Benha University

Faculty of Science

Department of Mathematics

(Curriculum Vitae)

(1) General

*Name** : **Mohamed Meabed Bayuomi Khader**

*Date of Birth** : **24 May 1973**

*Marital Status: **Married**

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(P.O. 13518)–Egypt

Department of Mathematics and Statistics, College of Science, Al-Imam Mohammad

Ibn Saud Islamic University (IMSIU), Riyadh, 11566, Saudi Arabia

(2) Academic Degrees

* B. Sc. Degree in Mathematics 1995, Faculty of Science, Benha University.
* M. Sc. Degree in Pure Mathematics (Numerical Analysis) 2002, Faculty of Science, Benha University.
  - My M. Sc. Thesis was titled:

  " Matrix Computation in Control Theory "

* Ph. D. Degree in Pure Mathematics (Numerical Analysis) 2009, Faculty of Science, Benha University.
  - My Ph. D. thesis was titled:

  '' Approximate Methods for Solving Nonlinear Coupled Systems

  of Partial Differential Equations"

(3) Activities

* A Demonstrator in Faculty of Science, Benha University (1996-2002).
* An Assistant Lecturer in Faculty of Science, Benha University (2003-2009).
* A Lecturer in Faculty of Science, Benha University (2009 until now).
* Assistant Prof. in Faculty of Sciences, Benha University 2015.
* Associate Prof. in College of Sciences, IMAM University.

(4) Languages

Excellent in English and Arabic

(5) Teaching Courses

- *Undergraduate***: Calculus, Algebra, Real Analysis, Functional Analysis, Numerical Analysis, Set Theory and Linear Algebra, Ordinary and Partial Differential equations, Integral Equations, Geometry, Abstract Algebra, Measure Theory, Computers (Matlab- Mathematica- C++, Basis,Fortran, ...)**

- *Postgraduate***: Discrete Mathematics, Difference Equations, Theory of Groups, Field Theory, Measure Theory, Mathematical Logic and Differential Geometry, Fractional Calculus.**

(6) Research Areas

1- Numerical solution of (Ordinary – partial differential equations);

2- Numerical solution of fractional (Ordinary – partial) differential equations;

3-Numerical solution of Integro-differential equations;

4-Numerical solution of difference equations;

5- Numerical solution of nonlinear system of algebraic equations;

The used methods are:

Adomian decomposition method-Variational iteration method- Homotopy perturbation method- Homotopy Analysis method-Finite difference method- Finite element method-Pseudo-spectral method(Chebyshev- Legendre polynomials) – Pade approximation-Laplace transform method.

(7) Some of Publications

[1] N. H. Sweilam and M. M. Khader, Variational iteration method for one dimensional nonlinear thermo-elasticity, Chaos, Solitons and Fractals, 32, p.(145-149), (2007).

[2] N. H. Sweilam and M. M. Khader, Application of homotopy perturbation method to a nonlinear focusing Manakov system, Accepted in the Proceeding of, Proc. Math. Phys. Soc. Egypt, 86(2), p.(245-257), (2008).

[3] N. H. Sweilam and M. M. Khader, On the convergence of variational iteration method for nonlinear coupled system of partial differential equations, International Journal of Computer Mathematics, 87(5), p.(1120-1130), (2010).

[4] N. H. Sweilam and M. M. Khader, Exact solutions of some coupled nonlinear partial differential equations using the homotopy perturbation method, Computers and Mathematics with Applications, 58, p.(2134-2141), (2009).

[5] N. H. Sweilam, M. M. Khader and R. F. Al-Bar, Nonlinear focusing Manakov systems by variational iteration method and Adomian decomposition method, Journal of Physics: Conference Series, 96, p.(1-7), (2008).

[6] N. H. Sweilam, M. M. Khader and R. F. Al-Bar, Numerical studies for a multi-order fractional differential equation, Physics Letters A, 371, p.(26-33), (2007).

[7] N. H. Sweilam, M. M. Khader and R. F. Al-Bar, Homotopy perturbation method for multi-dimensional nonlinear coupled system of parabolic and hyperbolic equations, Topological Methods in Nonlinear Analysis, 31, p.(295-304), (2008).

[8] N. H. Sweilam, M. M. Khader and R. F. Al-Bar, On the numerical simulation of population dynamics with density-dependent migrations and the Allee effects, Journal of Physics: Conference Series, 96, p.(1-10), (2008).

[9] N. H. Sweilam and M. M. Khader, Application of He's parameter-expansion method for the non-linear differential Equations, International Journal of Nonlinear Science & Numerical Simulation, 10(2), p.(265-272), (2009).

[10] N. H. Sweilam, M. M. Khader and R. F. Al-Bar, Homotopy perturbation method for linear and nonlinear system of fractional integro-differential equations, International Journal of Computational Mathematics and Numerical Simulation, 1(1), p.(73-87), (2008).

[11] N. H. Sweilam and M. M. Khader, Approximate solutions to the nonlinear vibrations of multiwalled carbon nanotubes using Adomian decomposition method, Applied Mathematics and Computation, 217, p.(495-505), (2010).

[12] N. H. Sweilam and M. M. Khader, A note on He's parameter-expansion method of coupled Van der Pol-Duffing oscillators, Applications and Applied Mathematics: An International Journal, Special Issue No. 1 (August 2010), p.(94-100), (2010).

[13] M. M. Khader, On the numerical solutions for the fractional diffusion equation, Communications in Nonlinear Science and Numerical Simulation, 16, p.(2535-2542), 2011.

[14] N. H. Sweilam and M. M. Khader, A Chebyshev pseudo-spectral method for solving fractional order integro-differential equations, , ANZIAM 51, p.(464-475), 2010.

[15] N. H. Sweilam, M.M. Khader and A.M. Nagy, Numerical solution of two-sided space-fractional wave equation using finite difference method, Journal of Computational and Applied Mathematics, 235, p.(2832-2841), (2011).

[16] N.H. Sweilam, M.M. Khader and F.T. Mohamed, On the numerical solutions of two dimensional Maxwell's equations, Studies in Nonlinear Sciences 1 (3), p.(82-88), 2010.

[17] N. H. Sweilam and M. M. Khader, On the existence and properties of the positive definite solution of the matrix equation $X=I+A^*\sqrt{X^{-1}}A$, International Electronic Journal of Pure and Applied Mathematics, 2(4), p.(225-232), (2010).

[18] M. M. Khader and R. F. Al-Bar, Application of Picard-Pade' technique for obtaining the exact solution of 1-D hyperbolic telegraph equation and coupled system of Burger's equations, Global Journal of Pure and Applied Mathematics, 7(2), p.(173-190), 2011.

[19] M. M. Khader and R. F. Al-Bar, Approximate method for studying the waves propagating along the interface between air-water, Mathematics Problem Engineering, 2011, p.(1-21), 2011.

[20] M. M. Khader, Numerical solution of nonlinear multi-order fractional differential equations by implementation of the operational matrix of fractional derivative, Studies in Nonlinear Sciences 2(1), p.(5-12), 2011.

[21] S. T. Mohamed and M. M. Khader, Numerical solutions to the second order Fredholm integro-differential equations using the spline functions expansion, Global Journal of Pure and Applied Mathematics, 34, p.(21-29), 2011.

[22] N. H. Sweilam and M. M. Khader, Semi exact solutions for the bi-harmonic equation using homotopy analysis method, World Applied Sciences Journal, 13, p.(1-7) 2011.

[23] M. M. Khader, N. H. Sweilam and A. M. S. Mahdy, An efficient numerical method for solving the fractional diffusion equation, Journal of Applied Mathematics and Bioinformatics, 1, p.(1-12), 2011.

[24 N. H. Sweilam, M. M. Khader and A. M. S. Mahdy, Crank-Nicolson finite difference method for solving time-fractional diffusion equation, Journal of Fractional Calculus and Applications, 2(2), p.(1-9), 2012.

[25] M. M. Khader and A. S. Hendy, The approximate and exact solutions of the fractional-order delay differential equations using Legendre pseudospectral method, International Journal of Pure and Applied Mathematics, 74(3), p.(287-297) 2012.

[26] M. M. Khader, Introducing an efficient modification of the homotopy perturbation method by using Chebyshev polynomials, Arab Journal of Mathematical Sciences 18, p.(61–71), 2012.

[27] M. M. Khader, Introducing an efficient modification of the variational iteration method by using Chebyshev polynomials, Application and Applied 7(1), (2012) 283 – 299.

[28] M. M. Khader and Ahmed M. Megahed, On the numerical solution for the flow and heat transfer in a thin liquid film over an unsteady stretching sheet in a saturated porous medium in the presence of thermal radiation. Accepted for publication in Journal of Applied Mechanics and Technical Physics 2012.

[29] N. H. Sweilam , M. M. Khader and R. F. Al-Bar, Parameter expansion method for viscoelastic motion with fractional order damping, Nonlinear Sci. Lett. A, 2(3), p.(159-169), 2011.

[30] N. H. Sweilam , M. M. Khader and F. M. Atlan, Numerical studies for singularity perturbed convection reaction diffusion problems in two dimensions, Research Journal of Mathematics and Statistics, 3(3), p.(97-106), 2011.

[31] N. H. Sweilam , M. M. Khader and T. A. Assiri, Efficient numerical treatment for fractional partial differential equations, Nonlinear Sci. Lett. A, 2(4), p.(181-189), 2011.

[32] M. M. Khader, Accelerated Solution of High order non-linear ODEs using Chebyshev spectral method comparing with Adomian decomposition method, Studies in Nonlinear Sciences 2 (3) p.(91-101), 2011

[33] M. M. Khader, and Ahmed M. Megahed, Numerical simulation using the finite difference method for the flow and heat transfer in a thin liquid film over an unsteady stretching sheet in a saturated porous medium in the presence of thermal radiation, Accepted for publication in Journal of King Saud University: Engineering Sciences, 2012.

[34] M. M. Khader, On the numerical solutions for the multi-order non-linear fractional differential equations, World Applied Sciences Journal, 13, P.(1-7), 2012.

[35] N. H. Sweilam, M. M. Khader and W. Y. Kota, On the numerical solution of Hammerstein integral equations using Legendre approximation, International Journal of Applied Mathematical Research, 1 (2012) 65-76.

[36] M. M. Khader, On the numerical solutions for chemical kinetics system using Picard-Pad´e technique, Accepted for publication in Journal of King Saud University: Engineering Sciences, 2012.

[37] N. H. Sweilam, M. M. Khader and M. Adel, On the stability analysis of weighted average finite difference methods for fractional wave equations, Accepted in Fractional Differential Calculus, 2 (2012), No. 1, 17-29.

[38] M. M. khader and S. T. Mohamed, Numerical treatment for first order neutral delay differential equations using spline functions, Engineering Mathematics Letters, 1 (2012), No. 1, 32-43.

[39] N. H. Sweilam, M. M. Khader and A. M. S. Mahdy, Numerical studies for fractional-order Logistic differential equation with two different delays, Accepted in Journal of Applied Mathematics, to appear in 2012.

[40] N. H. Sweilam, M. M. Khader and A. M. Mahdy, Numerical studies for solving Fractional-order Logistic equation, Int. J. of Pure and Applied Mathematics, 78 (2012), No. 8, 1199-1210.

[41] N. H. Sweilam, M. M. Khader and A. M. S. Mahdy, Computational methods for Fractional differential equations generated by optimization problem, 3(S). July, 11, 2012 (Proc. of the 4th. Symb. of Fractional Calculus and Applications) No. 15, 1-12.

[42] M. M. Khader, Talaat S. El Danaf and A. S. Hendy, A computational matrix Method for solving systems of high order fractional differential equations, Accepted in Applied Mathematical Modelling, to appear in 2012.

[43] M. M. Khader and A. S. Hendy, A numerical technique for solving fractional variational problems, Accepted in Mathematical Methods in Applied Sciences, to Appear in 2012.

[44] M. M. Khader, Talaat S. El Danaf and A. S. Hendy Efficient spectral collocation Method for solving multi-term fractional differential equations based on the Generalized Laguerre polynomials, Journal of Fractional Calculus and Applications, 3 (2012), No. 13, 1-14.

[45] N. H. Sweilam, M. M. Khader and H. M. Almarwm, Numerical studies for the Variable-order nonlinear fractional nonlinear fractional wave equation, Accepted in Journal of Fractional Calculus and applied analysis, to appear in 2012.

[46] N. H. Sweilam, M. M. Khader and A. M. S. Mahdy, Numerical study for the Fractional differential equations generated by optimization problem using Chebyshev collocation method and FDM, Accepted in Conference Australia.

[47] N. H. Sweilam, M. M. Khader and M. Adel, On the stability analysis of weighted Average finite Difference methods for fractional Cable equation, Accepted in Conference Australia.

[48] R. G. Abdel-Rahman, M. M. Khader and A. M. Megahed, Similarity analysis and numerical study for the melting phenomenon on MHD steady flow and heat transfer over a moving surface in the presence of thermal radiation in terms of finite difference method, Accepted in Journal of Chinese Physics B.

[49] M. M. Khader and A. S. Hendy, An efficient numerical scheme for solving fractional optimal control problems, Accepted in, …. to Appear in 2012.