

CURRICULUM VITAE

Professor: Mahmoud Mohammed Mostafa El-Borai

Address: Faculty of science Alexandria University Egypt

Nationality: Egyptian

Professor of mathematics

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Date of Birth: 7/4/1940

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Qualifications:

1-B.Sc. special degree (Mathematics) Faculty of science Alexandria University Egypt June 1961

2-Ph. D. Faculty of mathematics Department of Differential Equations University of Moscow June 1968

Posts:

1-Demonstrator Faculty of science Alexandria University Egypt September 1961.

2-Lecturer, the same faculty September 1969.

3-Assistant Professor, the same faculty June 1974.

4-Professor of Mathematics, the same faculty June 1979.

5-Head of the Department of Mathematics, Faculty of Science, Alexandria University from 27/9/1987 until 27/9/1993.

6-Head of the Department of Mathematics, Faculty of Science, Beirut. Arab University from 11/11/1985 to 15/8/1987.

Awarded the golden medal Alexandria University June 2000.

Awarded the Alexandria University appreciative prize for sciences June 2011.

Academic Visits and Activities:

- 1-Scholarship to the University of Moscow,
To study the degree of Ph.D.
June 1962 ---June 1968.**
- 2-Delegated to the University of King Abd El-Aziz, Saudi Arabia, 28
/9/ 1976 to 6/7/1980.**
- 3- Delegated to Arab Beirut University from 11/11/1985 to 15/8/1987.**
- 3-Visiting Professor to Beirut Arab University Lebanon.**
- 4-Attended the International Conference of Differential Equations at
Moscow State University 13-18 June 1988.**
- 5-Attended the International Conference of Operation Research
Chicago U.S.A. 23-30 August 1983.**
- 6-Attended the 16_th IMACS World Congress Lausanne Switzerland
20- 25 August, 2000.**
- 7-Attend the International Conference of Difference Equations and
Applications, held in Augsburg Germany August 16-20, 2001.**
- 8-Attended the International Congress of Theoretical and Applied
Mathematics Blacksburg VA USA June 23-28 , 2002.**
- 9-Attended the International Conference of Kolmogorov and
Contemporary Mathematics, June 16-21, 2003.**
- 10-Attended the International Conference on Scientific Computation
and differential equations held at Trondheim Norway SCICADE
July 1-5 2003.**
- 11-Attended the international conference of
Dynamical systems and differential equations, California State
Polytechnic University Pomona 16-19, June 2004.**
- 12-Attended the International Congress of Mathematics held at
Almery Spain June 2005.**
- 13-Attended the Fifth International Congress on Function Spaces,
16-20 May, 2006, at SIUE (SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE).**
- 14-Invitation to the International Congress
Of Banach Spaces and their applications,
May 22- 27, 2006 at Miami University
Oxford, Ohio (To deliver lectures and my research work).**
- 15-Invitation to the international conference, AIMS, Dynamical
systems, held in Poi tiers France June 25-28, 2006 (Special Session,
Qualitative properties of evolution equations of fractional orders).**
- 16- Invitation to the 6th international congress on industrial and
applied mathematics, 16-20 July 2007, held in Zurich, Switzerland.**
- 17-Invitation to the international conference of Mathematical
Problems in Engineering ,Aerospace and Science , June 25-27 , 2008 ,**

held in University of Genoa , Italy, (Lecture and paper about optimal control).

18-Invitation to the international Congress of the European Consortium for Mathematics in Industry, 30 June- 4 July 2008, held in London, University.

(Lecture and paper about exact solutions of problems in industry).

19- Invitation to international conference of Analysis Inequalities and Homogenization Theory (AIHT) 2009, June 8-11. 2009.

20-- Attend the International Congress on Mathematical Physics, Prague, August 3-8, 2009.

21-Invitation to the international conference of foundation of probability and physics-6 (FPP6) , June 12-16 , 2011, Linnaeus University, Sweden, Stockholm.

22- Invitation to the international conference on Differential & Difference Equations, July 4-8, 2011, Universidad dos Acores, Portugal.

List of publications (Some of the published papers):

[1] Mahmoud M. El-Borai, On the correct formulation of the Cauchy problem and the mixed problem for a self-conjugate equations, Vectnic of Moscow University, 3, 1967.

[2] Mahmoud M. El-Borai, On the correct formulation of the Cauchy problem, Vectnic of Moscow University, 4, 1968.

[3] Mahmoud M. El-Borai, Partial differential equations in an unbounded medium, Academia Nazionale Dei Lincei Series VIII Vol. IV December 6, 1973, 657-662.

[4] Mahmoud M. El-Borai, On stochastic differential equations in a Hilbert Space, Egyptian Statistical Journal, 2, 1973.

[5] Mahmoud M. El-Borai, A global estimation for solutions of Cauchy problem for elliptic equations, Proceedings of the Mathematical and Physical Society of A.R.E. No. 36 , 1975 , pp. 101-107.

[6] Mahmoud M. El-Borai, Singular integral operators and Cauchy's problem for some partial differential equations with operator coefficients, Transaction of the Egyptian Science Centre Vol. 2, pp. 33-41,1976.

[7] Mahmoud M. El-Borai, Some characterization of an abstract differential equation, Proc. Math. Phys. Soc. Egypt; (48) pp.15-23, 1979.

[8] Mahmoud M. El-Borai, On the initial value problem for partial differential equations with operator coefficients, Int. J. of Math. and Mathematical Sciences ,3 ,1980, pp. 103-111.

- [9] Mahmoud M. El-Borai, Generalized random processes and Cauchy's problem for some partial differential equations, *Int. J of Math. And mathematical Sc. No. 3, 1980, pp. 549-558.*
- [10] Mahmoud M. El-Borai and Hamza A. S. Aboujabal, On the Cauchy problem for abstract nonlinear differential equations, *Korean J. Com. & Appl. Math. Vol. 3(1996), No. 2, pp. 279 – 290.*
- [11] Mahmoud M. El-Borai and Assad F., On the asymptotic behavior of some nonlinear parabolic systems, *Memories of the faculty of science Kochi University Series A Math. (1997), 9-14.*
- [12] Mahmoud M. El-Borai and Assad F., On the Cauchy problem for some partial differential equations with time delays, *Memoirs of the Faculty of Science Series A. Math. Vol. 18 (1997), 49-57.*
- [13] Mahmoud M. El-Borai and Abujabal Hamza , An abstract Dirichlet problem in the Hilbert space , *Korean J. comp. Appl. Math. 4 (1997)*
- [14] Mahmoud M. El-Borai , Some probability densities and fundamental solution of fractional evolution equations , *Chaos, Soliton and Fractals 14 (2002),433-440.*
- [15] Mahmoud M. El-Borai, Osama Labib and Hamdy M., Asymptotic stability of some stochastic evolution equations , *Applied Math. And comp. 144, 2003, 273-286.*
- [16] Mahmoud M. El-Borai . Evolution equations without semi groups, *J. of Appl. Math. And Comp., 149 (2004), 815-821.*
- [17] Mahmoud M. El-Borai , Semi groups and some nonlinear fractional differential equations , *J. of Appl. Math. And Comp. (2004), 823-831.*
- [18] Mahmoud M. El-Borai , The fundamental solutions for fractional evolution equations of parabolic type , *J. of Appl. Math. Stochastic Analysis (JAMSA) 2004, 199-211.*
- [19] Mahmoud M. El-Borai and Khairia El-Said El-Nadi , Osama Labib , Hamdy M., Volterra equations with fractional stochastic integrals, *Mathematical problems in Engineering , 5 , (2004), 453-468.*
- [20] Mahmoud M. El-Borai , Khairia El-Said El-Nadi , Osama Labib and Hamdy M. , Numerical methods for some nonlinear stochastic differential equations , *Applied math, and comp, 168, 2005, 65-75.*
- [21] Mahmoud M. El-Borai , On some fractional evolution equations with non-local conditions , *International J. of Pure and Applied Mathematics , vol. 24, No. 3, 2005, 405-413.*
- [22] Mahmoud M. El-Borai, On some fractional differential equations in the Hilbert space, *Journal of Discrete and Continuous Dynamical Systems, Series A, 2005, 233-241.*

- [23] Mahmoud M. El-Borai and Mohammed I. Abbas , Fractional orders integral equations with supremum, *Int. J. Pure Appl. Math.*, 32(2006),365-374.
- [24] Mahmoud M. El-Borai and Mohammed I. Abbas , Solvability of an infinite system of singular integral equations and applications, *Serdica Mathematical Journal*, 33(2007), 1001-1012.
- [25] Mahmoud M. El-Borai , M.A. Abdou , A.A. Badr and M. Basseem , Chebyshev polynomials and Fredholm-Volterra integral equation , *Journal of Applied Mathematics and Mechanics* , 4(5):78-92,2008.
- [26] Mahmoud M. El-Borai, On some stochastic integro-differential equations, *Advances in Dynamical Systems and Applications*, Volume 1, Number 1 ,2006, pp. 49- 57.
- [27] Mahmoud M. El-Borai , Khairia El-Said El-Nadi and Iman G. El-Akabawi, On some integro- differential equations of fractional orders , *The International J. of Contemporary Mathematics* ,Vol. 1, 2006, No. 15, 719-726.
- [28] Mahmoud M. El-Borai , Khairia El-Said El-Nadi and Iman G. El-Akabawy , Approximate solutions for nonlinear fractional heat equations , *Int. J. Contemp. Math. Sciences*, Vol. 2, 2007, no. 27, 1307-1316.
- [29] Mahmoud M. El-Borai, M.A. Abdou, A.A. Badr and M. Basseem , Singular nonlinear integral equation and its application in viscoelastic nonlinear materials , *Journal of Applied Mathematics and Mechanics* ,4(5): 56-77, 2008.
- [30] Mahmoud M. El-Borai, M.A. Abdou and M. Basseem , Degenerate kernel method for two dimensional nonlinear integral equation of the second kind, *Journal of Applied Mathematics and Mechanics* , Accepted, 2007.
- [31] Mahmoud M. El-Borai , M.A. Abdou and M.M. El-Kojok , On a discussion of nonlinear integral equations of type Volterra-Hammertien , *J. Korea Sci. Math. Ser. B. Pure & Appl. Math.* Vol. 15, (February 2008), pages 1-18.
- [32] Mahmoud M. El-Borai and Mohammed I. Abbas , On some integro-differential equations of fractional orders involving Caratheodory nonlinearities , *International J. of Modern Mathematics* , 2(1) (2007), 41-52.
- [33] Mahmoud M. El-Borai ,Wagdy G. El-Said and Mohammed I. Abbas, Monotonic solutions of a singular integral equations of Volterra type, *J. of Studia Scientiarum mathematicurum Hungarica*, DOI: 10.1556/SScMath.2009.1094, 1-20.

- [34] Mahmoud M. El-Borai , M.A. Abdou and Basseem , An analysis of two dimensional integral equations of the second kind , LE MATEATICHE Vol. LXII (2007) Fasc I, pp. 15-39.
- [35] Mahmoud M. El-Borai , Osama L. Mostafa and Fayes Habeeb Michael , On the correct formulation of nonlinear differential equations in Banach space , Int. J. of Mathematics & Mathematical Sciences, Vol. 26 (2001) Issue 7 pp. 437- 444.
- [36] Mahmoud M. El-Borai , , Khairia El-Said , Osama L. Mostafa and Hamdy M. Ahmed , Semi group and some fractional stochastic integral equations , Int. J. of Pure and Applied Mathematical Sciences , Vol. 3 , No.1 (2006) pp. 47-52.
- [37] Mahmoud M. El-Borai , Khairia El-Said El-Nadi and Iman G. El-Akabawy , On the fractional optimal control , Journal of applied Mathematics and Mechanics, 4(6): 13-18, 2008..
- [38] Mahmoud M. El-Borai , Khairia El-Said El-Nadi and Iman G. El-Akabawy, Fractional evolution equations with non-local conditions , Journal of Applied Mathematics and Mechanics ,4(6):1-12, 2008..
- [39] Mahmoud M.El-Borai , Mohammed Abdellah and Maha Kojok, Toeplitz matrix method and nonlinear integral equations of Hammerstein type, Journal of Computational and Applied Mathematics, 223 (2009) 765-776.
- [40] Mahmoud M. El-Borai, Exact solutions for some nonlinear fractional parabolic fractional partial differential equations, Journal of Applied Mathematics and Computation 206 (2008) 141- 153.
- [41] Mahmoud M. E, l-Borai and Amar Debbouche On some fractional integro-differential equations with analytic semi groups, Int. J. Contemp. Math. Sciences, Vol. 4, 2009, no. 28, 1361- 1371.
- [42] Mahmoud M. E, l-Borai and Amar Debbouche, Almost periodic solutions of some nonlinear fractional differential equations, Int. J. Contemp. Math. Sciences, Vol. 4, 2009, no. 28, 1373 – 1387.
- [43] Mahmoud M. E, l-Borai and Amar Debbouche, Weak almost periodic and optimal mild solutions of fractional evolution equations, Electronic Journal of Differential Equations, Vol. 2009(2009), 46.pp. 1-8.
- [44] Mahmoud M. El-Borai, Khairia El-Said El-Nadi and Hoda A. Foad , On some fractional stochastic delay differential equations, Computers and Mathematics with Applications, 59,(2010)1165- 1170.
- [45] Mahmoud M. El-Borai, Khairia El-Said El-Nadi and Eman G. El-Akabawy, On some fractional evolution equations, Computers and Mathematics with Applications, 59,(2010) 1352- 1355.
- [46] Mahmoud M. El-Borai, On the solvability of an inverse fractional abstract Cauchy problem, International Journal of

Research and Reviews in Applied Sciences, Vol.4, No.4, September (2010) 411-416.

[47] Mahmoud M. El-Borai , Inverse Cauchy problems for nonlinear fractional parabolic equations in Hilbert space, Special Issue SCIENCE and Mathematics with Applications , (International Journal of Research and reviews in Applied Sciences), 6(3). February 2011, 242-246.

[48] Mahmoud M. El-Borai and Khairia El-Said El-Nadi , On some fractional parabolic equations driven by fractional Gaussian noise, Special Issue SCIENCE and Mathematics with Applications , International Journal of Research and reviews in Applied Sciences 6(3). February 2011, 236- 241.

[49] Mahmoud M. El-Borai, Khairia El-Said El-Nadi and Hoda A. Fouad, Backward stochastic differential equations on a fixed finite time interval, Special Issue SCIENCE and Mathematics with Applications , International Journal of Research and reviews in Applied Sciences, 6(3).February 2011, 247-245.

[50] Mahmoud M. El-Borai, Afaf A. Zaghrou and Amal L. Elshaer, Exact solutions for nonlinear partial differential equations by using cosine-function method, International Journal of Research and Reviews in Applied Sciences, Vol9 Issue3 December 2011-12-17.

[51] Mahmoud M. El-Borai, Afaf A. Zaghrou and Amal L. Elshaer, Exact solutions for nonlinear partial differential equations by using the extended multiple Riccati equations expansion method, International Journal of Research and Reviews in Applied Sciences, Vol9 Issue3 December 2011-12-17.

Research interests:

- 1- Dynamical systems and the artificial intelligence.**
- 2- Stochastic differential equations.**
- 3- Optimal control.**
- 4- Stochastic control**
- 5- The dynamics of robot.**
- 6- Abstract differential equations with fractional orders.**
- 7- Stochastic differential equations with fractional orders, (Hurst parameter).**
- 8- General theory of partial differential equations.**
- 9- Dynamical systems and Cancer.**
- 10-Semigroup and integrated semigroup.**

Teaching:

Real analysis - Complex analysis - Functional analysis - Measure theory - Probability theory - Ordinary differential equations - Partial

**differential equations - Stochastic analysis - Numerical analysis -
Linear algebra - Abstract algebra - Calculus of variations - Optimal
control.**

Supervised many M.Sc and PhD thesis (Some of them)

1-M.Sc by Eman Gaber Hassan Elakabawy

**Title: Some partial differential equations and the dynamic problem
in Robots (April 2004)**

2-M.Sc by Hoda Ahmed Foad Mohamed

**Title: On the Cauchy problem for some partial differential equations
of fractional orders (March 2003)**

3-M.Sc by Rania Shalaby Farhat

**Title: On some properties of fractional order derivatives of some
special functions (April 2002)**

4-M.Sc by El-Hady Ibrahim Soliman Ahmed

**Title: On the solution of some problems of the integral equations
(March 2004).**

5-M.Sc by Mohmmmed Ibrahim Abbas Ali :

**Title: On the initial value problems for some integro-partial
differential equations with fractional orders (March 2004)**

6-M.Sc by Hamed Kamal Mostafa

**Title: On some initial value problems for nonlinear differential
equations in Banach space (2001)**

7-M.Sc by Gehan Ahmed Hasan Ashry

Title: On some trust region algorithms, 2003.

8-M.Sc by Emad Saad Hussein :

Title: The vision correspondence I digital images, 1999.

9-M.Sc by Mahmoud Abd El-Meageed El-Hashash :

**Title: On the solution of some partial differential equations with
lagging argument, 1986.**

10-M.Sc by Tarek Zakaria Ibrahim Ahmed :

Title: On some problem of abstract differential equations, 1995.

11-M.Sc by Ismail Hamid Isansi:

Title: On the stochastic functional differential equations, 1986.

12-M.Sc by Mahmoud M. El-Alem :

**Title: On the initial value problem for some random differential
equations 1982.**

13-M.Sc by Fayez Habib Michael:

**Title: On the Cauchy problem of particular differential equations,
May 1976.**

14-M.Sc by Ahmed Mohammed El-Said:

Title: On the abstract Cauchy problem, May 1976.

15-M.Sc by Ammar Mohammed El-Sherif :

Title: Cauchy problem for some nonlinear fractional differential equations 2006.

16-M.Sc by Mabrouk El-Aish Nowwar Bravdi :

Title: Optimal control and some differential equations of fractional orders, 2006.

17-M.Sc by Omar Kabery :

Title: Stochastic control and the artificial intelligence, (Under preparation).

18-PhD. By Hamdy Mohammed Ahmed :

Title: On some stochastic integral equations (2003).

19-PhD. by Tarek Zakaria Ibrahim Ahmed :

Title: On the existence of solutions for some differential equations of fractional order, (2004).

20-PhD by Moheb S Abo-Zaid :

Title : On some invariance properties of the Cauchy problem , (1996).

21-PhD by Maha Kojok :

Title: On some problems of integral equations and integro-partial differential equations with fractional orders, (2008).

22- PhD by Mohammed Basseem :

Title: On some singular integral equations and applications, (2007).

23- PhD by Mohammed Ibrahim Abbas :

Title : Solvability of some singular integral equations, (May 2007).

24 -PhD by : Iman El-Akabawy :

Title : On some evolution equations with fractional orders, (Under preparation).

25- PhD by Hoda Foad:

Title: On the fractional stochastic differential equations, (Under preparations).

26-PhD by Hamed Kamal:

Title: On the integrated semi group, (Under preparation).

There are many other PhD and M.Sc thesis.

Other Activities:

1- A Member of the Swiss Society of Mathematics.

2- A Member of the American Society of difference and differential equations.

3- Reviewer in the Journal of Applied Mathematics and Computation.

4- Reviewer in the American Mathematical Review.

5- Editor and reviewer at Waset, (World Academy of Science, Engineering and Technology).

- 6- Reviewer in the Journal Computers and Mathematics with Applications.**
- 7-Reviewer in the Journal of Applied Numerical Mathematics.**
- 8-Reviewer in the Journal of Mathematical Modeling and Analysis.**
- 9-Reviewer in the Journal of Mathematical Analysis and Applications.**
- 10-Reviewer in the International Journal of Nonlinear Science.**
- 11-Reviewer in the Journal of Franklin Institute.**
- 12- Editor in the International Journal of Research and Reviews in Applied Sciences.**
- 13- Editor and reviewer of informatics, Computational & Mathematical Sciences.**
- 14- Editor in the Oriental Journal of Mathematics.**
- 15- Member of the promotion committee for assistant professors and professors, (many times), also refereeing M.SC., and Ph.D. degrees.**
- 16- Editor- in- Chief of the Journal Science and Mathematics with Applications (Special Issue of IJRRAS).**