NABIL Muhammed GMATI

Full Professor

Personal Data

Nationality | Tunisian

Date of Birth | 19 september 1962

Department | Mathematics

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Language Proficiency

Language	Read	Write	Speak
Arabic	Maternal	Maternal	Maternal
English	Full professional competence	Full professional competence	Full professional competence
French	Fluent	Fluent	Fluent

Academic Qualifications (Beginning with the most recent)

Date	Academic Degree	Place of Issue	Address
June 2005	University Habilitation	University Tunis El Manar	Campus El Manar, Tunis, Tunisia.
February 1992	Phd	University Paris 6– P.M.Curie	Rue Jussieu, Paris, France.
June 1987	Master Degree	University Paris 6 – P.M.Curie	Rue Jussieu, Paris, France.
June 1986	Bachelor Degree	University Paris 11 – Orsay.	Orsay, France.

PhD, Master or Fellowship Research Title: (Academic Honors or Distinctions)

PhD	
Master	
Fellowship	

Professional Record: (Beginning with the most recent)

Job Rank	Place and Address of Work			Date
Full Professor	Imam Abdurrahman Bin Faisal University	Dammam	KSA	2018 - present
Full Professor	Ecole Nationale d'ingénieurs de Tunis	Tunis	Tunisia	2010 - 2018
Associate Professor	Ecole Nationale d'ingénieurs de Tunis	Tunis	Tunisia	2006-2010
Associate Professor	Institut Prép. Des études d'Ing. De Nabeul	Nabeul	Tunisia	2005 – 2006
Assistant Professor	Institut Prép. Des études d'Ing. De Nabeul	Nabeul	Tunisia	1994 – 2005
Development Engin.	Dymag Company	Paris	France	Feb. 94 – Jun 94
Assistant	Pierre et Marie Curie University	Paris	France	1991 – 1993
Research Engineer	Ecole Nationale Sup. des Techn. Avancées	Paris	France	1987 - 1991

Administrative Positions Held: (Beginning with the most recent)

Administrative Position	Office	Date
Journal Editor In Chief	Arima Journal - https://arima.episciences.org	From 2016
Head of a research Laboratory	Laboratoire de Modélisation Mathématique et Numérique dans les sciences de l 'Ingénieur.	2007 – 2016
Coordinator of 10 Tunisian Laboratories	International Associated Laoratory (Associated with the French National Research Center-CNRS)	2009 - 2018

Scientific Achievements

Published Refereed Scientific Researches

(In Chronological Order Beginning with the Most Recent)

#	Name of Investigator(s)	Research Title	Publisher and Date of Publication	
1	E. Darrigrand, N. Gmati, R. Rais	Convergence of Krylov Subspace Solvers with Schwarz Pre-conditioner for the Exterior Maxwell Problem	Computers and Mathematics with Applications, August, 2017.	
2	N. Gmati, S. Lanteri, A. Mohamed	Discontinuous Galerkin Method Coupled with an Integral Representation for Solving the Three-Dimensional Time-Harmonic Maxwell Equations'	Applied Acousticc, 108 : 59-62, Vol. 1, 2016.	
3	N. Gmati, S. Lanteri, A. Mohamed	Solving the Three-Dimensional Time-Harmonic Maxwell Equations by Discontinuous Galerkin Methods Coupled to an Integral Representation	Springer International Publishing, Vol.2, 2015, pp 401-408. 2015	
4	E. Darrigrand, N. Gmati, R. Rais	'Schwarz Method Justification of a Coupling Between Finite Elements and Integral Representation for Maxwell Exterior Problem	Comptes Rendus Mathematiques, 352 (4), pp.311-315, 2014.	
5	M. Bouajaji, N. Gmati, S. Lanteri and J. Salhi	Coupling of an Exact Transparent Boundary Condition with a Discontinuous Galerkin Method for the Solution of the Time-Harmonic Maxwell Equations. Spectral and High-Order Methods for Partial Differential Equations	Selected Papers from the Icosahom 2012 Conference, Lecture Notes in Computational Science and Engineering, Springer, 2013	

6	F. Ben Belgacem, F.Jelassi and N. Gmati	Total Overlapping Schwarz Pre-conditioners for Elliptic Problems	ESAIM-M2AN, 2011, Vol. 45, pp 91- 113.	
7	F. Ben Belgacem, F.Jelassi and N. Gmati	'Convergence Bounds of GMRES with Schwarz Pre-conditioner for the Scattering Problem	*International Journal for Numerical Methods in Engineering*. Int. J. Numer. Meth. Eng. 2009, 80, pp. 191-209 .	
8	N. Gmati and B. Philippe	Comments on the GMRES Convergence for Preconditioned Systems	Large-Scale Scientific Computing. Revised papers in the 6th International Conference, LSSC 2007, pp 40-51.	
9	M. Azaiez, A. Ben Abda, R. Ben Fatma, N. Gmati	Missing Boundary Data Recovering for the Helmholtz Problem	CRAS Mécanique, 335 pp. 787-792, 2007.	
10	C. Hazard, N. Gmati, C. Ben Amar, K. Ramdani	Numerical Simulation of Acoustic Time Reversal Mirrors', in SIAM Journal of Applied Mathematics	Vol. 64, N.3, pp. 2067-2076, 2006 .	
11	N. Gmati et N. Zrelli	Numerical Study of Some Iterative Solvers for Acoustics in Unbounded Domains	ARIMA, Vol.4, pp. 1-23, 2006.	
12	F. Ben Belgacem, M. Fourně, N. Gmati et F. Jelassi	On the Schwarz Algorithms for Elliptic Exterior Boundary Value Problems	ESAIM-M2AN, Vol. 39, N.4, 2005.	
13	A.S. Bonnet-Bendhia, D. Drissi, N. Gmati	Mathematical Analysis of the Acoustic Diffraction by a Muffler Containing Perforated Ducts	M3AS, Vol.15, N.7, 2005.	
14	A.S. Bonnet-Bendhia, D. Drissi, N. Gmati	Determination of Muffler's Transmission Losses by a Homogenized Finite Element Method	Journal of Computational Acoustics, Vol 12, N.3, September 2004.	
15	F. Ben Belgacem, M. Fournié, N. Gmati et F. Jelassi	Comment traiter des conditions aux limites à l'infini pour quelques problèmes extérieurs par la méthode de Schwartz alterné	C. R. Acad. Sci. Paris, Ser. I 336 , 277- 282 (2003).	
16	A.S. Bonnet-Bendhia, N. Gmati	Spectral Approximation of Boundary Condition for an Eigenvalue Problem	SIAM J. NUMER ANAL, Vol 32, N.4, pp 1263-1279, August 1995.	

Refereed Scientific Research Papers Accepted for Publication

#	Name of Investigator(s)	Research Title	Journal	Acceptance Date

Scientific Research Papers Presented to Refereed Specialized Scientific Conferences

#	Name of Investigator(s)	Research Title	Conference and Publication Date
1	N. GMATI, F. JELASSI et B.PHILIPPE	Gmres preconditioners based on domain decompositions	8th workshop of the ERCIM WG Matrix computations and statistics. Salerno, Italy, september 2006.
2	C. BEN AMAR, N. GMATI, C. HAZARD, K. RAMDANI	Mathematical and numerical study of a time reversal mirror	The 7th International Conference on Mathematical and Numerical Aspects of Wave Propagation "Waves 2005", Providence, USA, June 2005.
3	F.BEN BELGACEM, N. GMATI, M.FOURNIE et F. JELASSI	Handling the Boundary conditions at in_nity for some exterior problems by the alternating Schwarz method	The 6th International Conference on Mathematical and Numerical Aspects of Wave Propagation "Waves 2003", Finland, July 2003.
4	N. GMATI et N. ZRELLI	A domain decomposition method for the Helmholtz equation on an unbounded waveguide	AMRTMA - L'analyse Mathématique et ses applications à l'acoustique et à la mécanique - Fréjus, France, Juin 2002.
5	A.S.BONNET-BENDHIA, D.DRISSI, N. GMATI	Determination of muffler's transmission losses by homogenization and _nite element method	5th International Conference "Waves 2000", Santiago de Compostela, Espana, July 2000
6	C.FARHAT, N.GMATI, U.HETMANIUK	An efficient substructuring method for analyzing acoustics in a concentric hole-cavity resonator	5th International Conference "Waves 2000", Santiago de Compostela, Espana, July 2000.

Completed Research Projects

#	Name of Investigator(s) (Supported by)	Research Title	Report Date
1	Nabil Gmati, Nejib Zemzemi	INRIA team project: EPICARD team co-directed with Nejib Zemzemi, https://team.inria.fr/carmen/research/epicard/	2017
2	Nabil Gmati, Mohamed Jaoua	Mathematics for Development Project: Coordinator for a project funded by the French Ministry of Immigration for National Identity and Solidarity	2011
3	Nabil Gmati, Eric darrigrand	STIC project: Fast multipole methods and Schwarz methods with overlap for diffraction problems. (ENIT-LAMSIN, INRIA-Rennes)	2010
4	Nabil Gmati, Anne Sophie Bonnet Ben Dhia, Amel Ben Abda.	STIC project: Direct and inverse problems in wave propagation. (ENIT-LAMSIN, INRIA-POEMS)	2005
5	Nabil Gmati, Anne Sophie Bonnet Ben Dhia,	CMCU Project: Numerical and experimental study of wave propagation problems in confined or unbounded environments. (ENIT, National School of Advanced Techniques and University of Maine).	2001
6	Nabil Gmati, Mohamed Jaoua, Kamel Mekki.	PIRD project: Sound study of exhaust silencers, by finite elements. (National School of Engineers of Tunis and ERECA Company)	2000
7	Nabil Gmati, Marc Lenoir.	CNRS-DGRST project: Study of the diffraction problems in acoustics and electromagnetics. (National School of Engineers of Tunis and National School of Advanced Techniques).	1999

Current Researches

#	Research Title	Name of Investigator(s)
1	Optimization of Deep Learning neural networks for Genomics	Nabil Gmati, Mohamed Masmoudi, Harouna Soumaré, Alia BelKahla.
2	A coupling method between integral epresentation and finite elements in acoustics with uniform flow.	Nabil Gmati, Mohamed Beldi, Ikram Jebali
3	FE approximation for an hybrid Naghdi equations for shells with G 1-midsurface	Nabil Gmati, Adel Blouza, Refka Barbouche.

Contribution to Scientific Conferences and Symposia

#	Conference Title	Place and Date of the Conference	Extent of Contribution
	More than 50	More than 50	More than 50
	Conference and seminar contributions	Conference and seminar contributions	Conference and seminar contributions

Membership of Scientific and Professional Societies and Organizations
- Member of the organization : Youth for science Fundation (Mission: Diffusion of the scientific culture).

Teaching Activities

Undergraduate

#	Course/Rotation Title	No./Code	Extent of Contribution (no. of lectures/Tutorials. Or labs, Clinics)
1	Mathematical equations for physics.		(15 lectures) 45 Hrs.
2	Numerical analysis. Linear systems.		(7 lectures) 21 Hrs.
3	Numerical Analysis. Non linear equations.		(7 lectures) 21 Hrs.
4	Linear algebra and vector spaces.		(30 lectures) 60 Hrs.
5	Linear and Bilinear Algebra		(30 lectures) 90 Hrs.
6	Real Analysis. Calculus.		(30 lectures) 90 Hrs.
7	The finite element method and the finite difference method.		(7 lectures) 21 Hrs.
8	Real Analysis 1. R, sequences, Series, functions.	Math 403	(14 lectures) 56 Hrs

Brief Description of Undergraduate Courses Taught: (Course Title – Code: Description)

1	
2	

Postgraduate

#	Course/Rotation Title	No./Code	Extent of Contribution (no. of lectures/ Tutorials. Or labs, Clinics)
1	Numerical and Mathematical Analysis of the Finite Element Method		15 lectures (45 Hrs)
2	Numerical and mathematical analysis of domain decomposition method.		15 lectures (45 Hrs)
3	Numerical and mathematical analysis of wave propagation phenomena.		15 lectures (45 Hrs)
4	Numerical and mathematical analysis of the boundary element method.		15 lectures (45 Hrs)
5	Numerical linear algebra	Math 525	14 lectures (56 Hrs)

Brief Description of Postgraduate Courses Taught: (Course Title – Code: Description)

1	
2	

Course Coordination

#	Course Title and Code	Coordination	Co-coordination	Undergrad.	Postgrad.	From	To
1	Numerical and Mathematical Analysis of the Finite Element Method	Nabil Gmati			(X)	2012	2015
2	Numerical and mathematical analysis of domain decomposition method.	Nabil Gmati			(X)	2004	2009
3	Mathematical equations for physics.	Nabil Gmati		(X)		2006	2018
4	Numerical analysis. Linear systems.	Nabil Gmati		(X)		2006	2018
5	Numerical Analysis. Non linear equations.	Nabil Gmati		(X)		2006	2012
6	Linear algebra and vector spaces.	Nabil Gmati		(X)		2009	2009
7	Linear and Bilinear Algebra	Nabil Gmati		(X)		1994	2005
8	Real Analysis. Calculus.	Nabil Gmati		(X)		1994	2005
9	The finite element method and the finite difference method.	Nabil Gmati		(X)		1988	1989

Guest/Invited Lectures for Undergraduate Students

#	Activity/Course Title and Code	Subject	College and University or Program	Date

Student Academic Supervision and Mentoring

#	Level	Number of Students	From	To

Supervision of Master and/or PhD Thesis

#	Degree Type	Title	Institution	Date
1	Master	Diffraction of an acoustic wave by an axisymmetric obstacle, numerical resolution by a boundary element method.	ENIT	1996
2	Master	Study of the Localised finite element method for the calculation of guided waves in optical fibers.	ENIT	1998
3	Master	Resolution of a diffraction problem in a essentially axisymmetric domain by domain decomposition and Fourier series decomposition.	ENIT	2001
4	Master	Alternating Schwarz method for the Poisson problem in an unbounded domain.	ENIT	2004
5	Master	Study and implementation of the calculation of the attenuation acoustics of an exhaust silencer, using three-dimensional finite elements.	ENIT	2002
6	Master	Fast multipole method for finite element coupled with an integral representation.	ENIT	2004
7	Master	Discontinuous Galerkin method coupled with an integral representation for the Maxwell equations in harmonic regime.	ENIT	2009
8	Master	Iterative method for Discontinuous Galerkin method coupled with an integral representation in propagation of electromagnetic waves.	ENIT	2011
9	Master	Numerical and theoritical study of the method coupling finite element methid and Fourier Representation.	ENIT	2012
10	Master	Convergence study of the stochastic gradient applied for Deep Learning.	ENIT	2016
11	Phd	Resolution of a wave propagation problem in a exhaust muffler by a technique coupling the finite elements and Homogenization.	ENIT	2017
12	Phd	Subdomain iteration method for conditions at the transparent limits in wave propagation.	ENIT	2005
13	Phd	Alternate Schwarz method for the problems of wave propagation in unbounded domain.	ENIT	2006
14	Phd	Theoretical and numerical study of the method of time reversal.	ENIT	2007
15	Phd	Koslov's algorithm for the Helmholtz equation.	ENIT	2011
16	Phd	Fast multipole method for finite element coupling and integral representation.	ENIT	2013
17	Phd	Numercial and theoritical study of Discontinuous Galerkin method coupled with an integral representation for propagation of electromagnetic waves.	ENIT	2018

Ongoing Research Supervision

#	Degree Type	Title	Institution	Date
1	Phd	Optimization of Deep Learning neural networks for Genomics.	ENIT	2018
2	Phd	FE approximation for an hybrid Naghdi equations for shells with G 1-midsurface	ENIT	2018

Administrative Responsibilities, Committee and Community Service
(Beginning with the most recent)

Administrative Responsibilities

#	From	To	Position	Organization
1	2016	Present	Journal Editor In Chief	Arima Journal - https://arima.episciences.org
2	2007	2016	Head of a research Laboratory	Laboratoire de Modélisation Mathématique et Numérique dans les sciences de l 'Ingénieur.
3	2009	2018	Coordinator of 10 Tunisian Laboratories	International Associated Laoratory (Associated with the French National Research Center-CNRS)

Committee Membership

#	From	To	Position	Organization
1	2012	2014	Member of the recruitment comittee	Ministry of higher education
2	2015	2018	Member of the sectorial committee of mathematics	Ministry of higher education

Scientific Consultations

Volunteer Work

#	From	To	Type of Volunteer	Organization
1	2016	2018	Coordinator	Youth for science foundation
2	2017	2017	National coordination of the project	National science Feast
3	2012	2014	Member of the scientific committee	ENIT

Personal Key Competencies and Skills: (Computer, Information technology, technical, etc.)

1	Computer science languages: Fortran, Pascal, Python, Matlab
2	Scientific computing: Melina, melina++, Xlife++, Ideas, Rayon, Ansys, Freefem

Last Update

...16/12/2018