3714832, 8 pages, 2020. <https://doi.org/10.1155/2020/3714832>
- [45] Sadat, Rahma, and Magda Kassem. 2018. "Explicit Solutions for the (2 + 1)-Dimensional Jaulent–Miodek Equation Using the Integrating Factors Method in an Unbounded Domain" *Mathematical and Computational Applications* 23, no. 1: 15. <https://doi.org/10.3390/mca23010015>

Professional Activities:

- **Editorial:** Gest editor in American Journal of Applied Mathematics.
- **Reviewer:** available at: [http://www.webofscience.com/wos/author/record/\[ResearcherID\]](http://www.webofscience.com/wos/author/record/[ResearcherID])

- Pysica Scripta Journal.
- Asian Research Journal Of Mathematics.
- Mathematical Methods in The Applied Sciences.
- Partial Differential Equations in Applied Mathematics.
- Sn Applied Science.
- Archives Of Current Research International.
- Informatics in Medicine Unlocked.
- Biomedical Signal Processing and Control.
- Arabian Journal of Chemistry.
- Symmetry.
- International Journal of Modern Physics B.
- Waves in Random and Complex Media.
- European Journal of Mathematics and Statistics.
- Chaos, Solitons and Fractals.

Teaching Activities:

- 2022 Fall Complex Mathematics at Zagazig.
 2022 Spring Differential equations at Zagazig.
 2021 Fall Topics in Cluster algebras, Zagazig University.
 2021 Spring Laplace, Fourier transformations, Zagazig.
 2020 Fall Discrete Mathematics at Zagazig.
 2020 spring Limits, Calculus I (Math 150) at Zagazig.
 2019 Spring Descriptive Geometry at Zagazig.
 2018 Fall Linear Algebra at Zagazig.
 2018 Spring Introduction of Maple 13, at Zagazig.
 2017 Fall Multivariable Calculus at Zagazig.
 2017 Spring Probability at Zagazig.
 2016 Spring Abstract Algebra at Zagazig.
 2016 Fall Differential equations at Zagazig.
 2015 Fall Number theory at Zagazig.

