Curriculum Vitae

Full name: Abdennasser CHEKROUN
Birth date: March, 30 of 1990 in Tlemcen, Algeria
Phone number: +213554709765
Website: http://math.univ-lyon1.fr/~chekroun/
E-mails: abdennasser.chekroun@gmail.com
chekroun@math.univ-lyon1.fr

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
- Charlotte Dugourd-Camus, Inria, Université Lyon 1, Institut Camille Jordan, France.
- Abderrahim El Abdllaoui, University of Rabat. Morocco.
- 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
- Mattia Sensi, Politecnico di Torino, Italy.
- Laurent Pujo-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.
- Simon Girel, Université Cote d'azur, Nice, France.

Publications

- M. Adimy, **A. Chekroun**, T. M. Touaoula « A delay defferential-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. Pujo-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 ofhematopoiec cell dynamics with applications to acute myelogenous leukemia, **Journal of Biological Systems**, 2022.

- A.Chekroun, M. Helal, D. Mandal, A. Lakmeche, M. El Arbi, A Mathematical Study of a Crop-Pest Model With the Caputo Fractional-Order Derivative, **Nonlinear Studies**, 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**, 2023.

- M.Adimy, **A. Chekroun**, T. Kuniya, H. Meghilli, Global stability of a SEIR discrete delay differential-difference system with protection phase, **Mathematical Methods in the Applied Sciences**, 2023.

- Elise BERTHEL, Laurent PUJO, Eymeric Le Reun, Laurène Sonzogni, Joëlle Al-Choboq, **Abdennasser Chekroun**, Adeline Granzotto, Clement Devic, Mélanie L Ferlazzo, Sandrine PEREIRA, Michel Bourguignon, Nicolas Foray, Toward an early diagnosis for Alzheimer's disease based on the perinuclear localization of the ATM protein, **Cells**, 2023.

- M.Adimy, **A. Chekroun**, C. Dugourd-Camus, H. Meghilli, Global Asymptotic Stability of a Hybrid Differential–Difference System Describing SIR and SIS Epidemic Models with a Protection Phase and a Nonlinear Force of Infection, **Qualitative Theory of Dynamical Systems**, 2023.

- A. Sha, D.S. Mandal, **A. Chekroun**, Impact of Prey Refuge in a Diffusive Prey Predator Model with Prey Harvesting, Mutually Interfering Predator and Additional Food for Predator, **International Journal of Applied and Computational Mathematics**, 2023.

- M. Adimy, **A. Chekroun**, L. Pujo-Menjouet, M. Sensi, A multigroup approach to delayed prion production, **Discrete and Continuous Dynamical Systems – B**, 2023.

-M. Adimy, **A. Chekroun**, G. Ranson, L. Pujo-Menjouet, Stability Analysis of a New Differential-Difference Model Applied to the Pre-exposure Prophylaxis (PrEP) Effect on the Spread of HIV, **Qualitative Theory of Dynamical Systems**, 2024.

-A. Salhi, **A. Chekroun**, S. Girel, A SEIR epidemic model with quarantine and distributed delay: revealing the occurrence of recurrent epidemic waves, **Nonlinear Studies**, 2024**.**

-M.Adimy, **A. Chekroun**, C. Dugourd-Camus, Is it more effective to protect susceptible individuals or isolate infected people to prevent the spread of a SIR-type epidemic ? **Discrete and Continuous Dynamical Systems – B**, 2024.

-H. Meghilli, A. Chekroun, M.Adimy, Traveling Waves in a Hybrid Reaction-Diffusion-Difference SEIR Epidemic Model With Nonlocal Transmission and Protection Phase With Delay, **Mathematical Methods in the Applied Sciences**, 2025.

Participation in Conferences, Workshops and Schools

November 27-28 JSB-2024: « Existence of a traveling wave solution in a Kermack-MacKendrick

2024 Model with protection phase and diffusion » Sidi Bel Abbes, Algeria / **Invited speaker.**

October 02-06 2023 GE2MI -2023: « Reaction-diffusion PDE coupled to integral equation with nonlocal dispersal term and time delay» Levico, Italy / **Invited speaker.**

June 25-27 2023 IBMD-2023: « On some infection age-space structured SIR epidemic models with Neumann/Dirichlet boundary conditions » Sidi Bel Abbes, Algeria / **Invited speaker.**

June 02 2023 Bonitos: « Predicting Bone Protein Expression: A Stiffness-Dependent Gene Regulation Model » Lyon, France / **Invited speaker.**

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 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 2014	Poitiers conference: « Conférence Franco-Algérienne EDP et applications » 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 prsentation**.
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 medicin » 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

- Awarded the IMU–Simons Research Fellowship, 2024
- 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 Pujo-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, Nonlinear Analysis: Real World Applications, Qualitative theory of dynamical systems.

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 Cursus préparatoires Khôlle 24h.
2016-2025 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.
2024-2025 Tlemcen university, Algebra L1, Portail Civil engineering.

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

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

Skills

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