

Lista lucrărilor științifice

A. Teze de doctorat

1. Isabela Birs, „Advanced fractional order control strategy for poorly damped processes”, Universitatea Tehnică din Cluj-Napoca, Romania
2. Isabela Birs, „Fractional order models enable control strategies based on material properties”, Ghent University, Belgium

B. Cărți și capitole în cărți

B1. Cărți

1. Ioan Nașcu, Gabriel Harja, **Isabela Roxana Birs**. Sisteme de Conducere a Proceselor Continue – Îndrumător de Proiect, U.T. Press, Cluj-Napoca, 2015, ISBN: 978-606-737-100-0. (Didactic laboratory guide – in Romanian)

B2. Capitole de carte

1. Birs, I., Dulf, E., Nascu, I., Muresan, C., “Comparison of various fractional order controllers on a poorly damped system”, Perspectives in Dynamical Systems III: Control and Stability, Springer Proceedings in Mathematics & Statistics, Springer, 2021.
2. I.Birs, C. Muresan, ”A non-Newtonian impedance measurement experimental framework: modeling and control inside blood- like environments— fractional-order modeling and control of a targeted drug delivery prototype with impedance measurement capabilities, chapter in Copot, D. “Automated Drug Delivery in Anesthesia”, ISSN:978-0-12-815975-0, DOI: 10.1016/B978-0-12-815975-0.00008-4, Elsevier”, 2020.
3. C.I. Muresan, R. De Keyser, I. R. Birs, S. Folea, O. Prodan, An Autotuning Method for a Fractional Order PD Controller for Vibration Suppression, chapter in K. Tas, , D. Baleanu, J.A. Tenreiro Machado (eds.) “Mathematical Methods in Engineering. Nonlinear Systems and Com- plexity”, vol. 24, pp. 245-256, Springer, 2019

C. Articole în reviste din fluxul științific internațional

C1. Articole în reviste de specialitate de circulație internațională cotate ISI

1. Isabela Birs, Cristina Muresan, Dana Copot, Clara Ionescu, Model Identification and Control of Electromagnetic Actuation in Continuous Casting Process With Improved Quality, IEEE/CAA Journal of Automatica Sinica, vol. 10(1), pp. 1-13, 2023. (if: 6.717)
2. Mihaela Ghita, Isabela R Birs, Dana Copot, Cristina I Muresan, Clara M Ionescu, Bioelectrical impedance analysis of thermal-induced cutaneous nociception, Biomedical Signal Processing and Control, vol. 83, 2023. (if: 5.861)

3. Cristina I Muresan, Iulia Bunescu, Isabela Birs, Robin De Keyser, A Novel Toolbox for Automatic Design of Fractional Order PI Controllers Based on Automatic System Identification from Step Response Data, *Mathematics*, vol. 11(5), 2023. (if: **2.592**)
4. Ricardo Cajo, Shiquan Zhao, Isabela Birs, Víctor Espinoza, Edson Fernández, Douglas Plaza, Gabriela Salcan-Reyes, An Advanced Fractional Order Method for Temperature Control, *Fractal and Fractional*, vol. 7(2), pp. 172, 2023. (if: **3.313**)
5. Adel Makhbouche, Badreddine Boudjehem, Isabela Birs, Cristina I Muresan, Fractional-Order PID Controller Based on Immune Feedback Mechanism for Time-Delay Systems, *Fractal and Fractional*, vol. 7(1), pp. 53, 2023. (if: **3.313**)
6. Maria Ghita, Ricardo A Cajo Diaz, Isabela R Birs, Dana Copot, Clara M Ionescu, Ergonomic and economic office light level control, *Energies*, vol. 15(3), pp. 734, 2022 (if: **3.252**).
7. Erwin T Hegedus, Isabela R Birs, Mihaela Ghita, Cristina I Muresan, "Fractional-Order Control Strategy for Anesthesia–Hemodynamic Stabilization in Patients Undergoing Surgical Procedures", *Fractal and Fractional*, vol. 10(6), pp. 614, 2022. (if: **3.874**)
8. Isabela Birs, Cristina Muresan, Marcian Mihai, Eva Dulf, Robin De Keyser, Tuning Guidelines and Experimental Comparisons of Sine Based Auto-Tuning Methods for Fractional Order Controllers, *IEEE Access*, vol. 10, pp. 86671-86683, 2022. (if: **3.367**)
9. Cristina I Muresan, Isabela R Birs, Dana Copot, Eva H Dulf, Clara M Ionescu, Fractional-Order PI Controller Design Based on Reference–to–Disturbance Ratio, *Fractal and Fractional*, vol. 6(4), pp. 224, 2022. (if: **3.874**)
10. Mihaela Ghita, Isabela Birs, Dana Copot, Ioana Nascu, Clara M Ionescu, Impedance Spectroscopy Sensing Material Properties for Self-Tuning Ratio Control in Pharmaceutical Industry, *Applied Sciences*, vol. 12(1), pp. 509, 2022. (if: **2.679**)
11. Cristina I Muresan, Isabela R Birs, Eva H Dulf, Dana Copot, Liviu Miclea, A Review of Recent Advances in Fractional-Order Sensing and Filtering Techniques, *Sensors*, Volume 21(17), pp. 5920, 2021 (IF: **3.576**)
12. Isabela Birs, Cristina Muresan, Ovidiu Prodan, Silviu Folea, Clara Ionescu, An Experimental Approach towards Motion Modeling and Control of a Vehicle Transiting a Non-Newtonian Environment, *Fractal and Fractional*, Vol. 5(3), pp. 104, 2021 (IF: **3.17**)
13. C.I. Muresan, I. Birs, R. De Keyser An Alternative Design Approach for Fractional Order Internal Model Controllers for Time Delay Systems, *Journal of Advanced Research*, DOI: 10.1016/j.jare.2021.01.004, 2021, (IF: **10.495**)
14. Birs, I. Nascu, C. Ionescu, C. Muresan Event-based fractional order PID control, *Journal of Advanced Research*, Volume 25, pp.191- 203, DOI: 10.1016/j.jare.2020.06.024 , 2020, (IF: **10.495**)
15. Birs, S. Folea, O. Prodan, E. Dulf, C. Muresan An experimental tuning approach of fractional order controllers in the frequency domain, *Applied Sciences*, vol. 10(9), pp. 2379 , 2020, (IF: **2.474**)
16. Muresan, Cristina I.; Birs, Isabela R.; Dulf, Eva H. Event- Based Implementation of Fractional Order IMC Controllers for Simple FOPDT Processes, *Mathematics*, 8(8), 1378, doi: 10.3390/math8081378, 2020, (IF: **1.747**)
17. R. A. C. Diaz, M. Ghita, D. Copot, I. R. Birs, C. Muresan and C. Ionescu, Context Aware Control Systems: An Engineering Applications Perspective, *IEEE Access*, vol. 8, pp. 215550-215569, doi: 10.1109/ACCESS.2020.3041357, 2020, (IF: **3.745**)

18. C. Ionescu, I. Birs, D. Copot, C. Muresan, R. Caponetto Mathematical modelling with experimental validation of viscoelastic properties in non-Newtonian fluids, *Philosophical Transactions of The Royals Society A*, A 20190284, doi:10.1098/rsta.2019.0284, 2020, (IF: **3.275**)
19. Birs, I., Muresan, C.I., Nascu, I., Ionescu, C. A Survey of Recent Advances in Fractional Order Control for Time Delay Systems, *IEEE Access*, vol. 7, no. 1, pp. 30951-30965, DOI: 10.1109/ACCESS.2019.2902567, 2019, (IF: **4.098**)
20. Birs, I., Copot, D., Muresan, C.I., Nascu, I., Ionescu, C. Identification For Control Of Suspended Objects In Non-Newtonian Fluids, *Fractional Calculus and Applied Analysis*, vol. 22, no.5, pp. 1378–1394 , DOI: 10.1515/fca-2019-0072, 2019, (IF: **3.514**)
21. Muresan, C.I., Birs, I.R., Ionescu, C., De Keyser, R. Tuning of fractional order proportional integral/proportional derivative controllers based on existence conditions, *Proc IMechE Part I: J Systems and Control Engineering*, vol. 223, no. 4, pp. 384-391, 2019, (IF: **1.166**)
22. Muresan, C.I., Copot, C., Birs, I.R., De Keyser, R., Vanlanduit, S., Ionescu, C.” Experimental validation of a novel auto- tuning method for a fractional order PI controller on an UR10 robot, *Algorithms*, vol. 11(7), pp. 95, DOI: 10.3390/a11070095, 2018 (IF: **2.27**)
23. Folea, S., De Keyser, R., Birs, I.R., Muresan, C.I., Ionescu, C.I. Discrete-Time Implementation and Experimental Validation of a Fractional Order PD Controller for Vibration Suppression in Airplane Wings, *Acta Polytechnica Hungarica*, vol. 14, no. 1, pp. 191-206, DOI: 10.12700/ APH.14.1.2017.1.13 , 2017 (IF: **0.745**)
24. Cristina I Muresan, Silviu Folea, Isabela R Birs, Clara Ionescu, A novel fractional-order model and controller for vibration suppression in flexible smart beam, *Nonlinear Dynamics*, vol. 93(2), 2018. (IF: **5.741**)

C2. Articole în reviste de specialitate de circulație internațională cotate BDI

1. Robin De Keyser, Isabela Roxana Birs, Cristina Ioana Muresan, Experimental Validation of the KC Autotuner on a Highly Nonlinear Vertical Take-Off and Landing (VTOL) Process, *International Journal of Electrical and Electronic Engineering & Telecommunications*, vol. 9(1), pp. 43 – 48, 2020.
2. Muresan, C.I., Birs, I.R., Folea, S., Ionescu, C. Fractional order based velocity control system for a nanorobot in non- Newtonian fluids, *Bulletin Of The Polish Academy Of Sciences- Technical Sciences*, Vol. 66, No. 6, pp. 991-997, DOI: 10.24425/bpas.2018.125946, 2018, (IF: 1.361)
3. Markowski, K., Birs, I.R., Muresan, C.I., Prodan, O. Different fractional order models for an experimental smart beam system, *Bulletin Of The Polish Academy Of Sciences- Technical Sciences*, Vol. 66, no. 4, pp. 485-493, DOI: 10.24425/124265, 2018, (IF: 1.361)
4. Robin De Keyser, Cristina Muresan, Isabela Birs, Clara Ionescu, Existence conditions for fractional order PI/PD controllers, *Proceedings of the 14th International Conference Dynamical Systems Theory and Applications*, Springer Proceedings in Mathematics and Statistics, 2017.
5. Konrad Markowski, Isabela Birs, Cristina Muresan, Ovidiu Prodan, Comparative experimental results of vibration suppression with switching model of the aircraft wings, *Proceedings of the 14th International Conference Dynamical Systems Theory and Applications*, Springer Proceedings in Mathematics and Statistics, 2017.
6. Prodan, O., Birs, I.R., Folea, S., Muresan, C. I. (2016), Seismic Mitigation in Civil Structures Using a Fractional Order PD Controller, *International Journal of Structural and Civil Engineering Research*, Vol. 5, No. 2, pp. 93-96, May 2016. DOI: 10.18178/ijscer.5.2.93-96

D. Publicații in extenso, apărute în lucrări ale principalelor conferințe internaționale de specialitate

D1. Articole cotate ISI

1. Isabela R Birs, Cristina I Muresan, Maria Ghita, Clara Ionescu, Robin De Keyser (2022), A low-order approximation method for fractional order PID controllers, 2022 IEEE 61st Conference on Decision and Control (CDC), pp. 6556-6561, 2022.
2. Mihaela Ghita, Dana Copot, Isabela R Birs, Cristina I Muresan, Robin De Keyser, Martine Neckebroek, Michel MRF Struys, Clara M Ionescu (2022), Uncertainty Minimization and Feasibility Study for Managing the Complex and Interacting Anesthesia-Hemodynamic System, 2022 IEEE 61st Conference on Decision and Control (CDC), pp. 6064-6069, 2022.
3. Erwin T Hegedus, Isabela R Birs, Mihaela Ghita, Clara M Ionescu, Robain De Keyser, Cristina I Muresan, Maria Ghita, Ioan Nascu (2022), Optimal Fractional Order PID based on a Modified Ziegler-Nichols method, 2022 International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME), pp. 1-6, 2022.
4. Dana Copot, Mihaela Ghita, Isabela Birs, Ricardo Cajo, Closed-loop control of multi-drug infusion for anesthesia and hemodynamic management, 2022 IEEE Conference on Control Technology and Applications (CCTA), pp. 1111-1116, 2022.
5. Dana Copot, Mihaela Ghita, Isabela Birs (2022), The role of control in achieving flexible and sustainable pharmaceutical manufacturing, 2022 IEEE Conference on Control Technology and Applications (CCTA), pp. 938 – 943, 2022.
6. Mihaela Ghita, Maria Ghita, Dana Copot, Isabela Birs, Cristina I Muresan, Clara M Ionescu (2022), Lumped Parametric Model for Skin Impedance Data in Patients with Postoperative Pain, 2022 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), pp. 4708-4711, 2022.
7. Robin De Keyser, Isabela Roxana Birs, Dana Copot, Mihaela Ghita, Cristina Ioana Muresan, Clara Mihaela Ionescu, Versatile Solutions for the Combine Harvester Header Height Control Problem, 2022 13th Asian Control Conference (ASCC), pp. 221 – 226, 2022.
8. Mihaela Ghita, Dana Copot, Maria Ghita, Isabela Birs, Cristina Muresan, Robin De Keyser, Clara M Ionescu (2022), A robust self-tuning PID-type control for time-varying process in the pharmaceutical industry, 2022 13th Asian Control Conference (ASCC), pp. 637-642, 2022.
9. Isabela Roxana Birs, Clara Mihaela Ionescu, Robin De Keyser, Cosmin Copot, Cristina Ioana Muresan, Bogdan Muresan, Constantin Florin Caruntu, Control of Nonlinear Mechatronic Systems with Context-Dependent Varying Dynamics, 2022 13th Asian Control Conference (ASCC), pp. 1296 – 1301, 2022.
10. Maria Ghita, Mihaela Ghita, Dana Copot, Isabela Roxana Birs, Cristina Muresan, Clara Mihaela Ionescu (2022), Optimizing radiotherapy with chemotherapy using PKPD modeling for lung cancer, 2022 IEEE 20th Jubilee World Symposium on Applied Machine Intelligence and Informatics (SAMI), 2022.
11. Mihaela Ghita, Maria Ghita, Dana Copot, Isabela Birs, Robin De Keyser, Clara M Ionescu, Time-frequency varying tissue impedance properties from noxious stimulation protocols, 2022 IEEE 20th Jubilee World Symposium on Applied Machine Intelligence and Informatics (SAMI), pp. 285 – 290, 2022.
12. Isabela Birs, Clara Ionescu, Ioan Nascu, Cristina Muresan (2021), A comparison between FOIMC and FOPI controllers for a submerged robot, 2021 25th International Conference on System Theory, Control and Computing (ICSTCC), pp. 166 – 171, 2021.

13. Isabela Birs, Cristina Muresan, Ioan Nascu, Robin De Keyser (2021), Experimental comparison between discrete time and event-based PID controllers on a nonlinear process, 2021 International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME), pp. 1 – 6, 2021.
14. Isabela Birs, Cristina Muresan, Mihaela Ghita, Maria Ghita, Dana Copot, Martine Neckebroek, Clara Ionescu (2021), Development and validation of preliminary fractional order impedance models for experimental pain assessment, 2021 International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME), pp. 1 – 6, 2021.
15. Erwin Hegedus, Isabela Birs, Cristina Muresan (2021), Fractional Order Control of the Combined Anaesthesia-Hemodynamic System: A Preliminary Study, IFAC-PapersOnLine, vol. 54(15), pp. 19 – 24, 2021.
16. Isabela Birs, Cristina I Muresan, Roxana Both, Ioan Nascu (2020), A real life implementation of fractional order event based PI control, 2020 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), pp. 1 – 6, 2020.
17. Isabela Birs, Cristina Muresan, Ioan Nascu, Clara Ionescu (2020), An Energy-Efficient Context Aware Solution for Environmental Assessment, IFAC-PapersOnLine, vol. 53(5), pp. 756 – 761, 2020.
18. Dana Copot, Cristina Muresan, Isabela Birs, Levente Kovacs (2020), Robust Hemodynamic Control Under General Anesthesia Conditions, IFAC-PapersOnLine, vol. 53(2), pp. 16179 – 16184, 2020.
19. Birs, I., Muresan, C., Ionescu, C. (2020). An event-based implementation of a fractional order controller on a non-Newtonian transiting robot. In 2020 European Control Conference (ECC) (pp. 1436 -1441).
20. Birs, I., Nascu, I., Muresan, C. I. (2020). Fractional order internal model control strategies for a submerged nanorobot. In 2020 International SAUPEC/ RobMech/ PRASA Conference, SAUPEC/RobMech/ PRASA 2020.
21. Birs, I., Muresan, C., Copot, D., Nascu, I., Ionescu, C. (2019). Design and Practical Implementation of a Fractional Order Proportional Integral Controller (FOPI) for a Poorly Damped Fractional Order Process with Time Delay. In 2019 IEEE 7th International Conference on Control, Mechatronics and Automation, ICCMA 2019.
22. Birs, I., Copot, D., Pilato, C., Ghita, M., Caponetto, R., Muresan, C. I., Ionescu, C. (2019). Experiment design and estimation methodology of varying properties for non-newtonian fluids. In Conference Proceedings - IEEE International Conference on Systems, Man and Cybernetics (Vol. 2019-October).
23. Birs, I., Copot, D., Ghita, M., Muresan, C., Ionescu, C. (2019). Fractional-order modeling of impedance measurements in a blood-resembling experimental setup. In Conference Proceedings - IEEE International Conference on Systems, Man and Cybernetics (Vol. 2019-October).
24. Birs, I. R., Ghita, M., Ghita, M., Copot, D., Muresan, C. I., Ionescu, C. M. (2019). An Interdisciplinary, Low-Cost Methodological Framework for Analysing Dynamical Material Properties for Control-Related Applications. In IFAC-PapersOnLine (Vol. 52).
25. Birs, I., Copot, D., Muresan, C. I., De Keyser, R., Ionescu, C. M. (2019). Robust fractional order PI control for cardiac output stabilization. In IFAC-PapersOnLine (Vol. 52).
26. Ghita, M., Juchem, J., Ghita, M., Birs, I., Cajo, R., Copot, D., Ionescu, C. (2019). Electrical circuits to mimic respiratory diseases: An interdisciplinary bachelor project. In 2019 IEEE 7th International Conference on Control, Mechatronics and Automation, ICCMA 2019. <https://doi.org/10.1109/ICCMA46720.2019.8988705>
27. Muresan, C. I., Birs, I. R., Darab, C., Prodan, O., De Keyser, R. (2019). Alternative Approximation Method for Time Delays in an IMC Scheme. In Proceedings 2019 International Aegean Conference on Electrical

Machines and Power Electronics, ACEMP 2019 and 2019 International Conference on Optimization of Electrical and Electronic Equipment, OPTIM 2019.

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29. Birs, I., Muresan, C., Nascu, I., Folea, S., Ionescu, C. (2018). Experimental results of fractional order PI controller designed for second order plus dead time (SOPDT) processes. In The 15th International Conference on Control, Automation, Robotics and Vision (ICARCV 2018), Singapore, November 18-21, 2018.
30. Birs, I., Muresan, C., Prodan, O., Folea, S., Ionescu, C. (2018). Analytical modeling and preliminary fractional order velocity control of a small scale submersible. In SICE ISCS 2018 - 2018 SICE International Symposium on Control Systems.
31. Birs, I. R., Muresan, C. I., Prodan, O., Folea, S. C., Ionescu, C. (2018). Structural vibration attenuation using a fractional order PD controller designed for a fractional order process. IFAC-PapersOnLine, 51(4). <https://doi.org/10.1016/j.ifacol.2018.06.150>
32. Muresan, C. I., Keyser, R. De, Birs, I., Copot, D., Ionescu, C. (2018). Benchmark Challenge: a robust fractional order control auto-tuner for the Refrigeration Systems based on Vapor Compression. IFAC-PapersOnLine. <https://doi.org/10.1016/j.ifacol.2018.06.021>
33. Birs, I. R., Muresan, C. I., Folea, S., Prodan, O. (2017). An Experimental Nanomedical Platform for Controller Validation on Targeted Drug Delivery. In 2017 AUSTRALIAN AND NEW ZEALAND CONTROL CONFERENCE (ANZCC) (pp. 161–165).
34. Birs, I. R., Folea, S., Muresan, C. I. (2017). An optimal fractional order controller for vibration attenuation. In 2017 25th Mediterranean Conference on Control and Automation, MED 2017.
35. Birs, I., Folea, S., Ionescu, F., Prodan, O., Muresan, C. (2017). Preliminary results and simulation of an active pendulum system for a three floor building. In Procedia Engineering (Vol. 199).
36. Birs, I. R., Folea, S., Copot, D., Prodan, O., Muresan, C.-I. (2017). Comparative analysis and experimental results of advanced control strategies for vibration suppression in aircraft wings. In Journal of Physics: Conference Series (Vol. 783). <https://doi.org/10.1088/1742-6596/783/1/012054>
37. Muresan, C. I., Folea, S., Birs, I. R., Ionescu, C. M. (2017). Fractional order modeling and control of a smart beam. In 1st Annual IEEE Conference on Control Technology and Applications, CCTA 2017 (Vol. 2017-Janua). <https://doi.org/10.1109/CCTA.2017.8062672>
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39. Birs, I. R., Muresan, C. I., Folea, S., Prodan, O., Kovacs, L. (2016). Vibration suppression with fractional-order PID μ controller. In Proceedings of 2016 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), pp. 413–418.
40. Birs, I. R., Nascu, I., Darab, C. (2016). Modelling and calibration of a conventional activated sludge wastewater treatment plant. In 2016 20th IEEE International Conference on Automation, Quality and Testing, Robotics, AQTR 2016 - Proceedings.

D2. Articole indexate BDI

1. Cristina I Muresan, Isabela Roxana Birs, Ovidiu Prodan, Ioana Nascu, Robain De Keyser (2019), Approximation methods for FO-IMC controllers for time delay systems, 2nd International Conference on Electrical Engineering and Green Energy (CEEAGE 2019), vol. 115, 2019.
2. Clara Ionescu, Cristina Muresan, Isabela Birs, Silviu Folea (2017), Preliminary results for velocity control of a nanorobot in non-Newtonian fluids using fractional calculus, International Conference on Mathematical Modelling in Applied Sciences, ICMMAS 2017, 24-28 July, St. Petersburg, Russia
3. Birs, I.R., Muresan, C.I., Folea, S., Prodan, O. (2016), A Comparison between Integer and Fractional Order PD μ Controllers for Vibration Suppression, *Applied Mathematics and Nonlinear Sciences*, Vol. 1, No. 1, pp. 273-282, DOI:10.21042/AMNS.2016.1.00022
4. Prodan, O., Birs, I.R., Folea, S., Muresan, C. I. (2016), Seismic Mitigation in Civil Structures Using a Fractional Order PD Controller, *International Journal of Structural and Civil Engineering Research*, Vol. 5, No. 2, pp. 93-96, May 2016. DOI: 10.18178/ijscer.5.2.93-96
5. Birs, I., Muresan, C.I., Folea, S., Prodan, O. (2016), Fractional Order Controller Design for Vibration Attenuation in an Airplane Wing, The 18th International Conference on Control, Automation, Robotics and Systems, pp. 1063-1067, 10-11 October 2016, New York, USA

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Semnătura:

