

Curriculum Vitae

Mohamed A. El-Beltagy

Professor

Mathematics Department.

Engineering Faculty

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Google Scholar Page:

<https://scholar.google.com/citations?user=LI-TDTcAAAAJ&hl=en>

Degrees Hold:

- **Professor:** Engineering Mathematics
Awarded by: Cairo University, Engineering Faculty, Engineering Mathematics & Physics Department, **2019**.
- **Associate Professor:** **Field:** Engineering Mathematics
Awarded by: Cairo University, Engineering Faculty, Engineering Mathematics & Physics Department, **2014**.
- **PhD:** **Field:** Engineering Mathematics
Awarded by: Cairo University, Engineering Faculty, Engineering Mathematics. & Physics Department, With one year in Salzburg University (Austria), **2008**.
Thesis Title: “On the Serial and Parallel Finite-Volume Solutions of the Incompressible Navier-Stokes Equations Using Unstructured Grids”
- **MSc:** **Field:** Mathematics
Awarded by: Cairo University, Engineering Faculty, Engineering

Mathematics. & Physics Department,, **2000.**

- **Diploma: Field:** Mathematics
Awarded by: Cairo University, Engineering Faculty, Engineering Mathematics. & Physics Department, **1998.**
- **BSc: Field:** Aerospace Engineering
Awarded by: Cairo University, Engineering Faculty, Aerospace Department, **1995.**

Previous occupations and Experience:

- 1- Professor at Cairo University, Engineering Faculty, Eng. Mathematics Department, September 2019 – Present.
- 2- Associate Professor at Cairo University, Engineering Faculty, Eng. Mathematics Department, January 2014 – 2019.
- 3- Associate Professor at Effat University, Jeddah, Saudi Arabia, August 2013 – July 2016 (Staff of Basic Sciences).
- 4- Assistant Professor at the Egyptian E-Learning University (EELU) in the IT/Mathematics department, 2011-2013.
- 5- Assistant Professor at Cairo University, 2008 – 2014 in the Department of Engineering Mathematics.
- 6- Team manager in the Applied Science Inc. (ASI) company (<http://www.appliedscienceint.com>), Mathematics Dept., 2006-2010.
- 7- Consultant in Mathematics for the Applied Science Inc., 2010-Present.
- 8- T.A. at Cairo University, 1997 – 2008 in the Department of Engineering Mathematics.

Teaching Activities:

- Mathematics (Functional Analysis, Numerical Analysis, Stochastic Processes, Stochastic Differential Equations, Calculus, Linear Algebra, Differential Equations, Partial Differential Equations, Series, Fourier Analysis)
- Computer Programming (C++, Visual Basic, FORTRAN)

Research Activities:

- Stochastic processes.
- Numerical solutions of partial differential equations.
- Stochastic processes and Stochastic DE/PDEs.
- Random and Stochastic FVM/FEM.

Conference Papers:

- 1- M. El-Beltagy, A. Sherif, and A. Seddik, “Unstructured FV Solver for the Two-Dimensional Laminar Backstep Flow Using Vorticity-Stream Function”. Proceedings of the 8th International Conference of Fluid Dynamics and

- Propulsion A.S.M.E., Sharm El-Shiekh, Egypt. Paper ICFDP8-EG-199, (2006).
- 2- M. El-Beltagy, O. Galal and M. Wafa, "Uncertainty Quantification of a 1-D Beam Deflection Due to Stochastic Parameters", NUMERICAL ANALYSIS AND APPLIED MATHEMATICS ICNAAM 2011. AIP Conference Proceedings, Volume 1389, pp. 2000-2003, DOI: 10.1063/1.3637007 (2011). (http://proceedings.aip.org/resource/2/apcpcs/1389/1/2000_1)
 - 3- A. Al-Johani and M. El-Beltagy, "Numerical Solution of Stochastic Nonlinear Differential Equations Using Wiener-Hermite Expansion", 11TH INTERNATIONAL CONFERENCE OF NUMERICAL ANALYSIS AND APPLIED MATHEMATICS 2013: ICNAAM 2013. AIP Conference Proceedings, Volume 1558, pp. 2099-2102 (2013).
 - 4- A. Khalil, H. Salem, H. Helmy, N. Abd Elhaleem and M. El-Beltagy, "Using Applied Element Method to Predict Seismic Vibration Due to Demolition", The 12th Arab Structural Engineering Conference, Tripoli, Libya, December 2013.
 - 5- M. El-Beltagy, Amnah S. Al-Juhani "Solution of Stochastic Nonlinear PDEs Using Automated Wiener-Hermite Expansion", UQAW 2014, KAUST, KSA, January 2014.
 - 6- M. El-Beltagy, N. Al-Mulla "Higher-order Solution of Stochastic Diffusion equation with Nonlinear Losses Using WHEP technique", UQAW 2014, KAUST, KSA, January 2014.
 - 7- Mohamed A. El-Beltagy and Amnah S. Al-Juhani "Numerical Solution of Stochastic Nonlinear Fractional Differential Equations" UQAW 2015 – Poster, <https://sri-uq.kaust.edu.sa/Pages/UQAnnualWorkshop2015.aspx>
 - 8- M. Al-Nory and M. A. El-Beltagy, "Optimal selection of energy storage systems", IEEE Smart Grid Conference (SASG 2015), Jeddah, KSA. DOI: [10.1109/SASG.2015.7449273](https://doi.org/10.1109/SASG.2015.7449273)
 - 9- M. El-Beltagy – Oral Presentation "Solution of stochastic nonlinear PDEs using Wiener-Hermite expansion of high orders", UQAW 2016, https://sri-uq.kaust.edu.sa/Pages/UQAW_2016_slides.aspx
 - 10- M. El-Beltagy – Oral Presentation "Comparative study of the spectral stochastic techniques in solving PDEs", COMUS17 (<https://comus17.com/>), Porto, Portugal, September 2017.

- 11- S. A. Nagy and M. A. El-Beltagy, 2019, "Numerical simulation of the stochastic Burgers' equation using MLMC and CBC algorithm", 18th international conference in Aerospace Sciences & Aviation Technology (ASAT-18), April 2019, Cairo, Egypt.
- 12- M. F. Al-Amin and M. A. El-Beltagy, 2019, "A stochastic estimation of the slip factor in apparent-permeability model of gas transport in porous media", Accepted abstract, XII International Conference on Computational Heat, Mass and Momentum Transfer <http://www.icchmt2019.com/>

Journal Papers:

- 13- A. Khalil, M. Hesham, and M. El-Beltagy, "Domain-limited solution of the wave equation in Riemannian coordinates." *GEOPHYSICS*, 78(1), T21–T27. doi:10.1190/geo2012-0027.1 (2013). (<http://library.seg.org/doi/abs/10.1190/geo2012-0027.1?journalCode=gpysa7>)
- 14- Said R. Grace, John R. Graef, Mohamed A. El-Beltagy, "On the oscillation of third order neutral delay dynamic equations on time scales". *ELSEVIER, Computers & Mathematics with Applications*, Volume 63, Issue 4, February 2012, Pages 775-782. <http://dx.doi.org/10.1016/j.camwa.2011.11.042> (<http://www.sciencedirect.com/science/article/pii/S089812211101025X>)
- 15- M. El-Beltagy, Magdy. A. El-Tawil, "Toward a Solution of a Class of Non-Linear Stochastic perturbed PDEs using Automated WHEP Algorithm", *Appl. Math. Modelling*, Volume 37, Issues 12–13, Pages 7174–7192 (2013), doi: <http://dx.doi.org/10.1016/j.apm.2013.01.038> (<http://www.sciencedirect.com/science/article/pii/S0307904X13000905>)
- 16- M. El-Beltagy and A. Al-Johany, "Numerical Approximation of Higher-Order Solutions of the Quadratic Nonlinear Stochastic Oscillatory Equation Using WHEP Technique", *Journal of Applied Mathematics*, Vol. 2013, ID: 685137. (<http://www.hindawi.com/journals/jam/2013/685137/>)
- 17- M. El-Beltagy and M. Wafa, "Stochastic 2D Incompressible Navier-Stokes Solver Using the Vorticity-Streamfunction Formulation", *Journal of Applied Mathematics*, Vol. 2013, ID: 903618. (<http://www.hindawi.com/journals/jam/2013/903618/>)

- 18- M. El-Beltagy, M. Wafa and O. Galal, "Upwind Finite-Volume Solution of Stochastic Burgers' Equation", Applied Mathematics, Vol. 3 No. 11, pp. 1818-1825. doi: 10.4236/am.2012.311247 (<http://www.scirp.org/journal/PaperInformation.aspx?paperID=24759>) (2012).
- 19- M El-Beltagy and A. Al-Johani, "Higher-Order WHEP Solutions of Quadratic Nonlinear Stochastic Oscillatory Equation" Vol. 5 No. 5A, May 2013, pp. 57-69. doi: 10.4236/eng.2013.55A009 (<http://www.scirp.org/journal/eng>)
- 20- M. El-Beltagy and A. Al-Johani, "Stochastic Response of Duffing Oscillator with Fractional or Variable-Order Damping", Journal of Fractional Calculus and Applications, Vol. 4(2), July 2013, pp. 357-366.
- 21- S. Grace, M. El-Beltagy, S. Deif, "Asymptotic Behavior of Non-oscillatory Solutions of Second order Integro-Dynamic Equations on Time Scales", J Appl Computat Math 2 (134), 2, (2013).
- 22- A. Fareed, H. El-Zoheiry, M. El-Tawil, M. El-Beltagy, H. Hassan, "Solving Nonlinear Stochastic Diffusion Models with Nonlinear Losses Using the Homotopy Analysis Method", Applied Mathematics 5 (1), 115-127 (2014).
- 23- M. Hamed, M. El-Tawil, B. El-Desouky, M. El-Beltagy, "Solution of Nonlinear Stochastic Langevin's Equation Using WHEP, Pickard and HPM Methods", Applied Mathematics, 5 (3), 398-412 (2014).
- 24- M. Al-Nory and M. El-Beltagy, "An energy management approach for renewable energy integration with power generation and water desalination", Renewable Energy, vol. 72, issue C, pages 377-385 (2014).
- 25- M. A. El-Beltagy and N. A. Al-Mulla, "Solution of the Stochastic Heat Equation with Non-Linear Losses Using Wiener-Hermite Expansion", Journal of Applied Mathematics, Volume 2014, Article ID 843714, (2014).
- 26- Said R. Grace and Mohamed A. El-Beltagy "Oscillatory Behavior of Solutions of Certain Integrodynamic Equations of Second Order on Time Scales" Abstract and Applied Analysis, Volume 2014 (2014), Article ID 259467.
- 27- M. A. El-Beltagy and N. A. Al-Mulla "Solution of the Stochastic Heat Equation with Nonlinear Losses Using Wiener-Hermite Expansion", Journal of Applied Mathematics, Volume 2014 (2014), Article ID 843714.
- 28- O. A. Kittaneh & M. A. El-Beltagy "Efficiency estimation of type-I censored sample from the Weibull distribution based on sup-entropy", Communications

- in Statistics - Simulation and Computation, Taylor & Francis - pages 0361-0918 (2015) <http://dx.doi.org/10.1080/03610918.2015.1056355>
- 29- S. R. Grace and M. A. El-Beltagy^{1,2} "Oscillation Criteria for Some Higher Order Integrodynamic Equations on Timescales", Abstract and Applied Analysis, Volume 2015 (2015), Article ID 160240.
- 30- Ahmed M. A. Sattar and Mohamed El-Beltagy, "Stochastic Solution to the Water Hammer Equations Using Polynomial Chaos Expansion with Random Boundary and Initial Conditions" , Journal of Hydraulic Engineering, Vol. 143 (2), (2017). (DOI: [10.1061/\(ASCE\)HY.1943-7900.0001227](https://doi.org/10.1061/(ASCE)HY.1943-7900.0001227))
- 31- W.K. Zahra, M.A. El-Beltagy, A.M. El Mhlawy, and R.R. Elkhadrawy, Exponential Spline Solution for Singularly Perturbed Boundary Value Problems with an Uncertain—But—Bounded Parameter. Journal of Applied Mathematics and Physics (JAMP), Vol.6 No.4, pp. 854-863. (2018) (DOI: [10.4236/jamp.2018.64073](https://doi.org/10.4236/jamp.2018.64073))
- 32- M. Hamed, I. L. El-Kalla, B. S. El-desouky, M. A. El-Beltagy, Numerical Treatment of the Stochastic Advection-Diffusion Equation Using the Spectral Stochastic Techniques, International Journal of Engineering Research & Science (IJOER), Vol. 4 (6), pp. 1-17. (2018) (DOI: [10.5281/zenodo.1302309](https://doi.org/10.5281/zenodo.1302309)).
- 33- M. El-Beltagy and A. Noor, Analysis of the Stochastic Point Reactor using Wiener-Hermite Expansion, Annals of Nuclear Energy, Vol. 134, pp. 250-257. (2019) (DOI: [10.1016/j.anucene.2019.06.022](https://doi.org/10.1016/j.anucene.2019.06.022))
- 34- M. El-Beltagy, A Practical Comparison Between the Spectral Techniques in Solving the SDEs, Engineering Computations, Vol. 36 No. 7, pp. 2369-2402. (2019). (DOI: [10.1108/EC-10-2018-0444](https://doi.org/10.1108/EC-10-2018-0444))

Advising:

Currently main supervisor and co-supervisor for many PhD and MSc students.

Research Projects:

- Contributed in research projects with Northern Border University, Arar, KSA.
- Currently involved in 2 research projects with team from King Abdulaziz University, Jeddah, KSA.