

IBRAHIMA N'DOYE

Contact Information

King Abdullah University of Science and Technology
Computer, Electrical and Mathematical Sciences and Engineering
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RESEARCH INTERESTS

Fractional calculus, estimation, stability analysis, observers design, \mathcal{H}_∞ observer design, synchronization, Lipschitz nonlinear systems, control systems engineering, model reduction, controller design.

Applications: Process control, Renewable energy, Biological systems.

CURRENT POSITION

Postdoctoral Researcher: July 2014

King Abdullah University of Science and Technology (KAUST)
Computer, Electrical and Mathematical Sciences and Engineering Division (CEMSE)
Estimation, Modeling and ANalysis group (EMAN)

RESEARCH POSITIONS

Postdoctoral Researcher: April 2012 – June 2014

University of Luxembourg, Luxembourg.
Research Unit in Engineering Sciences (RUES), Automation Research Group
Teaching activities: Mathematics and control engineering

Temporary Assistant Professor and Researcher: September 2011 – March 2012

University Institute of Technology (IUT) in Longwy, Nancy University, France
Teaching activities: Mathematics, electrotechnics, automatic control, informatics

Temporary Assistant Professor and Researcher: September 2010 – August 2011

Engineering College for Science and Technology (ESSTIN), Nancy University, France
Teaching activities: Statistics, linear dynamics systems, industrial informatics and programming tools

ACADEMIC EXPERIENCE

Teaching Assistant: October 2009 – August 2010

University Institute of Technology (IUT) in Longwy, Nancy University, France
Teaching activities: Mathematics, Automatic control, Informatics, Electrotechnics

Research Assistant: September 2007 – February 2011

University Institute of Technology (IUT) in Longwy, Nancy University, France
Ph.D School: Informatics, Automatic control, Electronic and Mathematics (IAEM)
Laboratory: Research Center for Automatic Control (CRAN), System Control and Observation

EDUCATIONAL QUALIFICATIONS

Ph.D. in Automatic Control: October 2007 – February 2011 with Highest Honors

Nancy University, (CRAN), France and Hassan II Ain Chock University, Casablanca, Morocco
Ph.D. School: Informatics, Automatic Control, Electronic and Mathematics (IAEM)
Title: **Stabilization of Fractional-Order Systems using a Generalized Gronwall-Bellman**

Lemma

Supervisors: Prof. Michel Zasadzinski (CRAN) and Prof. Nour-Eddine Radhy (LP2MAT)

Diploma of Advanced Studies (D.E.A): Physics, (First division)

September 2004 – 2006, University Hassan II Ain Chock, Casablanca, Morocco.

Project: Regulation Based on Fuzzy Logic: Application to Control Agricultural Greenhouse Temperature.

Master degree in Electrical Engineering: September 2002 – 2004

University Hassan II Ain Chock, Casablanca, Morocco

Project: Design and Analysis of a General Low Voltage

Higher Secondary: September 2000 – 2002

University Hassan II Ain Chock, Casablanca, Morocco

Disciplines: Physics, Chemistry, Mathematics

Baccalaureate High School: (First division) October 1999 – 2000

Lamine Gueye (ex Van Vollenhoven), Dakar, Senegal

Specialization: Experimental Sciences

REFERENCES

JOURNALS

- [J1] I. N'Doye and T. Laleg-Kirati, "Robust fractional-order proportional-integral observer for synchronization of chaotic fractional-order systems", *accepted for publication IEEE CCA Automatica Sinica*, 2017.
- [J2] I. N'Doye, T. Laleg-Kirati, M. Darouach and H. Voos, "H-infinity adaptive observer design for nonlinear fractional-order systems", *International Journal of Adaptive Control and Signal Processing* 2016, DOI: 10.1002/acs.2699.
- [J3] I. N'Doye, M. Darouach, H. Voos and M; Zasadzinski, "On the robustness of linear and nonlinear fractional-order systems with nonlinear uncertain parameters", *Journal of Mathematical Control and Information*. 10.1093/imamci/dnv022, 2015.
- [J4] I. N'Doye, M. Darouach, M. Zasadzinski and N. E. Radhy, "Robust stabilization of uncertain descriptor fractional-order systems". *Automatica*, Vol. 49, pp. 1907-1913, 2013.
- [J5] I. N'Doye, H. Voos, M. Darouach and J. G. Schneider, "Static output feedback H-infinity control for a fractional-order glucose-insulin system", *International Journal of Control, Automation, and Systems*. Vol. 13, No. 4, 2015.
- [J6] I. N'Doye, M. Zasadzinski, M. Darouach, N. E. Radhy and A. Bouaziz, "Exponential stabilization of a class of nonlinear systems: A generalized Gronwall-Bellman lemma approach". *Nonlinear Analysis: Theory, Methods & Applications*, Vol. 74, pp. 7333-7341, 2011.
- [J7] I. N'Doye, H. Voos and M. Darouach, "Observer-based approach for fractional-order chaotic synchronization and secure communication". *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, Vol. 3, pp. 442-450, 2013.
- [J8] I. N'Doye, M. Darouach, H. Voos and M. Zasadzinski, "Design of unknown input fractional-order observers for fractional-order systems". *International Journal of Applied Mathematics and Computer Science (AMCS)*, Vol. 23, pp. 491-500, 2013.
- [J9] N. Rouis, I. N'Doye and T. Laleg-Kirati, "Modulating function based intelligent LQR-PID controller for trajectory tracking of 2-DoF helicopter", under preparation.
- [J10] I. N'Doye, Adil Aloufi, Sharefa Asiri and T. Laleg-Kirati, "Modulating function based intelligent PID control of a laser beam pointing and stabilization platform: experimental results", under review.
- [J11] I. N'Doye and T. Laleg-Kirati, "Reinforcement learning for robust optimal control of a laser beam pointing", under preparation.
- [J12] I. N'Doye and T. Laleg-Kirati, "Reinforcement learning for H-infinity optimal pointing control of free space optical communication", under preparation.
- [J13] I. N'Doye and T. Laleg-Kirati, "Adaptive optimal control for nano-positioning system based on policy iteration", under preparation.

- [J14] I. N' Doye *et al.*, "Performance and sensitivity analysis of fractional-order PID controllers : Application to the laser beam pointing". under preparation.

BOOK CHAPTER

- [BC1] M. Darouach, I. N' Doye, M. Alma, H. S. Ali, "Optimal Filtering for Discrete-time Differential Algebraic Systems", *Control Theory: Perspectives, Applications and Developments*, Systems Science Serie, Nova Science Publishers, 2015. https://www.novapublishers.com/catalog/product_info.php?products_id=54687&osCsid=
- [BC2] Z. Belkhatir, I. N' Doye, T. Laleg-Kirati "Estimation Methods for Fractional Order Systems", *Linear and Nonlinear Fractional-Order Systems: Analysis and Applications*, Elsevier, 2018, to be published.

CONFERENCES PUBLICATIONS

- [C1] N. Rouis, I. N' Doye and T. Laleg-Kirati, "Intelligent LQR based PID controller for trajectory tracking of 2-DoF helicopter: comparison and experimental results", under review.
- [C2] S. Elmetennani, I. N' Doye, K. N. Salama and T. Laleg-Kirati, "Performance analysis of fractional-order PID controllers for a parabolic distributed solar collector", *IEEE Africon, South Africa*, 2017.
- [C3] A. Al-Alwan, X. Guo, I. N' Doye and T. M. Laleg-Kirati, "Laser beam pointing and stabilization by fractional-order PID control: tuning rule and experiments", *IEEE Conference on Control Technology and Applications (CCTA), Hawaii, USA*, 2017.
- [C4] I. N' Doye and T. Laleg-Kirati, "Model reduction of nonlinear systems subject to input disturbances", *IEEE American Control Conference, ACC'17, Seattle, USA*, 2017.
- [C5] F. Eleiwi, I. N' Doye and T. Laleg-Kirati, "Feedback stabilization and reference output control tracking for direct-contact membrane distillation process", *IEEE Multi-Conference on Systems and Control, MSC'15*, 2015.
- [C6] I. N' Doye and T. Laleg-Kirati, "Fractional-order adaptive fault estimation for a class of nonlinear fractional-order systems", *IEEE American Control Conference, ACC'15, Chicago, USA*, 2015.
- [C7] I. N' Doye and T. Laleg-Kirati, "Chaotic convective behavior and stability analysis of a fractional viscoelastic fluids model in porous media", *IEEE International Conference on Control, Engineering and Information, Technology, CEIT'15*, 2015.
- [C8] I. N' Doye, H. Voos, T. Laleg-Kirati, and M. Darouach, "H-infinity adaptive observer design and parameter identification for a class of nonlinear fractional-order systems", *53rd IEEE Conference Decision and Control, CDC'14, Los Angeles, California, USA*, 2014.
- [C9] L. Pan, H. Voos, I. N' Doye and M. Darouach, "Exponential synchronization for a new class of complex dynamical network with periodically intermittent pinning control and hybrid time-varying delay ", *IEEE Multi-Conference on Systems and Control, MSC 2014, Nice, France*.
- [C10] L. Pan, H. Voos, I. N' Doye and M. Darouach, "Uncertainty quantification of group synchronization and control of a class of adaptive complex dynamical network with brownian motion and time-varying delay ", *IEEE Chinese Control Conference, CCC 2014*.
- [C11] I. N' Doye, H. Voos and M. Darouach, "Chaos in a fractional-order cancer system", *13th IEEE European Control Conference (ECC)*, Strasbourg, France, 2014.
- [C12] L. Pan, H. Voos, I. N' Doye and M. Darouach, "Group synchronization and control of a class of new adaptive complex network with brownian motion and time-varying delay", *13th IEEE European Control Conference (ECC)*, Strasbourg, France, 2014.
- [C13] I. N' Doye, M. Darouach and H. Voos, "Observer-based approach for fractional-order chaotic synchronization and communication", *12th IEEE European Control Conference (ECC)*, Zurich, Switzerland, 2013.
- [C14] I. N' Doye, H. Voos, M. Darouach, J. G. Schneider and N. Knauf, "H-infinity static output feedback control for a fractional-order glucose-insulin system", *6th Workshop on Fractional Differentiation and Its Applications. Part of 2013 IFAC Joint Conference SSSC, TDS and FDA*, Grenoble, pp. 261-266, 2013.

- [C15] I. N'Doye, H. Voos, M. Darouach, J. G. Schneider and N. Knauf, "An unknown input fractional-order observer design for fractional-order glucose-insulin system", *IEEE EMBS Conference on Biomedical Engineering and Sciences*, Langkawi, Malaysia, 2012.
- [C16] I. N'Doye, H. Voos, M. Darouach, J. G. Schneider and N. Knauf, "Static output feedback stabilization of nonlinear fractional-order glucose-insulin system", *IEEE EMBS Conference on Biomedical Engineering and Sciences*, Langkawi, Malaysia, 2012.
- [C17] I. N'Doye, M. Darouach and M. Zasadzinski, "Fractional-order observers design for fractional-order systems with unknown inputs", *2nd International Conference on Systems and Control, ICSC'12*, Marrakech, Morocco, pp. 75-80, 2012.
- [C18] I. N'Doye, M. Darouach, M. Zasadzinski, and N. E. Radhy, "Observers for singular fractional-order systems", *50th IEEE Conference Decision and Control, CDC'11*, Orlando, USA, 2011.
- [C19] I. N'Doye, M. Zasadzinski, M. Darouach and N. E. Radhy "Regularization and robust stabilization of singular uncertain fractional-order systems", *18th IFAC World Congress, Invited session*, Milano, Italia, 2011.
- [C20] I. N'Doye, M. Zasadzinski, M. Darouach and N. E. Radhy "Regularization and stabilization of singular fractional-order systems", *4th IFAC Workshop on Fractional Differentiation and Its Applications, FDA'10*, Badajoz, Spain, 2010.
- [C21] I. N'Doye, M. Zasadzinski, M. Darouach and N. E. Radhy "Robust stabilization of linear and nonlinear fractional-order systems with nonlinear uncertain parameters ", *49th IEEE Conference Decision and Control, CDC'10*, Atlanta, USA, 2010.
- [C22] I. N'Doye, M. Zasadzinski, N. E. Radhy and M. Darouach, "Stabilization of singular fractional-order systems: An LMI approach", *18th IEEE Mediterranean Conference on Control and Automation, MED'10*, Marrakech, Morocco, 2010.
- [C23] I. N'Doye, M. Zasadzinski, N. E. Radhy, and M. Darouach "Stabilisation des systèmes bilinéaires fractionnaires", *Conférence Internationale Francophone d'Automatique, CIFA'10*, Nancy, France, 2010.
- [C24] I. N'Doye, M. Zasadzinski, M. Darouach and N. E. Radhy, "Observer-based control for fractional-order continuous-time systems", *48th IEEE Conference Decision and Control, CDC'09 held jointly with 2009 28th Chinese Control Conference*, Shanghai, P.R. China, 2009.
- [C25] I. N'Doye, M. Zasadzinski, N. E. Radhy and M. Darouach, "Exponential observer-based stabilization for a class of affine nonlinear systems", *IFAC-IEEE Conference Methods and Models in Automation and Robotics, MMAR'09*, Miedzydroje, Poland, 2009.
- [C26] I. N'Doye, M. Zasadzinski, N. E. Radhy and A. Bouaziz, "Robust controller design for linear fractional-order systems with nonlinear time-varying model uncertainties", *17th IEEE Mediterranean Conference on Control and Automation, MED'09*, Thessaloniki, Greece, 2009.
- [C27] I. N'Doye, M. Zasadzinski, M. Darouach and N. E. Radhy, "Stabilization of a class of nonlinear affine fractional-order systems", *IFAC-IEEE Conference Methods and Models in Automation and Robotics, MMAR'09*, Miedzydroje, Poland, 2009.
- [C28] I. N'Doye, M. Zasadzinski, N. E. Radhy and A. Bouaziz, "Stabilization of a class of nonlinear affine fractional-order systems using generalizations of Bellman-Gronwall lemma", *17th IEEE Mediterranean Conference on Control and Automation, MED'09*, Thessaloniki, Greece, 2009.

BOOK

- [B1] I. N'Doye, "Stabilisation et observation des systèmes fractionnaires : théorie et applications", *publié par Editions Universitaires Européennes (13-05-2011) - ISBN-13 : 978-613-1-57590-7*, <https://www.editions-ue.com/catalog/details/store/es/book/978-613-1-57590-7/stabilisation-et-observation-des-syst%C3%A8mes-fractionnaires?search=ibrahima>

POSTERS

- [P1] “Laser beam pointing and stabilization by fractional PID control: experimental results”, *KAUST, February 2017*.
- [P2] “Synchronization and secure communication for fractional-order chaotic systems”, *NSF-KAUST conference, KAUST, February 2015*.
- [P3] “Fractional-order modeling and control for glucose-insulin systems”, *University of Luxembourg, Faculty of Sciences Technology and Communication (FSTC), 20th February 2013*.
- [P4] “Stabilisation et observation d’une classe de systèmes non linéaires fractionnaires”, *Ecole Doctorale IAEM, Nancy University, 2009*.

TECHNICAL REPORTS

- [R1] I. N’Doye, “Fractional-order modeling and control for glucose-insulin systems”, Fond National de Recherche Luxembourg, progress report, 15th April 2013.
- [R2] I. N’Doye, “Modeling, observation and control of the glucose level for type 1 diabetes patients”, Fond National de Recherche Luxembourg, final report, 15th April 2014.

CONFERENCE CHAIRMANSHIPS

- **Co-chairman**, “Session: Estimation”, IEEE American Control Conference, ACC’15, Chicago, USA, 2015.
- **Co-chairman**, “Session: Fractional-order systems”, 53rd IEEE Conference Decision and Control, CDC’14, Los Angeles, California, USA, 2014.
- **Co-chairman**, “Session: Biological systems”, 13th IEEE European Control Conference (ECC), Strasbourg, France, 2014.

INVITED TALKS AND PRESENTATIONS

- **April 2017**, “On the stabilization and observation of fractional-Order Systems”, *Shanghai Jiao Tong University, China, 2017*.
- **March 2017**, “Towards control and estimation of fractional-order systems with applications”, *Bharathiar University, Coimbatore, Tamil Nadu, India, 2017*.
- **March 2017**, “Towards control and estimation of fractional-order Systems with applications”, *Kongu Engineering College, India, 2017*.
- **January 2014**, “Robust stabilization and observers design for singular fractional-order systems”, *King Abdullah University of Science and Technology, KAUST, Saudi Arabia, 2014*.
- **May 2013**, “Fractional-order calculus: a new tool to model and control complex systems”, Business Meets Research, Forum Luxinnovation, Luxembourg.
- **November 2013**, “Type 1 Diabetes Metabolic Simulator (T1DMS)”, *University of Luxembourg, Luxembourg, 2013*.

JOURNAL AND SELECTED CONFERENCE REVIEWS

- IEEE Transactions on Automatic Control.
- IEEE Transactions on Circuit and Systems.
- International Journal of Adaptive Control and Signal Processing
- Automatica.
- Systems and Control Letters.

- Nonlinear Analysis : Hybrid Systems.
- ISA Transactions Journal.
- IET Journal.
- IEEE Conference Decision and Control (CDC).
- American Control Conference (ACC).
- IEEE Mediterranean Conference on Control Automation (MED).
- IFAC Workshop on Fractional Differential and its Applications (FDA).
- European Control Conference (ECC).
- IEEE EMBS Conference on Biomedical Engineering and Sciences.
- Conference Internationale Francophone Automatique (CIFA).
- IFAC Word Congress.
- International Journal of Applied Mathematics and Computer Science.

ADVANCED CONTROL COURSES

April 2010: “LMI, optimization and polynomial methods”, by Didier Henrion, HYCON-EECI, Graduate School on Control, SUPELEC, Paris - France.

March 2010: “Nonlinear output regulation”, by Alberto Isidori, HYCON-EECI, Graduate School on Control, SUPELEC, Paris - France.

FUNDING RECORD

April 2012 – March 2014: “MOCDIAB (Modelling, Observation and Control of the Glucose Level for Type 1 Diabetes Patients)”, funded by Fonds National de la Recherche (FNR) AFR Post-Doc project.

COMPUTER SKILLS

Programmation: Matlab, C, C++, Visual Basic, Fortran.

Circuit simulation: Pspice, Workbench, AutoCAD, Ecodial.

Others: \LaTeX , Scientific Workplace, Maple, Word, Excel, Access, PowerPoint, Microsoft Project.

TRAINING ACTIVITIES

September – December, 2017: “KAUST Volunteer Fire Department (KVFD)”, King Abdullah University of Science and Technology (KAUST).

February – March, 2016: “Spring 2016 scientific writing course”, by Lina Mynar, prepared for : King Abdullah University of Science and Technology (KAUST).

June 2013: “FNR Media Training for Researchers”, by Dirk Hanse and Ingo Knopf, prepared for : Fonds National de la Recherche (FNR), Luxembourg.

March 2013: “Constraint Programming and mathematical programming”, by Dr. Richard Wallace, Cork Constraint Computation Centre (4C), University College Cork, Ireland, prepared for : Fonds National de la Recherche (FNR), CRP Henri Tudor, Luxembourg.

December 2012: “Professional Research Management : Project Management for Research”, by M. David White, prepared for : Fonds National de la Recherche (FNR), Fast Training, Luxembourg.

April 2010: “LMI, Optimization and Polynomial Methods”, by Didier Henrion, HYCON-EECI, Graduate School on Control, SUPELEC, Paris - France.

March 2010: “Nonlinear Output Regulation”, by Alberto Isidori, HYCON-EECI, Graduate School on Control, SUPELEC, Paris - France.

May 2010: “Aid and Rescue Work (Sauvetage-Secourisme du Travail - STT)”, by Gaetan Didier, Longwy, France.

June 2008: Certificate of Participation in the African University Information Systems UNASI'08, Afrique Challenge (Priorité Formation) et l'EMIAE, Casablanca - Morocco.

November 2007: Trainer Certificate in Analysis and Evaluation Resource Systems (F-AeSR), Institut Francophone d'Etudes et d'Analyses Systémiques (IFEAS), Namur - Belgium.

PROFESSIONAL AFFILIATIONS

IEEE member.

IEEEExtreme proctors group.

French assistant professor qualification, control section, 2012.

International Federation of Automatic Control (IFAC) affiliate.

Publication List

JOURNALS

- [J1] I. N' Doye and T. Laleg-Kirati, "Robust fractional-order proportional-integral observer for synchronization of chaotic fractional-order systems", *accepted for publication in IEEE CCA Automatica Sinica*, 2017.
- [J2] I. N' Doye, T. Laleg-Kirati, M. Darouach and H. Voos, "H-infinity adaptive observer design for nonlinear fractional-order systems", *International Journal of Adaptive Control and Signal Processing* 2016, DOI: 10.1002/acs.2699.
- [J3] I. N' Doye, M. Darouach, H. Voos and M; Zasadzinski, "On the robustness of linear and nonlinear fractional-order systems with nonlinear uncertain parameters", *Journal of Mathematical Control and Information*. 10.1093/imamci/dnv022, 2015.
- [J4] I. N' Doye, M. Darouach, M. Zasadzinski and N. E. Radhy, "Robust stabilization of uncertain descriptor fractional-order systems". *Automatica*, Vol. 49, pp. 1907-1913, 2013.
- [J5] I. N' Doye, H. Voos, M. Darouach and J. G. Schneider, "Static output feedback H-infinity control for a fractional-order glucose-insulin system", *International Journal of Control, Automation, and Systems*. Vol. 13, No. 4, 2015.
- [J6] I. N' Doye, M. Zasadzinski, M. Darouach, N. E. Radhy and A. Bouaziz, "Exponential stabilization of a class of nonlinear systems : A generalized Gronwall-Bellman lemma approach". *Nonlinear Analysis : Theory, Methods & Applications*, Vol. 74, pp. 7333-7341, 2011.
- [J7] I. N' Doye, H. Voos and M. Darouach, "Observer-based approach for fractional-order chaotic synchronization and secure communication". *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, Vol. 3, pp. 442-450, 2013.
- [J8] I. N' Doye, M. Darouach, H. Voos and M. Zasadzinski, "Design of unknown input fractional-order observers for fractional-order systems". *International Journal of Applied Mathematics and Computer Science (AMCS)*, Vol. 23, pp. 491-500, 2013.
- [J9] N. Rouis, I. N' Doye and T. Laleg-Kirati, "Modulating function based intelligent LQR-PID controller for trajectory tracking of 2-DoF helicopter", under preparation.
- [J10] I. N' Doye, Adil Aloufi, Sharefa Asiri and T. Laleg-Kirati, "Modulating function based intelligent PID control of a laser beam pointing and stabilization platform: experimental results", under review.
- [J11] I. N' Doye and T. Laleg-Kirati, "Reinforcement learning for robust optimal control of a laser beam pointing", under preparation.
- [J12] I. N' Doye and T. Laleg-Kirati, "Reinforcement learning for H-infinity optimal pointing control of free space optical communication ", under preparation.
- [J13] I. N' Doye and T. Laleg-Kirati, "Adaptive optimal control for nano-positioning system based on policy iteration", under preparation.
- [J14] I. N' Doye *et al.*, "Performance and sensitivity analysis of fractional-order PID controllers : Application to the laser beam pointing", under preparation.

BOOK CHAPTER

- [BC1] M. Darouach, I. N' Doye, M. Alma, H. S. Ali, "Optimal Filtering for Discrete-time Differential Algebraic Systems", *Control Theory: Perspectives, Applications and Developments*, Systems Science Serie, Nova Science Publishers, 2015. https://www.novapublishers.com/catalog/product_info.php?products_id=54687&osCsid=
- [BC2] Z. Belkhatir, I. N' Doye, T. Laleg-Kirati "Estimation Methods for Fractional Order Systems", *Linear and Nonlinear Fractional-Order Systems: Analysis and Applications*, Elsevier, 2018, to be published.

CONFERENCES PUBLICATIONS

- [C1] N. Rouis, I. N'Doye and T. Laleg-Kirati, "Intelligent LQR based PID controller for trajectory tracking of 2-DoF helicopter: comparison and experimental results", under review.
- [C2] S. Elmetennani, I. N'Doye, K. N. Salama and T. Laleg-Kirati, "Performance analysis of fractional-order PID controllers for a parabolic distributed solar collector", *IEEE Africon, South Africa*, 2017.
- [C3] A. Al-Alwan, X. Guo, I. N'Doye and T. M. Laleg-Kirati, "Laser beam pointing and stabilization by fractional-order PID control: tuning rule and experiments", *IEEE Conference on Control Technology and Applications (CCTA), Hawaii, USA*, 2017.
- [C4] I. N'Doye and T. Laleg-Kirati, "Model reduction of nonlinear systems subject to input disturbances", *IEEE American Control Conference, ACC'17, Seattle, USA*, 2017.
- [C5] F. Eleiwi, I. N'Doye and T. Laleg-Kirati, "Feedback stabilization and reference output control tracking for direct-contact membrane distillation process", *IEEE Multi-Conference on Systems and Control, MSC'15*, 2015.
- [C6] I. N'Doye and T. Laleg-Kirati, "Fractional-order adaptive fault estimation for a class of nonlinear fractional-order systems", *IEEE American Control Conference, ACC'15, Chicago, USA*, 2015.
- [C7] I. N'Doye and T. Laleg-Kirati, "Chaotic convective behavior and stability analysis of a fractional viscoelastic fluids model in porous media", *IEEE International Conference on Control, Engineering and Information, Technology, CEIT'15*, 2015.
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- [C9] L. Pan, H. Voos, I. N'Doye and M. Darouach, "Exponential synchronization for a new class of complex dynamical network with periodically intermittent pinning control and hybrid time-varying delay", *IEEE Multi-Conference on Systems and Control, MSC 2014, Nice, France*.
- [C10] L. Pan, H. Voos, I. N'Doye and M. Darouach, "Uncertainty quantification of group synchronization and control of a class of adaptive complex dynamical network with brownian motion and time-varying delay", *IEEE Chinese Control Conference, CCC 2014*.
- [C11] I. N'Doye, H. Voos and M. Darouach, "Chaos in a fractional-order cancer system", *13th IEEE European Control Conference (ECC), Strasbourg, France*, 2014.
- [C12] L. Pan, H. Voos, I. N'Doye and M. Darouach, "Group synchronization and control of a class of new adaptive complex network with brownian motion and time-varying delay", *13th IEEE European Control Conference (ECC), Strasbourg, France*, 2014.
- [C13] I. N'Doye, M. Darouach and H. Voos, "Observer-based approach for fractional-order chaotic synchronization and communication", *12th IEEE European Control Conference (ECC), Zurich, Switzerland*, 2013.
- [C14] I. N'Doye, H. Voos, M. Darouach, J. G. Schneider and N. Knauf, "H-infinity static output feedback control for a fractional-order glucose-insulin system", *6th Workshop on Fractional Differentiation and Its Applications. Part of 2013 IFAC Joint Conference SSSC, TDS and FDA, Grenoble*, pp. 261-266, 2013.
- [C15] I. N'Doye, H. Voos, M. Darouach, J. G. Schneider and N. Knauf, "An unknown input fractional-order observer design for fractional-order glucose-insulin system", *IEEE EMBS Conference on Biomedical Engineering and Sciences, Langkawi, Malaysia*, 2012.
- [C16] I. N'Doye, H. Voos, M. Darouach, J. G. Schneider and N. Knauf, "Static output feedback stabilization of nonlinear fractional-order glucose-insulin system", *IEEE EMBS Conference on Biomedical Engineering and Sciences, Langkawi, Malaysia*, 2012.
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- [C18] I. N'Doye, M. Darouach, M. Zasadzinski, and N. E. Radhy, "Observers for singular fractional-order systems", *50th IEEE Conference Decision and Control, CDC'11, Orlando, USA*, 2011.

- [C19] I. N'Doye, M. Zasadzinski, M. Darouach and N. E. Radhy “Regularization and robust stabilization of singular uncertain fractional-order systems”, 18th *IFAC World Congress, Invited session*, Milano, Italia, 2011.
- [C20] I. N'Doye, M. Zasadzinski, M. Darouach and N. E. Radhy “Regularization and stabilization of singular fractional-order systems”, 4th *IFAC Workshop on Fractional Differentiation and Its Applications, FDA'10*, Badajoz, Spain, 2010.
- [C21] I. N'Doye, M. Zasadzinski, M. Darouach and N. E. Radhy “Robust stabilization of linear and nonlinear fractional-order systems with nonlinear uncertain parameters ”, 49th *IEEE Conference Decision and Control, CDC'10*, Atlanta, USA, 2010.
- [C22] I. N'Doye, M. Zasadzinski, N. E. Radhy and M. Darouach, “Stabilization of singular fractional-order systems: An LMI approach”, 18th *IEEE Mediterranean Conference on Control and Automation, MED'10*, Marrakech, Morocco, 2010.
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- [P3] “Fractional-order modeling and control for glucose-insulin systems”, *University of Luxembourg, Faculty of Sciences Technology and Communication (FSTC), 20th February 2013*.
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- [R1] I. N'Doye, “Fractional-order modeling and control for glucose-insulin systems”, Fond National de Recherche Luxembourg, progress report, 15th April 2013.
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Teaching statement

I believe that teaching is an important factor which contributes to the development of a university and pave the way to reach excellence. Teaching and mentoring are very important to me and I am devoted to providing quality teaching, service and advising to students.

While I enjoy research as an opportunity to make an impact on society, I view teaching as an opportunity to make a difference in student's lives. Teaching also provides a great opportunity for the instructor to introduce her/his own research field to a diverse audience, and to interact with the students who often offer creative insights.

Teaching Experience As a PhD student and temporary assistant professor and researcher at University of Lorraine, I had the opportunity to work as a teaching assistant for undergraduate and graduate courses. The following tables summarize the courses taught and developed at University of Lorraine.

2011 - 2012: IUT Longwy, University of Lorraine, France.

| | | |
|-------------------|---|-------------|
| Mathematics | Undergraduate students (DUT GEA) | 18h + 143h |
| Automatic control | Graduate students (Licence Pro - AII SARI) | 20h |
| Electrotechnics | Undergraduate students (DUT GEII) | 12h |
| Electrotechnics | Undergraduate students (DUT GTE) | 42h |
| Informatics | Undergraduate students (DUT GTE) | 10h + 14h |
| Total | | 268h |

2010 - 2011: Engineering College for Science and Technology (ESSTIN) - University of Lorraine, France.

| | | |
|------------------------|-------------------|-------------|
| Automatic control | Graduate students | 32h |
| Industrial Informatics | Graduate students | 42h |
| Data Processing | Graduate students | 26h |
| Total | | 100h |

2009 - 2010: IUT Longwy, University of Lorraine, France.

| | | |
|-------------------|-----------------------------------|-------------|
| Mathematics | Undergraduate students (DUT GEII) | 4h + 74h |
| Automatic control | Undergraduate students (DUT GEII) | 12h |
| Electrotechnics | Undergraduate students (DUT GTE) | 14h + 48h |
| Informatics | Undergraduate students (DUT GTE) | 10h + 14h |
| Electrotechnics | Undergraduate students (DUT GEII) | 10h |
| Total | | 186h |

As a Postdoctoral researcher at University of Luxembourg, I have taught graduate courses Applied Mathematics and Control Engineering. The following table summarize the graduate courses taught at University of Luxembourg.

2012 - 2013: Faculty of Science, Technology and Communication (FSTC), University of Luxembourg.

| | | |
|---------------------|-------------------|-----|
| Applied Mathematics | Bachelor students | 36h |
| Control Engineering | Bachelor students | 18h |

The opportunities I had at University of Lorraine and University of Luxembourg to interact with highly motivated students brought me a feeling that I was really making a difference. I believe that my past teaching experience, my interdisciplinary research background, and my enthusiasm in interacting with students will help me to design and conduct well structured and comprehensive courses to benefit all the parties involved.