



جامعة بنها
كلية العلوم
قسم الرياضيات

(السيرة الذاتية)

(1) البيانات الشخصية

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تاريخ الميلاد: 1973 / 5 / 24

الحالة الاجتماعية: متزوج

العنوان: المريخ - مدينة شبين القناطر - محافظة القليوبية - مصر

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قسم الرياضيات والإحصاء (P.O. 11566) .

(2) الدرجات الأكاديمية

(1) درجة بكالوريوس علوم في الرياضيات 1995، كلية العلوم - جامعة بنها.

(2) درجة الماجستير في الرياضيات البحتة (التحليل العددي) 2001، كلية العلوم - جامعة بنها.
عنوان الرسالة:

" الطرق العددية لنظرية المصفوفات الناشئة من أنظمة التحكم "

(3) درجة الدكتوراه في الرياضيات البحتة (التحليل العددي) 2009، كلية العلوم - جامعة بنها.
عنوان الرسالة:

" طرق تقريبية لحل أنظمة المعادلات التفاضلية الجزئية غير الخطية المرتبطة "

(3) التدرج الوظيفي

1- معيد بقسم الرياضيات بكلية العلوم - جامعة بنها، من 1996 إلى 2001 .

2- مدرس مساعد بقسم الرياضيات بكلية العلوم - جامعة بنها، من 2002 إلى 2009.

3- مدرس بقسم الرياضيات بكلية العلوم - جامعة بنها، من 2009 إلى الآن.

(4) اللغات

الإنجليزية

(5) المؤتمرات الدولية وورش العمل

م	اسم المؤتمر	مكان انعقاده	تاريخ انعقاده	دور المتقدم إلقاء بحث- معلق
1	المؤتمر الدولي الرابع والعشرين لإحصاء وعلوم الحاسب وتطبيقاتها	جامعة بنها المعهد العالي للتكنولوجيا سابقا	22-27 مايو 1999	إلقاء بحث
2	الندوة الثالثة للتحليل الرياضي وتطبيقاته	كلية العلوم جامعة القاهرة	16 نوفمبر 2005	إلقاء بحث
3	المؤتمر الدولي المصري الفرنسي	المؤتمر الدولي المصري الفرنسي	3-5 مايو 2010	إلقاء بحث
4	المؤتمر الثانى في التفاضل الكسري وتطبيقاته	كلية العلوم جامعة الإسكندرية	27 مايو 2010	إلقاء بحث
5	المؤتمر الرابع في التفاضل الكسري وتطبيقاته	كلية العلوم جامعة الإسكندرية	11 يوليو 2012	إلقاء بحث
6	ورشة عمل بعنوان النظم الديناميكية وتطبيقاتها	كلية العلوم جامعة الإسكندرية	8 فبراير 2012	إلقاء بحث
7	ورشة عمل بعنوان الطرق الحسابية للأنظمة الخطية وغير الخطية (4)	كلية العلوم جامعة القاهرة	28 يونيو 2012	إلقاء بحث
8	المؤتمر الدولي للرياضيات الجمعية المصرية للرياضيات	جامعة عين شمس	27-29-2012	إلقاء بحث

(6) المواد التي يمكن تدريسها

حساب التفاضل والتكامل – التفاضل العالى – التحليل العددي – التحليل الحقيقي – التحليل الدالي – التحليل المركب – نظرية المجموعات – الجبر – الجبر الخطي – الجبر المجرّد – الحلقات والحقول – الهندسة المستوية والفراغية – هندسة المسلمات – المعادلات التفاضلية العادية والجزئية – المعادلات التكاملية – الرياضيات المتقطعة – نظرية القياس – الهندسة التفاضلية – الإحصاء والاحتمالات – معادلات الفروق – المنطق الرياضي – التفاضل الكسري – الحاسب الآلي (Word-Excel-Power-point-Access) ولغاته (Matlab- Mathematica- C++ – Basic-Fortran)

(7) مجالات البحث

* الفروع:

التحليل العددي – المعادلات التفاضلية العادية والجزئية الخطية وغير الخطية – المعادلات التكاملية الخطية وغير الخطية – التفاضل والتكامل الكسري.

* الطرق المستخدمة:

طريقة العناصر المحدودة – طريقة الفروق المنتهية – طريقة الأدميان التحليلية – طريقة التغيرات التكرارية – طريقة هوموتوبي المثارة – طريقة هوموتوبي التحليلية – طريقة التمثيل البارامتري – طرق شبه الطيفية باستخدام كثيرات حدود **Chebyshev–Legendre–Laguerre–Jacobi**.

* لغات الحاسب المستخدمة:

Matlab – Mathematica – Maple – C++ – Basic– Fortran – Pascal

(8) الرسائل العلمية تحت الإشراف

م	اسم الطالب	درجة الرسالة	عنوانها	تاريخ التسجيل	الحالة
1	أ. عمرو محمد سامى محمد مهدي	دكتوراه	Numerical Studies for Linear and Non-Linear Fractional Order Differential Equations and their Optimal Control	9-9-2010	منح 2013-5-22
2	أ. محمد عادل السيد	دكتوراه	Numerical Studies for Anomalous Sub-diffusion Equations	10-11-2011	منح 2014-3-8
3	أ. أحمد سعيد هندي	ماجستير	Numerical and Analytical Study for Fractional Differential Equations	12-5-2011	منح 2012-11-19
4	أ. وفاء يحيى قوطة	ماجستير	Numerical Studies for Integral and Integro-Differential Equations	15-6-2011	منحت 2013-5-25

(9) المراجعيات

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(10) الكليات والجامعات التي تم القيام بالتدريس فيها:

- 1- كلية العلوم جامعة بنها.
- 2- كلية التربية جامعة بنها.
- 3- كليتي التربية والعلوم جامعة قناة السويس.
- 4- المعهد الفني الصحي ببنها.
- 5- كلية العلوم – جامعة الإمام محمد بن سعود الإسلامية – السعودية

(11) موضوع الاهتمام البحثي:

- 1- الحلول التحليلية والتقريبية للمعادلات التفاضلية الجزئية الخطية وغير الخطية.
- 2- الحلول العددية للمعادلات التفاضلية العادية والجزئية ذات الرتب الكسرية.
- 3- المعادلات التفاضلية ذات الرتب الكسرية المتغيرة.
- 4- الحلول التحليلية لمعادلات الفروق التفاضلية والمعادلات التكاملية، التكاملية-التفاضلية.
- 5- الدراسات العددية لمسائل الموانع.

(12) الدورات التدريبية الحاصل عليها

م	البرنامج	عدد الأيام	عدد الساعات	فترة الإنعقاد
1	أساليب البحث العلمي	4	20	من 2005-9-19 إلى 2005-9-22
2	التدريس الفعال	4	20	من 2006-7-10 إلى 2006-7-13
3	أخلاقيات وآداب المهنة	3	15	من 2007-4-16 إلى 2007-4-18
4	الاتصال الفعال	3	15	من 2007-7-2 إلى 2007-7-4

من 2007-8-20 إلى 2007-8-22	15	3	مهارات العرض الفعال	5
من 2011-7-9 حتى 2011-7-11	15	3	معايير الجودة في العملية التدريسية	6
من 2011-8-16 حتى 2011-8-18	15	3	مهارات العرض الفعال	7
من 2012-2-14 حتى 2012-2-16	15	3	إدارة الوقت والإجتماعات	8
من 2015-2-14 حتى 2015-2-16	15	3		9
من 2015-2-14 حتى 2015-2-16	15	3		10
1435-4-27 هـ	3	1	ورشة تدريبية بعنوان: استخدام مصادر المعلومات في المكتبة الرقمية السعودية بجامعة الإمام محمد بن سعود الإسلامية	11
من 2013-4-27 حتى 2013-5-01	25	5	ورشة تدريبية بعنوان: التعليم والتعلم الجامعي بجامعة الإمام محمد بن سعود الإسلامية	12
من 2008-11-16 إلى 2008-12-03	30	15	دورة إعداد المعلم الجامعي	13
	36	18	دورات الحاسب الألي (Windows, Word, Excel, Access, (PowerPoint, Internet)	14

(13) المجالات المحكم فيها

- 1-Heat Transfer-Asian Research
- 2- Abstract and Applied Analysis
- 3- Ain Shams Engineering Journal
- 4- Chinese Physics B
- 5-Computers and Mathematics with Applications
- 6-Mathematical Problems in Engineering
- 7-Applied Mathematics Letters
- 8-Journal of Mechanical Science and Technology
- 9-International Journal of the Physical Sciences
- 10-Carpathian Journal of Mathematics
- 11-Mathematical Modelling and Analysis
- 12-Walailak Journal of Science and Technology
- 13-Iranian Journal of Science and Technology
- 14-Acta Mathematica Scientia
- 15-World Journal of Modeling and Simulation A
- 16-African Journal of Mathematics and Computer Science Research
- 17-British Journal of Mathematics & Computer Science

- 18- SIAM Journal on Scientific Computing
- 19- Science Iranica
- 20-Applied Mathematics and Computation
- 21-Physical Sciences Research International
- 22- International Journal of Modern Applied Physics
- 23-Applied Mathematics & Information Sciences
- 24-Journal of Scientific Research and Studies
- 25- Filomat
- 26-Journal of the Association of Arab Universities for Basic and Applied Sciences
- 27-Journal of Aerospace Engineering
- 28-World Journal of Engineering and Physical Sciences
- 29-Meccanica
- 30-International Journal of Bifurcation and Chaos
- 31-Journal of Taibah University for Science
- 32-New Trends in Mathematical Sciences
- 33-Applied Mathematics
- 34- Journal of Applied Physical Science International
- 35-Journal of King Saud University
- 36-Punjab University Journal of Mathematics
- 37-Journal of Advanced Research
- 38- Advanced Studies in Theoretical Physics
- 39- International Journal of Applied and Computational Mathematics
- 40-Advances in Difference Equations
- 41- Asian Journal of Mathematics and Computer Research
- 42- International Journal of Wavelets, Multiresolution and Information Processing
- 43-Journal of Supercomputing
- 44- Iranian Journal of Science and Technology (Sciences)
- 45- Applications and Applied Mathematics: An International Journal
- 46-Journal of Applied Mathematics and Physics
- 47- Structural Engineering and Mechanics
- 48- Jordan Journal of Mathematics
- 49-Mediterranean Journal of Mathematics
- 50-Numerical Algorithms

Accepted Project (21-10-2014, 27-12-1435):

عمادة البحث العلمي – جامعة الإمام محمد بن سعود الإسلامية – رقم البحث المقبول تمويله

Project Number: **351227**

(14) الجوائز الحاصل عليها:

1- جائزة اللجنة القومية للرياضيات لعام 2014

2- جائزة التميز البحثي التابعة لعمادة البحث العلمي بجامعة الإمام محمد بن سعود الإسلامية للأعوام

2013-2015.

- [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, 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.
- [3] 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.
- [4] 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.
- [5] 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.
- [6] 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.
- [7] 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.
- [8] 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.
- [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 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.
- [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 Chebyshev pseudo–spectral method for solving fractional order integro–differential equations, *ANZIAM*, 51, p.(464–475), 2010.
- [13] 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*,1, p.(94–100), 2010.
- [14] 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.
- [15] 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.
- [16] M. M. Khader, On the numerical solutions for the fractional diffusion equation, *Communications in Nonlinear Science and Numerical Simulation*, 16, p.(2535–2542), 2011.
- [17] 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.
- [18] M. M. Khader and R. F. Al–Bar, Approximate method for studying the waves propagating along the interface between air–water, *Mathematics Problem in Engineering*, 2011, p.(1–21), 2011.

- [19] 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.
- [20] 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.
- [21] 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.
- [22] 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.
- [23] 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.
- [24] 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.
- [25] 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.
- [26] N. H. Sweilam , M. M. Khader and T. A. Assiri, Efficient numerical treatment for fractional partial differential equations, *Nonlinear Science Letter A*, 2(4), p.(181–189), 2011.
- [27] 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.

- [28] M. M. Khader and A. S. Hendy, The approximate and exact solutions of the fractional-order delay differential equations using Legendre pseudo-spectral method, *Inter. J. of Pure and Applied Mathematics*, 74(3), p.(287–297), 2012.
- [29] M. M. Khader and A. 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, *Journal of Applied Mechanics and Technical Physics*, 53(5), p.(710–721), 2012.
- [30] N. H. Sweilam, M. M. Khader, and A. M. S. Mahdy, Numerical studies for fractional-order Logistic differential equation with two different delays, *Journal of Applied Mathematics*, 2012, Article ID 764894, 14 pages.
- [31] 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(8), p.(1199–1210), 2012.
- [32] M. M. Khader and A. S. Hendy, An efficient numerical scheme for solving fractional optimal control problems, *Inter. J. of Nonlinear Science*, 14(3), p.(287–296), 2012.
- [33] N. H. Sweilam, M. M. Khader and A. M. Mahdy, On the numerical solution for the linear fractional Klein–Gordon equation using Legendre pseudo-spectral method, *International Journal of Mathematics and Computer Applications Research*, 2(4), p.(1–10), 2012.
- [34] N. H. Sweilam, M. M. Khader and M. Adel, An efficient class of FDM based on Hermite formula for solving fractional reaction–sub–diffusion equations, *International Journal of Mathematics and Computer Applications Research*, 2(4), p.(61–75), 2012.
- [35] N. H. Sweilam, M. M. Khader and A. M. Mahdy, Numerical studies for solving fractional Riccati differential equation, *Applications and Applied Mathematics: An International Journal*, 7(2), p.(1–10), 2012.

- [36] M. M. Khader, Introducing an efficient modification of the variational iteration method by using Chebyshev polynomials, *Application and Applied Mathematics: An International Journal*, 7(1), p.(283–299), 2012.
- [37] N. H. Sweilam, M. M. Khader and H. M. Almarwm, Numerical studies for the variable–order nonlinear fractional wave equation, *Fractional Calculus and Applied Analysis*, 15(4), p.(1–15), 2012.
- [38] 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.
- [39] 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.
- [40] N. H. Sweilam, M. M. Khader and M. Adel, On the stability analysis of weighted average finite difference methods for fractional wave equations, *Fractional Differential Calculus*, 2(1), p.(17–29), 2012.
- [41] M. M. Khader and S. T. Mohamed, Numerical treatment for first order neutral delay differential equations using spline functions, *Engineering Mathematics Letters*, 1(1), p.(32–43), 2012.
- [42] N. H. Sweilam, M. M. Khader and A. M. S. Mahdy, Computational methods for fractional differential equations generated by optimization problem, *Proc. of the 4th. Symb. of Fractional Calculus and Applications*, 3(S)(15), p.(1–12), 2012.
- [43] 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(13), p.(1–14), 2012.
- [44] M. M. Khader and A. S. Hendy, Fractional Chebyshev finite difference method for solving the fractional BVPs, *Journal of Applied Mathematics & Informatics*, 31(1–2), p.(299–309), 2012.

- [45] 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, p.(65–76), 2012.
- [46] M. M. Khader, Numerical treatment for solving fractional Riccati differential equation, *Journal of the Egyptian Mathematical Society*, 21, p.(32–37), 2013.
- [47] M. M. Khader, Talaat S. El Danaf and A. S. Hendy, A computational matrix method for solving systems of high order fractional differential equations, *Applied Mathematical Modelling*, 37, p.(4035–4050), 2013.
- [48] 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, *J. of King Saud University: Engineering Sciences*, 25, p.(29–34), 2013.
- [49] M. M. Khader, On the numerical solutions for chemical kinetics system using Picard–Pade' technique, *Journal of King Saud University: Engineering Sciences*, 25, p.(97–103), 2013.
- [50] M. M. Khader and A. S. Hendy, A numerical technique for solving fractional variational problems, *Mathematical Methods in Applied Sciences*, 36(10), p.(1281–1289), 2013.
- [51] R. G. Abdel–Rahman, M. M. Khader and A. M. Megahed, 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, *Journal of Chinese Physics B*, 22(3), p.(03XXXX1:1–6), 2013.
- [52] M. M. Khader, Numerical solution for discontinued problems arising in nanotechnology using HAM, *Journal of Nanotechnology & Advanced Materials An International Journal*, 1(1), p.(59–67), 2013.
- [53] M. M. Khader, An efficient approximate method for solving linear fractional Klein–Gordon equation based on the generalized Laguerre polynomials, *International Journal of Computer Mathematics*, 90(9), p.(1853–1864), 2013.

- [54] M. M. Khader, N. H. Sweilam and N. Y. Ali, An efficient modification of PIM by using Laguerre polynomials, *International Journal of Pure and Applied Mathematics*, 2013.
- [55] M. M. Khader, Computational approaches for solving the Logistic equation using VIM–Pade' and Chebyshev-spectral techniques, *International Journal of Nonlinear Science*, 15(2), p.(157–167), 2013.
- [56] M. M. Khader and M. M. Babatin, On approximate solutions for fractional Logistic differential equation, *Mathematical Problems in Engineering*, 2013, ID 391901, 7 pages, 2013.
- [57] M. M. Khader, Sunil Kumar and S. Abbasbandy, New homotopy analysis transform method for solving the discontinued problems arising in nano-technology, *Chinese Physics B*, 22(11), p.(110201:1–5), 2013.
- [58] M. M. Khader, N. H. Sweilam and A. M. S. Mahdy, Numerical study for the fractional differential equations generated by optimization problem using Chebyshev collocation method and FDM, *Applied Mathematics and Information Science* 7(5), p.(2013–2020), 2013.
- [59] M. M. Khader, The use of generalized Laguerre polynomials in spectral methods for fractional-order delay differential equations, *Journal of Computational and Nonlinear Dynamics*, 8 p.(041018:1-5), 2013.
- [60] M. M. Khader, N. H. Sweilam and T. A. Assiri, On the numerical solution for the fractional wave equation using Legendre pseudo-spectral method, *International Journal of Pure and Applied Mathematics*, 84(4), p.(307–319), 2013.
- [61] M. M. Khader and Ahmed M. Megahed, Numerical solution for the effect of variable fluid properties effect on the flow and heat transfer in a non-Newtonian Maxwell fluid over an unsteady stretching sheet with internal heat generation, *Ukrainian Journal of Physics*, 58(4), p.(353–361), 2013.

- [62] M. M. Khader and A. M. Megahed, Numerical studies for flow and heat transfer of the Powell–Eyring liquid thin film over an unsteady stretching sheet with internal heat generation using the Chebyshev-finite difference method, *Journal of Applied Mechanics and Technical Physics*, 54(3), p.(440–450), 2013.
- [63] M. M. Khader, An efficient modification of PIM by using Chebyshev polynomials, *International Journal of Pure and Applied Mathematics*, 7(5), p.(2011–2018), 2013.
- [64] M. M. Khader, Numerical treatment for solving the perturbed fractional PDEs using hybrid techniques, *Journal of Computational Physics*, 250, p.(565–573), 2013.
- [65] M. M. Khader and N. H. Sweilam, On the approximate solutions for system of fractional integro-differential equations using Chebyshev pseudo-spectral method, *Applied Mathematical Modelling*, 37, p.(9819–9828), 2013.
- [66] M. M. Khader, Numerical and theoretical treatment for solving linear and nonlinear delay differential equations using variational iteration method, *Arab Journal of Mathematical sciences*, 19(2), p.(243–256), 2013.
- [67] M. M. Khader, On the numerical solutions to nonlinear biochemical reaction model using Picard-Pade technique, *World Journal of Modelling and Simulation*, 9(1), p.(38–46), 2013.
- [68] N. H. Sweilam, M. M. Khader and W. Y. Kota, Numerical and analytical study for fourth-order integro-differential equations using a pseudo-spectral method, *Mathematical Problems in Engineering*, Volume 2013, Article ID 434753, 7 pages.
- [69] M. M. Khader and Ahmed M. Megahed, Numerical solution for boundary layer flow due to a nonlinearly stretching sheet with variable thickness and slip velocity, *Eur. Phys. J. Plus* (2013) 128: 100 DOI 10.1140/epjp/i2013-13100-7.
- [70] N. H. Sweilam, M. M. Khader and M. Adel, Weighted average finite difference methods for fractional order reaction-sub-diffusion equation, *Walailak Journal of Science and Technology*, 11(4), p.(361–377), 2014.

- [71] N. H. Sweilam, M. M. Khader and M. Adel, Numerical simulation of fractional Cable equation of spiny neuronal dendrites, *Journal of Advanced Research*, 5, p.(253–259), 2014.
- [72] M. M. Khader, A new formula for Adomian polynomials and the analysis of its truncated series solution for the fractional non-differentiable IVPs, *ANZIAM J.*, 55, p.(69-92), 2014. Doi:10.1017/S1446181113000321.
- [73] M. M. Khader, A new fractional Chebyshev–FDM: An application for solving the fractional differential equations generated by optimization problem, *Intent. J. of Systems Science*, (2014), <http://dx.doi.org/10.1080/00207721.2013.874508>.
- [74] M. M. Khader and A. S. Hendy, A new Legendre computational matrix method: An application for solving the high order fractional differential equations, *Walailak Journal of Science and Technology*, 11(4), p.(289–305), 2014.
- [75] M. M. Khader and Mohammed M. Babatin, Legendre spectral collocation method for solving fractional SIRC model and influenza A, *Journal of Computational Analysis and Applications*, 17(2), p.(214–229), 2014.
- [76] M. M. Khader and Mohammed M. Babatin, Numerical treatment for solving fractional SIRC model and influenza A, *Computational and Applied Mathematics*, 33(3), p.(543–556), 2014.
- [77] M. M. Khader, N. H. Sweilam, A. M. S. Mahdy and N. K. Abdel Moniem, Numerical simulation for the fractional SIRC model and influenza A, *Applied Mathematics and Information Science*, 8(3), p.(1029–1036), 2014.
- [78] M. M. Khader, N. H. Sweilam, Z. I. EL-Sehrawy and S. A. Ghwail, Analytical study for the nonlinear vibrations of multiwalled carbon nanotubes using homotopy analysis method, *Applied Mathematics and Information Science*, 8(4), p.(1675–1684), 2014.
- [79] N. H. Sweilam, M. M. Khader and W. Y. Kota, Cardinal functions for Legendre pseudo-spectral method for solving the integro-differential equations, *Journal of the Egyptian Mathematical Society*, 22, p.(511–516) 2014.

- [80] M. M. Khader and Sunil Kumar, An accurate numerical method for solving the linear fractional Klein-Gordon equation, *Mathematical Methods in the Applied Sciences*, 37, p.(2972–2979), 2014.
- [81] M. M. Khader and N. H. Sweilam, Approximate solutions for the fractional advection-dispersion equation using Legendre pseudo-spectral method, *Computational and Applied Mathematics*, 33(3), p.(739–750), 2014.
- [82] M. M. Khader and N. H. Sweilam, An application of homotopy analysis method for estimation the diaphragm deflection in MEMS capacitive microphone, *International Journal of Non-linear Science*, 17(1), p.(3–13), 2014.
- [83] M. M. Khader and Ahmed M. Megahed, Numerical solution for the flow and heat transfer due to a permeable stretching surface embedded in a porous medium with a second-order slip and viscous dissipation, *The European Physical Journal Plus*, 129(10), 2014.
- [84] M. M. Khader, N. H. Sweilam and A. M. S. Mahdy, The Chebyshev collection method for solving fractional order Klein-Gordon equation, *Wseas Transactions on Mathematics*, 13, p.(31–38), 2014.
- [85] M. M. Khader, A. M. S. Mahdy and M. M. Shehata, Approximate analytical solution to the time-fractional biological population model equation, *Jokull*, 64(5), p.(378–394), 2014.
- [86] M. M. Khader, A. M. S. Mahdy and M. M. Shehata, A modification of the power series method applied to systems of linear ordinary differential equations, *Jokull*, 64(5), p.(120–130), 2014.
- [87] M. M. Khader, N. H. Sweilam and A. M. S. Mahdy, An approximate analytical solution for system of non-linear fractional diffusion equations, *Jokull*, 64(4), p.(77–93), 2014.
- [88] M. M. Khader, Numerical treatment for solving fractional Logistic differential equation, *Differential Equations and Dynamical Systems*, 24(1), p.(99–107), 2016. DOI 10.1007/s12591–014–0207–9

- [89] Abdullah Aljouiee and M. M. Khader, Approximate solution of the fractional Logistic differential equation using Legendre spectral collocation method, *Jokull*, 64(6), p.(196–205), 2014.
- [90] M. M. Khader, Laguerre collocation method for the flow and heat transfer due to a permeable stretching surface embedded in a porous medium with a second order slip and viscous dissipation, *Applied Mathematics and Computation*, 243(15), p.(503–513), 2014.
- [91] M. M. Khader, On the numerical solution and convergence study for system of non-linear fractional diffusion equations, *Canadian Journal of Physics*, 92(12), p.(1658–1666), 2014.
- [92] M. M. Khader, A. M. S. Mahdy and M. M. Shehata, An integral collocation approach based on Legendre polynomials for solving Riccati, Logistic and delay differential equations, *Applied Mathematics*, 5, p.(2360–2369), 2014.
- [93] M. M. Khader and Ahmed M. Megahed, Differential transformation method for studying flow and heat transfer due to a stretching sheet embedded in a porous medium with variable thickness, variable thermal conductivity and thermal radiation, *Applied Mathematics and Mechanics*, 35(11), p.(1387–1400), 2014.
- [94] M. M. Khader and Mohammed M. Babatin, An approximate solution of the fractional variational problems using Laguerre pseudo-spectral method, *Sylwan*, 158(7), p.(360–371), 2014.
- [95] M. M. Khader and Ahmed M. Megahed, Effect of viscous dissipation on the boundary layer flow and heat transfer past a permeable stretching surface embedded in a porous medium with a second order slip using Chebyshev finite difference method, *Transport in Porous Media*, 105, p.(487–501), 2014.
- [96] M. M. Khader and Ahmed M. Megahed, Differential transformation method for the flow and heat transfer due to a permeable stretching surface embedded in a porous medium with a second order slip and viscous dissipation, *Journal of Heat Transfer*, 136, p.(072602–1–072602–7), 2014.

- [97] N. H. Sweilam, M. M. Khader, and M. Adel, Chebyshev pseudo-spectral method for solving the fractional advection-dispersion equation, *Applied Mathematics*, 5, p.(3240–3248), 2014.
- [98] M. M. Khader, An efficient approximate method for solving fractional variational problems, *Applied Mathematical Modelling*, 39, p.(1643–1649), 2015.
- [99] M. M. Khader, N. H. Sweilam and M. Adel, An approximate solution for fractional optimal control problems using Chebyshev pseudo-spectral method, *Int. J. of Mathematics and Computer Applications Research*, 5(2), p.(65–76), 2015.
- [100] M. M. Khader, N. H. Sweilam and A. M. S. Mahdy, Two computational algorithms for the numerical solution for system of fractional differential equations, *Arab Journal of Mathematical Sciences*, 21, p.(39–52), 2015.
- [101] M. M. Khader and S. A. Yousefi, Extended Adomian's polynomials for solving non-linear fractional differential equations, *Theoretical Mathematics & Applications*, 5(2), p.(89–114), 2015.
- [102] M. M. Khader and N. H. Sweilam, Numerical and theoretical study for solving multi-term linear fractional differential equations using a collocation method based on the generalized Laguerre polynomials, *Journal of Fractional Calculus and Applications*, 6(2), p.(53–64), 2015.
- [103] M. M. Khader, Shifted Legendre collocation method for the flow and heat transfer due to a stretching sheet embedded in a porous medium with variable thickness, variable thermal conductivity and thermal radiation, *Mediterranean Journal of Mathematics*, 13(4), p.(2319-2336), 2015, DOI 10.1007/s00009–015–0594–3.
- [104] N. H. Sweilam, M. M. Khader, and M. Adel, On the numerical solution for the fractional wave equation using pseudo-spectral method based on the generalized Laguerre polynomials, *Applied Mathematics*, 6, p.(647–654), 2015.
- [105] M. M. Khader and Ahmed M. Megahed, Boundary layer flow due to a stretching sheet with a variable thickness and slip velocity, *Journal of Applied Mechanics and Technical Physics*, 56(2), p.(241–247), 2015.

- [106] M. M. Khader, Fractional Chebyshev finite difference method for solving the fractional-order delay BVPs, *International Journal of Computational Methods*, 12(6), 1550033 (11 pages), 2015. DOI: 10.1142/S0219876215500334
- [107] A. Borhanifara and M. M. Khader, Jacobi operational matrix and its application for solving systems of ODEs, *Differential Equations and Dynamical Systems*, 24(4), p.(459–473), 2015. DOI 10.1007/s12591–015–0248–8.
- [108] E. M. Solouma and M. M. Khader, Implementation of Legendre collocation spectral method for solving fractional variational problems, *Jokull*, 65(4), p.(188–200), 2015.
- [109] Emad M. Solouma and Mohamed M. Khader, Approximate technique for solving class of fractional variational problems, *Applied Mathematics*, 6, p.(837–846), 2015.
- [110] M. M. Khader and M. Adel, Numerical treatment of the fractional SIRC model and influenza A using generalized Euler method, *Journal of Modern Methods in Numerical Mathematics*, 6(1), p.(44–56), 2015.
- [111] M. M. Khader, Mohammed M. Babatin, A. Eid and Ahmed M. Megahed, Numerical study for simulation the MHD flow and heat transfer due to a stretching sheet with variable thickness, variable thermal conductivity and thermal radiation, *Applied Mathematics*, 6, p.(2045–2056), 2015.
- [112] M. M. Khader and Mohammed M. Babatin, Numerical study of fractional Logistic differential equation using implementation of Legendre wavelet approximation, *Journal of Computational and Theoretical Nanoscience*, 13(1), p.(1022–1026), 2016.
- [113] M. M. Khader and Abdullah Aljouiee, Numerical simulation for mathematical model of the hepatitis C with different types of virus genome using Legendre spectral collocation method, *Journal of Computational and Theoretical Nanoscience*, 12(11), p.(4601–4606), 2015.

- [114] M. M. Khader and Rubayyi T. Alqahtani, On the approximate solution for the generated system of ODEs of the hepatitis C with different types of virus genome, *Journal of Computational and Theoretical Nanoscience*, 13(5), p.(3501–3506), 2016.
- [115] M. M. Khader and E. M. Solouma, Introducing FDM combined with Hermite formula for solving numerically the linear fractional Klein-Gordon equation, *J. of Computational and Theoretical Nanoscience*, 12(11), p.(4579–4583), 2015.
- [116] M. M. Khader and Mohammed M. Babatin, Theoretical and numerical study for solving the fractional modeling dynamics of HIV and CD4+ T-cells during primary infection, *Journal of Computational and Theoretical Nanoscience*, 13(5), p.(3005–3012), 2016.
- [117] Mohamed M. Khader, Sunil Kumar and S. Abbasbandy, Fractional homotopy analysis transforms method for solving a physical model of fractional heat-like, *Walailak Journal of Science and Technology*, 13(5), p.(337–353), 2016.
- [118] M. M. Khader and Ahmed M. Megahed, Numerical treatment for flow and heat transfer of Powell-Eyring fluid over an exponential stretching sheet with variable thermal conductivity, *Meccanica*, 51(8), p.(1763-1770), 2015, DOI 10.1007/s11012-015-0336-4.
- [119] A. Eid and M. M. Khader, Numerical studies using FDM for viscous dissipation and thermal radiation effects on the slip flow and heat transfer due to a stretching sheet embedded in a porous medium with variable thickness and variable thermal conductivity, *New Trends in Mathematical Sciences*, 4(1), p.(38–50), 2016.
- [120] M. M. Khader and Ahmed M. Megahed, Approximate solutions for the flow and heat transfer due to a stretching sheet embedded in a porous medium with variable thickness, variable thermal conductivity and thermal radiation using Laguerre collocation method, *Applications and Applied Mathematics: An International Journal*, 10(2), p.(817–834), 2015.

- [121] M. M. Khader and N. H. Sweilam, Numerical and analytical study for integro-differential equations using spectral collocation method, *New Trends in Mathematical*, 3(4), p.(144–153), 2015.
- [122] M. M. Khader and M. Adel, Numerical solutions of fractional wave equations using an efficient class of FDM based on Hermite formula, *Advances in Difference Equations*, 2016(34), p.(1–10), 2016.
- [123] M. M. Khader, A. M. S. Mahdy and E. S. Mohamed, On approximate solutions for fractional Riccati differential equation, *International Journal of Engineering and Applied Sciences*, 4(9), p.(1–10), 2014.
- [124] M. M. Khader and N. H. Sweilam, Singularly perturbed BVP to estimation of diaphragm deflection in MEMS capacitive microphone: An application of ADM, *Applied Mathematics and Computation*, 281, p.(214–222), 2016.
- [125] M. M. Khader and Abdullah Aljouiee, Implementation of Legendre-spectral-collocation method for solving the fractional Logistic differential equation, *Journal of Computational and Theoretical Nanoscience*, xx, p.(xx–xx), 2016.
- [126] M. M. Khader and M. Motawi Khashan, Application to fractional differential transformation method for solving fractional SIRC model and influenza A, *Journal of Computational and Theoretical Nanoscience*, 13, p.(7018-7024), 2016.
- [127] M. M. Khader, Application of Homotopy Perturbation Method for Solving Nonlinear Fractional Heat-like Equations using Sumudu Transform, *Scientia Iranica*, 42(2), p.(648-655), 2017.
- [128] M. M. Khader and M. Adel, Analytical and numerical validation for solving the fractional Klein-Gordon equation using the fractional complex transform and variational iteration methods, *Nonlinear Engineering – Modeling and Application*, xx, p.(1–5), 2016.
- [129] M. M. Khader and A. M. S. Mahdy, An efficient modification of PIM by using Chebyshev polynomials, *Malaya Journal of Matematik*, 4(3), p.(453–462), 2016.
- [130] Mohamed M. Khader, Rubayyi T. Alqahtani, Approximate solution for system of fractional non-linear dynamical marriage model using Bernstein polynomials, *Journal of Nonlinear Science and Applications*, 10(3), p.(865–873), 2017.

- [131] Khadijah M. Abualnaja, M. M. Khader, A computational solution of the multi-term nonlinear ODEs with variable coefficients using the integral-collocation-approach based on Legendre polynomials, *Journal of Progressive Research in Mathematics*, 9(3), p.(1406–1410), 2016.
- [132] M. M. Khader and A. Borhanifar, Implementation of the matrix differential transformation procedure for obtaining the approximate solution of some nonlinear matrix evolution equations, *Applications and Applied Mathematics: An International Journal*, 11(2), p.(906–918), 2016.
- [133] M. M. Khader, On the numerical solution for the variable-order fractional some modeling dynamics problems using generalized Adams-Bashforth-Moulton method, *The Journal of Mathematics and Computer Science*, xx(x), p.(xxx–xxx), 2017.
- [134] M. M. Khader, Application Taylor-Pade technique for obtaining approximate solution for system of linear Fredholm integro-differential equations, *Applications and Applied Mathematics: An International Journal*, xx(x), p.(xx–xx), 2017.
- [135] M. Adel and M. M. Khader, Approximate solutions for a certain-class-of fractional optimal control problems using Laguerre collocation method, *International Mathematical Forum*, 12(8), p.(379–389), 2017.
- [136] M. M. Khader, and Samy Mziou, Chebyshev spectral method for studying the viscoelastic slip flow due to a permeable stretching surface embedded in a porous medium with viscous dissipation and non-uniform heat generation, *Boundary Value Problems*, 2017(37), p.(1–12), 2017.
- [137]