

CURRICULUM VITAE

NAJIB Khalid

Head of Industrial Engineering Department

Applied mathematics teacher

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RESEARCH INTERESTS

Mathematical and Numerical Aspects of Fluid flow Phenomena

Quasi-Newtonian and viscoelastic fluid flow

Fluid flow in porous media

Mathematical modelling of sea intrusion in costal aquifer

Inverse Problems in hydrogeology

Spline interpolation

Risk modelling

Computational Mechanics, System Identification and Finite Element Model

Mathematical Physics, Scientific Computing, Numerical Analysis, Nonlinear Analysis,

Partial Differential Equations, Bio-Mathematics,

EDUCATION

- Doctorat d'État ès Sciences in applied mathematics , Numerical analysis, Kenitra university Morocco, 1994
- PhD in Applied Mathematics, Numerical analysis, Lyon, France June 1988
- Diploma of advanced studies, Numerical analysis and scientific computation, Saint Etienne university, France, 1983
- Master of Mathematics and fundamental applications Saint-Etienne, 1982,
- Bachelor of Mathématiques, Saint-Etienne university, 1981

COMMUNICATIONS AT CONFERENCES AND CONGRESSES

BARANGER,J., NAJIB,K. : Local inf-sup condition and mixed finite element method for quasi-newtonian flows ; Proceeding du V^e Congrès International sur les méthodes numériques de l'ingénieur, Lausanne, 11-15 Septembre 1989, **Vol 2**, p93-98, Computational mechanics publications, Springer Verlag.

BARANGER,J., NAJIB,K. : Méthodes d'éléments finis mixtes pour l'étude de l'écoulement d'un fluide non-newtonien ; Actes du 2^{ème} colloque Maghrébin des Sciences de l'Ingénieur, E.M.I, Rabat, Maroc, Novembre 1989.

BARANGER,J., NAJIB,K. : Analyse numérique d'une méthode d'éléments finis mixtes vitesse pression pour le calcul d'écoulements quasi-newtoniens, Actes du 2^{ème} Colloque franco-chilien de mathématiques appliquées aux sciences de l'ingénieur, p39-51, Cépaduès Editions, Décembre 1989.

BARANGER,J., NAJIB,K., SANDRI,D. : Formulation à trois champs contraintes-vitesse-pression de l'écoulement d'un fluide dont la viscosité obéit à une loi non homogène ; Journées d'analyse numérique et d'optimisation, Marrakech, Maroc, Avril 1992.

BARANGER,J., NAJIB,K., SANDRI,D. : Formulation à trois champs contraintes-vitesse-pression de l'écoulement d'un fluide dont la viscosité obéit à la loi puissance ; Journées de Mathématiques appliquées, Rabat, Maroc, Juillet 1992.

NAJIB,K., SANDRI,D. : Etude d'une approximation éléments finis des équations de l'écoulement d'un fluide viscoélastique de type Oldroyd ; 26^{ème} Congrès d'Analyse Numérique, les Karellis, France, 30 Mai-03 Juin 1994.

NAJIB,K., SANDRI,D. : Higher order finite element and decoupled algorithm for the approximation of viscoelastic fluid flow ; Actas de las V Jornadas Zaragoza-Pau de Matemàtica Aplicada y Estadística, p485-492, Jaca, Espagne, 15-16 Septembre 1997.

ESSELAOUI,D., NAJIB,K., RAMADANE,A., ZINE,A. : Méthode efficace pour la résolution numérique d'écoulements de fluides non newtoniens ; Actes du C.I.M.A.S.I.98, 27-29 Octobre 1998, Casablanca, Maroc.

NAJIB,K. : Une nouvelle formulation mixte à trois champs pour l'étude de l'approximation d'un modèle de fluide quasi-newtonien ; CIMASI 2000, 24-26 Octobre 2000, Casablanca, Maroc.

NAJIB, K., SANDRI, D., ZINE, A : Estimations à posteriori pour un problème d'Oldroyd linéarisé ; Colloque Maghrébin « Tendances pour les Applications des Mathématiques », Tunisie- Algérie- Maroc, 14-18 Avril 2003, EMI Rabat, Maroc

NAJIB, K., SANDRI, D., ZINE, A : Adaptative finite element methods for viscoelastic fluid flow; ECCOMAS 2004, 24-28 Juillet 2004, Jyvaskyla, Finlande

NAJIB, K., ROSIER, C. : On the global existence for a Degenerate Elliptic-Parabolic Seawater Intrusion Problem; MAMERN09, 3rd International Conference on Approximation Methods and Numerical Modelling in Environment and Natural Resources, 08-11 Juin 2009, Pau, France

NAJIB, K., ROSIER, C.: Existence for a Degenerate Elliptic-Parabolic Seawater Intrusion Problem for a free aquifer; MAMERN11, 4rd International Conference on Approximation Methods and Numerical Modelling in Environment and Natural Resources, 23-26 Mai 2011, Saidia, Maroc

Z. Belhaj , K. Najib, A. Kouibia, M. Pasadas, Oral "Construction of evolutionary surfaces by variational PDE splines", International Congress of EuroMaghreb Laboratory of Mathematics and their interactions (Ecole Nationale Supérieure des Mines), February 12, 2013

Z. Belhaj , K. Najib, A. Kouibia, M. Pasadas, Oral "An evolutionary PDE problem by discrete variational splines.Applications", International Conference on Approximation Methods and Numerical Modelling in Environment and Natural Resources (University of Granada, Spain), April 22-25, 2013

Z. Belhaj , K. Najib, A. Kouibia, M. Pasadas, Oral "The variational spline method for solving Troesch's problem", 4th International Conference of SM2A (University of Oujda, Morocco), February 12-14, 2015

Z. Belhaj , K. Najib, A. Kouibia, M. Pasadas, Oral "A variational method for solving 2D Poisson-Boltzmann equation (PBE)", Numerical Analysis and Optimization Days JANO'11 (FST of Beni Mellal, Morocco), April 27-29, 2016

I.MEDARHRI, K.NAJIB, S.SLIMANI, A.ZINE « inverse problem for modelling seawater intrusion » Numerical Analysis and Optimization Days JANO' 12 (ENSA Al Hoceima) October 17-19, 2018

PUBLICATIONS

BARANGER,J., NAJIB,K. : Analyse numérique des écoulements quasi-newtoniens dont la viscosité obéit à la loi puissance ou la loi de Carreau ; Numer. Math. **58**, p35-49, 1990.

BARANGER,J., NAJIB,K., SANDRI,D. : Numerical analysis of a three-fields model for a quasi-newtonian flow ; Comp. Meth. Appl. Mech. Eng. **109**, p281-292, 1993.

NAJIB,K., SANDRI,D. : On a decoupled algorithm for solving a finite element problem for the approximation of viscoelastic fluid flow ; ; Numer. Math. **72**, p223-238, 1995.

ESSELAOUI,D., NAJIB,K., RAMADANE,A., ZINE,A. : Analyse numérique et approche découplée d'un problème d'écoulements de fluides non newtoniens de type Phan-Thien-Tanner : contraintes discontinues ; Comptes Rendus de l'Académie des Sciences de Paris t330, Série1, p931-936,2000.

NAJIB, K., SANDRI, D., ZINE, A. : On a posteriori estimates for a linearized oldroyd's problem, Journal of Computational and Applied Mathematics, **167**, Issue 2, p345-361, Juin 2004

AGOUZAL, A., ALLALI, K., NAJIB, K. : Non-conforming finite element discretisations of a class of non-Newtonian flows, Applied Mathematics and Computation, **168**, p1004-1019, 2005

NAJIB, K., ROSIER, C. : On the global existence for a Degenerate Elliptic-Parabolic Seawater Intrusion Problem, Mathematics and computers in simulation (2011)

BELHAJ, Z., KOUIBIA, A., NAJIB, K., PASADAS, M., Construction of global surfaces by variational evolutionary PDE splines Journal of Computational and Applied Mathematics (2013), pp. 80-90

MARION, P., NAJIB, K., ROSIER, C.: Numerical simulations for a seawater intrusion problem in a free aquifer, Applied Numerical Mathematics, 75:48-60,(2014).

S.ELFADILY, A.KADDAR, K. NAJIB "Dynamics of a delayed Solow model with effective labor demand", Journal Advances in Applied Mathematics 175-182, July 2016

S.ELFADILY, A.KADDAR, K. NAJIB "Direction and stability of Hopf bifurcation in a delayed Solow model with labor demand", International Journal of Differential Equations, Accepted May 2019.

ORGANIZATION OF SCIENTIFIC SYMPOSIA

Member of organizing committee of the first Maghrebien symposium « Trends of applied mathematics », Tunisia- Algérie- Morocco, 14-18 April 2003, EMI Rabat, Maroc TAM-TAM 2003

Member of organizing committee of the second Maghrebien symposium « Trends of applied mathematics », Tunisia- Algérie- Morocco, 26-28 April 2005, ENIT Tunis, Tunisia

Member of the scientific committee of international conference MAMERN 2005, Approximation methods and numerical modelization of Environment and natural resources, 09-11 May 2005 Oujda Morocco

Member of organizing committee and scientific committee of RFMAO days 2005, Rencontres Franco- Marocaines d'Approximation et d'Optimisation, 19-21 September 2005, Faculté des Sciences Rabat, Morocco

Head of organizing committee JANO8, Huitièmes Journées d'Analyse Numérique et Optimisation, 14-16 december 2005, ENIM, Rabat, Morocco

Member of the scientific committee of « Convergences Mathématiques Franco-Maghrébines », 22-24 January 2007, Nice, France

Head of organizing committee of the first conference of the Applied Mathematics Moroccan society ENIM, Rabat February 6-8, 2008

Member of organizing committee and invited speaker of « Day of reflection on the teaching of mathematics in higher education » Meknès Morocco June 2009

Head of organizing committee of the second conference of the Applied Mathematics Moroccan society Faculty of Sciences, Rabat, 28 au 30 June 28-30, 2010

Head of organizing committee of the international conference of LEM²I, ENIM, Rabat, Morocco, Feb 2013

Invited speaker in « Triennale de l'ADEA » (Association for the Development of Education in Africa (ADEA))15-17 march 14-17, 2017 - Diamniadio (Dakar), Sénégal

Member of organizing committee of the fifth conference of the Applied Mathematics Moroccan society, My Ismail University Meknes, Morocco, march 17-19 2017

Member of organizing committee of the night Maghrebien symposium « Trends of applied mathematics », Tunisia- Algéria- Morocco, 23-28 February Tlemcen Algeria TAM-TAM 2019

SCIENTIFIC STAYS ABROAD

I have developed several research projects en applied mathematics between 1991 and 2017 within the french CNRS, Lyon, Marseille, Nice, Pau and Littoral Universities, within Spain university of Sevilla and I did several scientific stays

More,

I have been invited Professor

- Lyon1 University February -August 1996 (6 months)
- Lyon1 University March-Mai 1998 (2 months)
- Pau University Décembre 1999. (1 month)
- Ecole Centrale de Lyon June 2002 (1 month)
- Pau University septembre 2002. (1 month)
- Littoral University, Calais, Juin 2007, June 2009, June 2011 and June 2013 (4 months)
- Moncton University, Moncton , Canada, May 25-June 8, 2018, 15 days

RECENT RESEARCH TOPICS

1. Carcteristics methods of viscoelastic fluid flows (collaboration with Lyon1, France)
2. Flows with sliding on the walls, (collaboration with ECL Lyon, France)
3. Finite volumen methods for viscoelastic fluid flow, (collaboration with ECL, Lyon1 and Moncton university, Canada)
4. Finite volumen methods for sea intrusion models en costal aquifer, (collaboration with Pau and Calais universities, France)
5. Theoretical and numerical study of non linear parabolic equations in porous media from environnemental problems (Collaboration with Calais university), ECL and Moncton University.
6. Spline curves and applications (Collaboration with Granada University Spain)
7. Economic modelling (Collaboration with faculty of Economy)
8. Modelling of natural, industrial and financial Risk (Collaboration with Sapienza University and CNRI, Roma, Italy)

TEACHING EXPERIENCE

1986-1988 : Associated Assistant in France, Ecole Centrale de Lyon and Faculty of Sciences, Saint-Etienne,

- Mathematics course for engineers de première année de l'école,
- Numerical analysis course for bachelors
- Probability and statistics course for students of biology

1988 - 1994 : Assistant Professor at faculty of sciences El Jadida, Morocco
Analysis, Algebra Probability Statistics

1994-2000 : Professor at faculty of sciences El Jadida, Morocco
Analysis, Numerical Analysis Optimization and Scientific Computing

Since September 2000, Professor at ENSMR, Ecole Nationale Supérieure des Mines de Rabat, (Mines National High School of Rabat)

OTHER ACTIVITIES

- Head of Industrial engineering department at ENSMR since 2017
- Head of Cooperation and Cultural Activities at ENSMR between January 2007 and September 2014
- Representant of ENSMR in RMEI
- Responsible of the core curriculum at ENSMR since 2015
- Animation of popular lectures on the history and epistemology of sciences
- First President of Moroccan Applied Mathematical Society between 2005 and 2010 , General Secretary since 2012
- Member of executive committee of « Laboratoire International Euro-Maghrébin de Mathématiques et de ses Interactions » created in december 2009.
- Member of the Board of RMEI (Réseau Méditerranéen des Ecoles d'Ingénieurs) and member of his TARGET working group