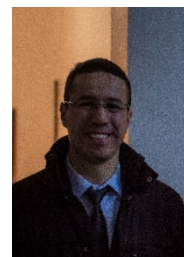


# Curriculum Vitae



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## Institution

Faculty of Technology,  
Tlemcen University- Tlemcen - Algeria  
And  
Laboratory of Mathematics, Analyse Non Linéaire & Mathématiques Appliquées,  
Tlemcen University - Tlemcen - Algeria

## Professional Activities

Since 2016      Lecturer and Research Assistant at Tlemcen university - Tlemcen - Algeria  
2015 - 2016      Temporary Lecturer and Research Assistant (**A.T.E.R**), Université Claude Bernard  
Lyon 1, France  
2012–2016      Member of the Mathematics Laboratory, Institut Camille Jordan (ICJ), Claude  
Bernard Lyon 1, and the Inria-team: Dracula "Multi-Scale Modelling of Cell  
Dynamics: Application to Hematopoiesis"

## Education

2016: Doctorate in mathematics «Contribution to the mathematical analysis of age and space  
structured partial differential equations describing a cell population dynamics model»  
Université Claude Bernard Lyon 1, France – Supervisor: Mostafa Adimy  
2012: Algerian scholarship training for a PHD in France  
2012: Master degree in Dynamical Systems of Population Dynamics and applications, at Abou Bekr  
Belkaid University, Tlemcen, Algeria  
2010: Licence degree in Mathematics (Partial Differential Equation) at Tlemcen University, Algeria  
2007: Bachelor in sciences

## Research interests

- Delayed differential equations and coupled differential-difference equations
- Reaction-diffusion equations and travelling wave fronts
- Asymptotic stability and Hopf bifurcation
- Transport PDE and modeling in population dynamics (Cell dynamics).
- Blood cell production models (hematopoiesis)

## Scientific projects

- Member of Inria project " Modelling Leukemia ", 2012-2015

- Member of Inria project Euromediterranean 3+3 " Mathematical Models and Methods in Cell Dynamics ", 2012-2015
- Member POLONIUM project " Applications of Reaction-Diffusion Equations in Cell " 2013-2015.
- Member of the national project (PRFU) " Modèles mathématiques des phénomènes des sciences de la vie ", 2018-2021.
- Member of the national project (PRFU) " Existence et stabilité des solutions de certaines classes d'équations et d'inclusions différentielles fractionnaires et ses applications ", 2021-2025.

### Scientific publications

The research work I have done since my thesis has been the subject of several publications in collaboration with:

- Mostafa Adimy, Inria, Université Lyon 1, Institut Camille Jordan, France
- Sabri Bensid, Université de Tlemcen, Algérie
- Soufiane Bentout, Ain Temouchent University, Algérie
- Anass Bouchnita, University of Texas at Austin, USA
- Jean-Philippe Berteau, Department of Physical Therapy, City University of New York, USA.
- Joydev Chattopadhyay, Indian Statistical Institute, India
- Salih Djilali, Hassiba Benbouali University of Chlef, Algérie
- Claudia Pio Ferreira, Sao Paulo State University, Brazil
- Mohammed Nor Frioui, L.AN.M.A, Tlemcen University, Algeria
- Mohamed Helal, University of Sidi-Bel-Abbes, Algeria
- Bogdan Kazmierczak, Institute of Fundamental Technological Research, Pologne
- Toshikazu Kuniya, Graduate School of System Informatics, Kobe University, Japon
- Abdelkader Lakmeche, University of Sidi-Bel-Abbes, Algeria
- Dibyendu Sekhar Mandal, Amity University Mumbai, India
- Laurent Pujou-Menjouet, Institut Camille Jordan, Université Claude Bernard Lyon 1, France
- Tarik Mohammed Touaoula, Laboratoire d'Analyse Nonlinéaire et Mathématiques Appliquées, Tlemcen University, Algeria
- Sudip Samanta, Bankura University, India.

### Publications

- M. Adimy, **A. Chekroun**, T. M. Touaoula « A delay differential-difference system of hematopoietic stem cell dynamics » C. R. Acad. Sci. Paris, Ser. I, 353, 303-307, 2015.
- M. Adimy, **A. Chekroun**, T. M. Touaoula « Age-structured and delay differential-difference model of hematopoietic stem cell dynamics » Discrete and Continuous Dynamical Systems - Series B. Volume 20, Number 9, 2765-2791, 2015.
- M. Adimy, **A. Chekroun**, T. M. Touaoula « Global asymptotic stability for an age-structured model of hematopoietic stem cell dynamics » Applicable Analysis, 96 (2016) 429-440.
- M. Adimy, **A. Chekroun**, B. Kaźmierczak « Traveling wave fronts in a coupled reaction diffusion and difference model of hematopoiesis » Journal of Differential Equation, 262 (2017) 4085-4128.
- M. Adimy, **A. Chekroun**, T. Kuniya « Delayed nonlocal reaction-diffusion model of hematopoietic stem cell dynamics with Dirichlet boundary condition » MMNP, 2017.
- **A. Chekroun**, T. Kuniya « Stability and existence results for a time-delayed nonlocal model of hematopoietic stem cells dynamics » Journal of Mathematical Analysis and Applications, 2018.
- **A. Chekroun**, L. Pujou-Menjouet, J.P. Berteau « A Novel Multiscale Mathematical Model for Building Bone Substitute Materials for Children » Materials, 2018.
- **A. Chekroun**, T. Kuniya « An infection age-space structured SIR epidemic model with Neumann boundary condition » Applicable Analysis, 2018.
- **A. Chekroun**, N. Frioui, T. Kuniya, T. M. Touaoula « Global stability of an age-structured epidemic model with general Lyapunov functional » Mathematical biosciences and engineering, 2019.

- M. Adimy, **A. Chekroun**, T. Kuniya « Coupled reaction-diffusion and difference system of cell cycle dynamics for hematopoiesis process with Dirichlet boundary conditions» *Journal of Mathematical Analysis and Applications*, 2019.
- S. Bensid, **A. Chekroun**, On the multiplicity of solutions of a simplified tumor growth model with a free boundary » *Mathematical Methods in the Applied Sciences*, 2019.
- **A. Chekroun**, T. Kuniya « An infection age-space-structured SIR epidemic model with Dirichlet boundary condition » *MMNP*, 2019.
- **A. Chekroun**, Existence and asymptotics of traveling wave fronts for a coupled nonlocal diffusion and difference system with delay, *Electronic Journal of Qualitative Theory of Differential Equations*, 2019.
- M. Adimy, **A. Chekroun**, C.P. Ferreira ,Global dynamics of a differential-difference system: a case of Kermack-McKendrick SIR model with age-structured protection phase, *Mathematical biosciences and engineering*, 2019.
- S. Bentout, **A. Chekroun**, T. Kuniya, Parameter estimation and prediction for coronavirus disease outbreak 2019 (COVID-19) in Algeria, *AIMS Public Health*, 2020.
- **A. Chekroun**, M. N. Frioui, T. Kuniya, T. M. Touaoula « Mathematical analysis of an age structured Heroin-cocain epidemic model » *Discrete and Continuous Dynamical Systems - Series B*, 2020.
- **A. Chekroun**, T. Kuniya, Global threshold dynamics of an infection age-structured SIR epidemic model with diffusion under the Dirichlet boundary condition, *Journal of Differential Equations*, 2020.
- K. Nawal, M. Helal, **A. Chekroun**, A. Lakmeche Mathematical analysis and global dynamics for a time-delayed Chronic Myeloid Leukemia model with treatment, *Mathematical Modelling of Natural Phenomena*, 2020.
- S. Bentout, S. Djilali, **A. Chekroun**, Global threshold dynamics of an age structured alcoholism model, *International Journal of Biomathematics*, 2021.
- D. Sekhar Mandal, **A. Chekroun**, S. Samanta, J. Chattopadhyay , A mathematical study of a crop-pest-natural enemy model with Z-type control, *Mathematics and Computers in Simulation*, 2021.
- A. Bouchnita, **A. Chekroun**, A. Jebrane, Mathematical Modeling Predicts That Strict Social Distancing Measures Would Be Needed to Shorten the Duration of Waves of COVID-19 Infections in Vietnam, *Frontiers in Public Health* , 2021.
- M. Adimy, **A. Chekroun**, T. Kuniya, Traveling waves of a differential-difference diffusive Kermack-McKendrick epidemic model with age-structured protection phase, *Journal of Mathematical Analysis and Applications*, 2021.
- A. Bouchnita, **A. Chekroun**, A. Jebrane, Mathematical Modeling Predicts That Strict Social Distancing Measures Would Be Needed to Shorten the Duration of Waves of COVID-19 Infections in Vietnam, **Frontiers in Public Health**, 2021.
- D. Mandal, **A. Chekroun**, S. Samanta, J. Chattopadhyay, A mathematical study of a crop-pest natural enemy model with Z-type control, **Mathematics and Computers in Simulation**, 2021.
- **A. Chekroun**, L. Pujo-Menjouet, S. Falcoz, K. Tsuen, K. Tsueng , J.P. Berteau, Theoretical Evidence of Osteoblast Self-Inhibition after Activation of the Genetic Regulatory Network Controlling Mineralization, **Journal of Theoretical Biology**, 2022.
- M. Adimy, A. Chekroun, T. Kuniya, Global asymptotic stability for a distributed delay differential–difference system of a Kermack–McKendrick SIR model, **Applicable Analysis**, 2022.
- M. Adimy, A. Chekroun, B. Kaźmierczak, Traveling waves for reaction-diffusion PDE coupled to difference equation with nonlocal dispersal term and time delay, **Mathematical Modelling of Natural Phenomena**, 2022.
- M. Adimy, A. Chekroun, A. EL ABDLLAOUI, A. MARZORATI, Discrete maturity and delay differential-difference model of hematopoietic cell dynamics with applications to acute myelogenous leukemia, **Journal of Biological Systems**, 2022.

- D. Mandal, S. Samanta, R. Parshad, A. Chekroun, M. Helal, J. Chattopadhyay, Study of a Crop-pest-natural Enemy Model with Z-type Control - an Approach to Pest Management, **International Journal of Biomathematics**, 2022

### Participation in Conferences, Workshops and Schools

- February 8-11 2022 DSABNS 2022 Virtual: « Differential difference Kermack-Mckendrick epidemic model with age-structured protection phase » Spain / **Oral presentation** (Virtual).
- June 13-17 2021 Virtual SMB annual meeting: « Traveling waves of a differential-difference diffusive Kermack-McKendrick epidemic model with age-structured protection phase » California / **Oral presentation** (Virtual).
- Novembre 18-22 2019 Conference of the Euro-Maghreb International Research: « Coupled reaction-diffusion and difference system with Dirichlet boundary conditions for hematopoiesis process phase » Madrid, Espagne / **Oral presentation**.
- Juillet 08-12 2019 DMEE Summer School: « Global dynamics of a differential-difference system: a case of Kermack-McKendrick SIR model with age-structured protection phase » Paris, France / **Oral presentation**.
- Février 23-27 2019 Congrès TAM-TAM: « Coupled reaction-diffusion and difference system of 2019 cell cycle dynamics for hematopoiesis process with Dirichlet BC » Tlemcen, Algérie / **Oral presentation**.
- Février 07-09 2018 Workshop Dynamical Systems Applied to Biology and Natural Sciences: « Delayed nonlocal reaction-diffusion model for hematopoietic stem cell Dynamics – Dirichlet BC » Torino, Italy / **Oral presentation**.
- Mai 01-04 2017 Deuxième Workshop Algéro-français EDP ET Applications: « Contribution to the mathematical analysis of age and space structured partial differential equations describing a cell population dynamics model » Tlemcen, Algérie / **Oral presentation**.
- Novembre 08-09 2016 Congrès des mathématiciens algériens « CMA2016 » Batna, Algérie / **Oral presentation**.
- Juin 01-03 2016 Perpignan Conference: « EMERGING TRENDS IN APPLIED MATHEMATICS AND MECHANICS » Perpignan, France / **Oral presentation**.
- Mai 23-24 2016 SIMBAD (Séminaire Itinérant de Mathématiques, Biologie et Applications des Doctorants) Paris (Pierre et Marie Curie), France / **Oral presentation**.
- Juillet 06-10 2015 Equadiff 2015: « Traveling wave fronts in coupled delayed reaction diffusion equation and difference equation » Lyon, France / **Presentation of a poster**. (second best poster).
- Juillet 01-04 2015 10th Colloquium: « Qualitative Theory of Differential Equations » Szeged, Hongrie / **Oral presentation**.
- Séptembre 14-16 2014 Workshop: « Workshop on mathematics for life sciences » Sidi Bel Abbes, Algérie / **Oral presentation**.
- Juin 16-19 Poitiers conference: « Conférence Franco-Algérienne EDP et applications »

- 2014 Poitiers, France / **Oral presentation.**
- Janvier 27-28 2014 Workshop under EuroMediterranean program : « Modèles et Méthodes Mathématiques en Dynamique Cellulaire » Marrakech, Maroc / **Oral presentation.**
- Décembre 03-05 2013 UABB Tlemcen university school researchers: « Modélisation des Systèmes Complexes » Tlemcen, Algérie / **Oral presentation.**
- Juin 10-13, 2013 USTHB University: « Conférence sur les Systèmes Dynamiques Complexes » Alger, Algérie / **Oral presentation.**
- Mai 27-31 2013 ESMTB-EMS Summer school : « Multiscale modeling in the life sciences » Lyon, France / **Presentation of a poster.**

### **Scientific research visit**

- November 17-21 2014 Institute of fundamental technological research (Warsaw) Polish academy of sciences, France-Polonium project: « Applications of reaction-diffusion equations in biology and medicine » Warsaw, Poland. Oral presentation.
- October 26-31 2015 Institute of fundamental technological research (Warsaw) Polish academy of sciences, France-Polonium project: Warsaw, Poland.
- December 2021 Institut Camille Jordan: Audin chair from Insmi 2020

### **Distinction**

- First winner of the Audin chair from CNRS 2020, I was welcomed for 1 month at the Camille Jordan Institute for work in collaboration with Laurent Pujon-Menjouet, lecturer at Claude Bernard University.
- Second best poster presentation: Equadiff 2015 (July 06-10) “Traveling wave fronts in coupled delayed reaction diffusion equation and difference equation” Lyon, France.
- Obtaining an excellence scholarship (PROFAS A) from the Algerian ministry for doctoral training in France 2012-2016).

**Academic services: Review for scientific journals** Chapter Springer, Journal of Dynamics and Differential Equations, International Journal of Biomathematics, Mathematical Modelling of Natural Phenomena.

### **Teaching**

- 2015-2016 Lyon 1 university, Analysis L1, Portail Math TD 36h.  
Lyon 1 university, Analysis L1, Portail Info TD 36h.  
Lyon 1 university, Analysis L1, Portail Cours préparatoires Khôlle 24h.
- 2016-2022 Tlemcen university, Analysis L2, Portail Civil engineering Courses and TD.  
Tlemcen university, Prob-stat L2, Portail Civil engineering Courses and TD.  
Tlemcen university, Complex analysis L2, Portail Civil engineering Courses and TD.

### **Teaching production**

- Handout 1: Statistiques descriptives et exercices (Rappels de cours et exercices corrigés sur la statistique descriptive), 2017.
- Handout 2: Exercices corrigés pour l'analyse complexe, 2020.
- Book: A. Chekroun, « Statistiques descriptives et exercices : Rappels de cours et exercices corrigés sur la statistique descriptive » Generis Publishing, 2021.

## **Supervision and juries**

- 4 **Master's theses** at the University of Tlemcen.
- 1 **PhD** (in progress), **1 doctoral co-supervision** (in progress)
- **Examination**: 4 **Master's theses** at the University of Tlemcen, 2 doctoral jury.
- **Presidency**: 6 **Master's theses** in the Civil Engineering department.

## **Skills**

Data processing: office, Maple, C++, Matlab, Latex and other tools.