Jean-Daniel DJIDA

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Citizen of Cameroon, born on Jan. 12, 1988

Summary and Research interests

My research interests are **Partial Differential Equations and Harmonic Analysis**. Integro-differential operators and its applications, regularity theory, Harnack inequalities, free boundary problems, Optimal control theory and its applications.

Education

Ph.D student, University of Santiago de Compostela, Spain:
Some nonlocal operators in porous medium equation : the extension problem and regularity theory. (on going)

MSc in Mathematics, African Institute of Mathematical Sciences (AIMS), Cameroon:
A one year master program with courses on pure and applied mathematics, physics, computational science: *Fractional Calculus and quantum mechanics* (2014-2015)

MSc in Theoretical Physics, University of Ngaoundéré, Cameroon:
Master thesis: *Simulation of Quantum Images Recognition* (2010-2013)

Publications

[1] **J-D. Djida and G. M. Mophou**, *Optimal control of diffusion equation with missing data governed by Dirichlet fractional Laplacian.*, https://arxiv.org/pdf/1809.00917.pdf (2018)

[2] **J-D. Djida.**, *Wellposedness and boundary regularity for nonlocal parabolic problem with fractional derivative*, (submitted), (2018).

[3] **J-D. Djida, Arran Fernandez and I. Area.**, *Well-posedness results for fractional semi-linear wave equations*, (submitted), (2018).

[4] **J-D. Djida, I. Area and J. J. Nieto**, *A De Giorgi-Nash type theorem for nonlocal time porous medium equations*, (submitted), (2018).

[5] **J-D. Djida, J. J. Nieto and I. Area**, *Nonlocal Time-Porous Medium Equation: Weak Solutions and Finite Speed of Propagation.*,Discrete Continuous Dyn. Syst. Ser. B, **22**:1, 2019.

[6] **J-D Djida and Arran Fernandez**, *Interior Regularity Estimates for a Degenerate Elliptic Equation with Mixed Boundary Conditions.*, Axioms, **7**(3), 65, 1–16, (2018).

[7] **J-D. Djida, J. J. Nieto, I. Area**, *Nonlocal time porous medium equation with fractional time derivative*, Discrete Continuous Dyn. Syst. Ser. S, in press, 2018.

[8] **J-D. Djida, G.M. Mophou, and I. Area**, *Optimal control of diffusion equation with fractional-time derivative with nonlocal and nonsingular Mittag-Leffler kernel.*, J Optim Theory Appl, 1–18, (2018).

[9] **J-D. Djida, J. J. Nieto, I. Area**, *Parabolic problem with fractional time derivative with nonlocal and nonsingular Mittag-Leffler kernel*, Discrete Continuous Dyn. Syst. Ser. S, in press, (2018).

[10] **P. A. Feulefack, J-D. Djida, Abdon Atangana**, *A New Model of Groundwater Flow Within an Unconfined Aquifer: Application of Caputo-Fabrizio Fractional Derivative*, Discrete Continuous Dyn. Syst. Ser. B **22**:1, (2019).

[11] **J-D. Djida, Abdon Atangana**, *More generalized groundwater model with space-time Caputo Fabrizio fractional differentiation*, Numerical Methods for Partial Differential Equations DOI 10.1002/num, (2017).

[12] **S. N. Kameni, J-D. Djida, Abdon Atangana**, *Modelling the movement of groundwater pollution with variable order derivative*, J. Nonlinear Sci. Appl., 10 (2017), 5422–5432

[13] **J-D. Djida, Abdon Atangana, and , I. Area**. *Numerical computation of a fractional derivative with non-local and non-singular kernel*, J Math. Model. Nat. Phenom. Volume 12, Number 3, (2017).

[14] **J-D. Djida, Abdon Atangana, I.Area**, *New numerical scheme of Atangana-Baleanu fractional integral: an application to groundwater flow within leaky aquifer*, http://arxiv.org/abs/1610.08681v1 (2016).

[15] **I. Area, J-D. Djida, J.Losada, and Juan J. Nieto**, *On Fractional Gram Orthogonal Polynomials*, Discrete Dynamics in Nature and Society (2015).

[16] **G. Rigatos, E. Rigatou and J-D. Djida**, *Change detection in the dynamics of an intracellular protein synthesis model using nonlinear Kalman filtering*, Journal of Biological Physics-Springer Netherlands (2015).

[17] **G. Rigatos, E. Rigatou and J-D. Djida**, *Detection of parametric changes in the Peyrard-Bishop-Dauxois model of DNA using nonlinear Kalman filtering*, Journal of Biological Physics-Springer Netherlands (2014). [doi: 10.1007/s10867-014-9366-8]

Workshops and Conferences

Department of mathematics (Analysis) Seminar,– University of Santiago de Compostela, Spain:
Regularity of some fractional nonlocal parabolic equations (Speaker) (Mars, 2018)

Seminar at the Departmento de Matemática Aplicade II,– Universidade de Vigo, Spain:
Regularity for porous medium equation with fractional time derivative (Speaker) (February 21, 2018)

Aims-UB International Conference on Mathematics and its applications,– Buea, Cameroon:
Optimal control of diffusion equation with fractional derivative with nonlocal and nonsingular Mittag-Leffler kernel (Speaker) (December, 2017)

Aims-Cameroon Tuesdays Seminar,– Limbé, Cameroon:
Optimal control of diffusion equation with fractional nonlocal operator (Speaker) (November, 2017)

Advanced School/Workshop on Nonlocal Partial Differential Equations and Applications to Geometry, Physics and Probability, – Trieste, Italy:
(Participant) (May,2017)

School on "Partial Differential Equations & Probability",– Mbour, Senegal:
Hölder regularity of parabolic problem with fractional time derivative with non-local and Mittag-Leffler nonsingular kernel (Speaker) (November, 2016)

Aims-Cameroon Tuesdays Seminar,– Limbé, Cameroon:
Control of some nonlinear Systems (Speaker) (October, 2015)

International Conference of Physics, 3^{rd} Edition, Yaoundé, Cameroon:
High level Physics and appropriate solutions to real life problems in developing countries (Participant) (2013)

Work experience

Teaching Assistant at African Institute of Mathematical Sciences (AIMS), Cameroon:
Organizing the academic program and to provide individual support in tutorials … (August 2015–on going)

Teacher, Sabongari secondary high school, Ngaoundéré, Cameroon:
Five months of full time teaching of mathematics. (Sept. 2012-Jan. 2013)

Teacher in Gbaya language and culture, See Gbaya cultural centre, Ngaoundéré, Cameroon:
Teaching of my mother tongue *Gbaya* in two-month full time summer courses. (2010-2013)

Teaching and Tutoring qualifications

Mathematics: Differential Calculus, Partial Differential Equations, Measure Theory & Probability, Real analysis, Mathematical analysis and modelling, Optimal Control & Optimal Transport.

Languages

Gbaya, French: Native **English:** Fluent **Fufulde, Dii:** Good

Relevant Skills

- Excellent mathematical and physical problem solving skills
- Excellent communication and presentation skills
- Ability to work well in a team

Computer Skills

Science: Python, SAGE, Maxima, R, Mathematica

OS and office: Linux, Windows, Microsoft Office, OpenOffice, LaTeX (including Beamer)

References

- **Juan José Nieto** (Ph.D Avisor):
  Departamento de Análise Matemática,
  Universidade de Santiago de Compostela,
  15782 Santiago de Compostela,
  Spain
  Email: **juanjose.nieto.roig@usc.es**

- **Professor Iván Area** (Ph.D Co-Avisor):
  Departamento de Matemática Aplicada II
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  36310-Vigo
  Spain
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- **Professor Gisèle Mophou**:
  German Research Chair at the African Institute for Mathematical Sciences (AIMS-Cameroon),
  Cristal Garden,
  P.O.Box: 608. Limbe,
  Senegal
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- **Professor Mouhamet Moustapha Fall**:
  German Research Chair at the African Institute for Mathematical Sciences (AIMS) of Senegal,
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  Senegal
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