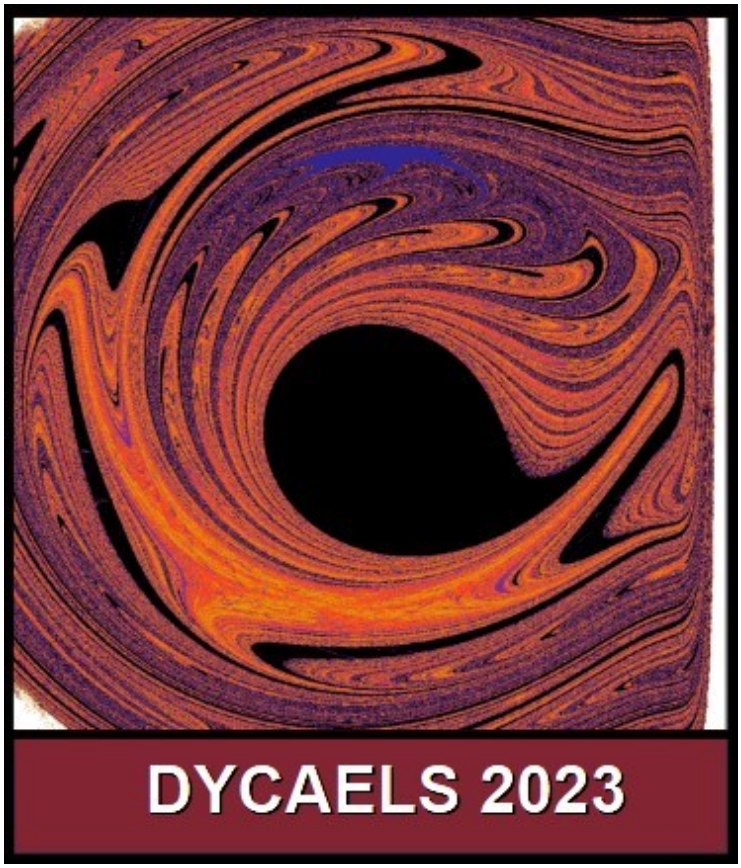


# INTERNATIONAL DYCAELS FINAL PROGRAMME

PONTA GROSSA, BRAZIL, NOVEMBER 6 - 11, 2023

## IV INTERNATIONAL CONFERENCE ON DYNAMICS, CONTROL, AND APPLICATIONS TO APPLIED ENGINEERING AND LIFE SCIENCE

**Organizing Committee:**

J. M. Balthazar(Chairperson) UTFPR-Ponta Grossa and UNESP –Bauru, SP

A. M. Tusset (Co-chairperson), UTFPR-Ponta Grossa

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Juliana Simonović (University of Nis, Serbia)

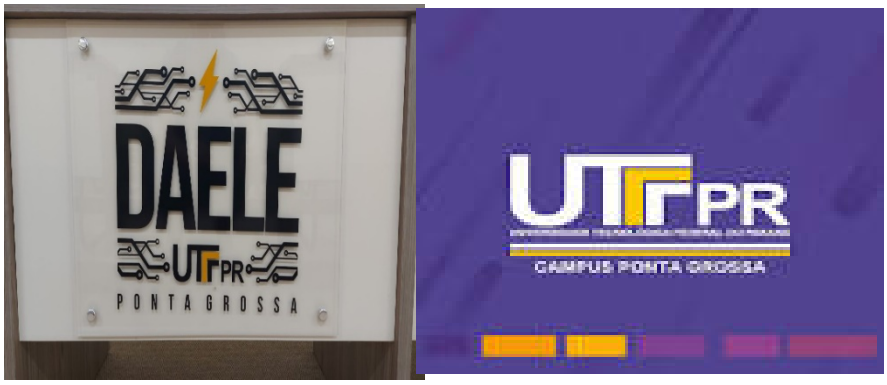
Paulo Batista Gonçalves, (Pontifical CatholicUniversityof Rio de Janeiro-PUCRJ)

Clivaldo de Oliveira (Federal Universityof Grande Dourados – UFGD)

G. Litak and P. Wolszczak, (Department of Automation Lublin University of Technology, Lublin, Poland)

**Web :Developed by Abramo Floriolli - UTFPR, PG.**

LOCAL: UTFPR - FEDERAL TECHNOLOGICAL UNIVERSITY OF PARANÁ, PONTA GROSSA.DEPT OF ELETRICAL ENGINNERING(DAELE).




ADDRESS:R. Doutor Washington Subtil Chueire, 330 - Jardim Carvalho, Ponta Grossa - PR, 84017-220. TEL: + 55 (42) 3220-4801
Web: http://portal.utfpr.edu.br/campus/pontagrossa(http://portal.utfpr.edu.br/english)

CONTACT: DYCAELS2023@GMAIL.COM

REALIZATION: UTFPR: FEDERAL TECHNOLOGICAL UNIVERSITY OF PARANÁ, PONTA GROSSA.

NONLINEAR PHENOMENA, CHAOS COMMITTEE OF ABCM: BRAZILIAN SOCIETY OF MECHANICAL SCIENCES AND ENGINEERING.IFTOMM: INTERNATIONAL FEDERATION FOR THE PROMOTION OF MECHANISM AND MACHINE SCIENCE. TECHNICAL COMMITTEE FOR TRANSPORTATION MACHINERY.

## To register on the conference: REGISTRATION

### Templates

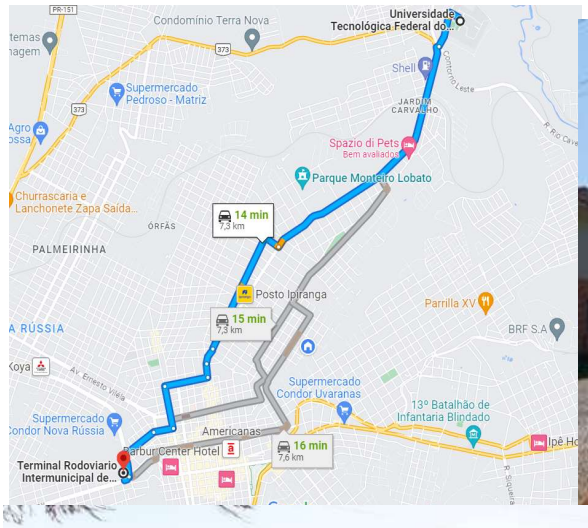
The conference template is mandatory for all papers and posters submitted to the event. Any submissions that do not follow the template will be rejected. The template ensures a consistent and high-quality presentation of the research work.

*Papers: TEMPLATE FOR POWER POINT (send to email:oraldycaels@gmail.com)*

*Posters:TEMPLATE FOR POSTER (send to email: posterdycaels@gmail.com)*

We are in the process of finalizing the abstract booklet for the upcoming conference. Please send them to us as soon as possible. You can email your updated abstract to**bookletdycaels2023@gmail.com**. Thank you for your cooperation and contribution.

| **Deadlines** |
|---|
| Power point **: October 30, 2023** |
| Posters**: October 30, 2023** |
| Abstracts: **October 30, 2023** |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13º Batalhão de Infantaria Blindado
Supermercado Condor Nova Rússia
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# Preliminary Comments

The event DYCAELS (CONFERENCE ON DYNAMICS, CONTROL, AND APPLICATIONS TO APPLIED ENGINEERING AND LIFE SCIENCE), was organized in the 3 periods, before:

1. On dynamics, control and applications to engineering and life science. Jose M. Balthazar, Angelo M. Tusset. 24/11/2018
2. On dynamics, control and applications to engineering and life science-II Jose M. Balthazar, Angelo M. Tusset. 24/02/2019
3. On dynamics, control and applications to engineering and life science III-Jose J. M. Balthazar, Angelo M. Tusset, Mauricio A. Ribeiro. 25/08/2020

by the UTFPR-Ponta Grossa and the meetings have attracted a representative regional scientific community in dynamics and control

.

The invited speakers ( in the 4th DYCAELS 2023 ( November 6-11) ) are from : Aberdeen Scotland, Nis Serbia, Belgrade, Serbia, PA ,USA, Porto Portugal, Modena, Italy, Kharkiv Ukraine, Kyiv, Ukraine, Lublin, Poland, Polytechnical Warszawska, Casablanca Morocco , Tamil Nadu, India, , City University of Hong Kong, Klabin Industry, PR, Brazil., DAF Industry, PR, Brazil, Center for Space Research, Polish Academy of Sciences, ITA, São Jose dos Campos, UNESP, Escola Politécnica USP , UFABC, INPE, UF Paraná, PUC-Rio, Universidade de Brasília, etc. are distinguished professors and industry executives that will share their experiences and background in Dynamics and control systems, management, innovation, and application areas of control and automation. Industry and academic presentations will be carried out by engineers from industry and master and doctoral students, from Brazil and other countries.

Official language of the conference is English. Besides, we approved 55 submitted works buy authors.

The DYCAELS 2023, aims to provide a forum for scientists in different branches of applied Engineering to present and discuss recent advances in theoretical, numerical, and experimental techniques in dynamics and control and their applications. It Focuses are directed toward diverse topics, ranging from theoretical and practical applications in Engineering and science.

In summary, the goal of the events is to explore the emergence of new research fields in which modeling, analysis and control of nonlinear and complex systems play a role of growing importance and it will be devoted to an interdisciplinary audience with

particular attention to master, PhD students and young researchers and practical engineers.

**We will publish several special issues and the book titled: Nonlinear Dynamics, Chaos, Control, Energy Transfer and their Applications in Engineering and Science by Springer ISSN: 2211-0992. BOOK SERIES MECHANISMS AND MACHINE SCIENCE.**

The publication of the accepted papers is conditional on the presentation of the paper by one of the authors, either in person or remotely, at the conference.

The papers that meet this requirement may be considered for publication in Special issues or in the Springer book, depending on the outcome of the paper revisions process by expert reviewers.

**Prof. Dr. Jose Manoel Balthazar and Prof. DR.Angelo Marcelo Tusset**

**Chairpersons of DYCASELS 2023**

## FINAL PROGRAM

First Day: Monday, Nov 06. 13:45 - 14: 00 Opening Remarks

- PROF. DR. ABEL DIONIZIO AZEREDO- UTFPR-PONTA GROSSA- PR DIRECTOR
- PROF. DR. LUCIANO AUGUSTO LOURENÇATO - UTFPR - DIRECTOR
- PROF. DR. JOSÉ MANOEL BALTHAZAR, PROF. DR. ANGELO MARCELO TUSSET- CHAIRS.

Short lecture: What is the difference between Science, Engineering and Technology and some warnings to Dycaels's people

Theme: Industry and Engineering applications session

14:00 -14:40 Keynote (opening) lecture

Digital Transformation as a driver for Industry 4.0. Alexandre Reis Graeml - UTFPR, Curitiba, PR, Brazil

14:40 – 15:00 Interval

15:00 – 15:30 Invited Lecture:

Glow Energy Public Company Limited (GLOW) - Thalles M. dos Santos, Brazil

15:30 – 15:40 Interval

15:40 - 16: 20 Keynote lecture

3D printer and the new method of bonding plastic layers (piotrWolszczak, Lublin University of Technology, Lublin; Academy of Zamość, Poland.

16:20 – 16:30 Interval

16:30 - 17:00 Invited Lecture

Co-Optimization of Vehicles and Routes (CoVaR) - To Improve Commercial Transportation System Efficiency. Marcio Guerreiro - DAF Industry, PR, Brazil.

17:00 -17:10 Interval

17:10 - 18:00 Keynote lecture

Energy harvesting from wind induced vibrations. G. Litak. Lublin University of Technology, Lublin, Poland.

## Day: Tuesday, Nov 07

Dynamics and Control: Part 1-Developments in the perturbation theory: algebraically manipulations:Nonlinear Modal Interactions

**8:30 – 10:30 Short Course I**

**Theme:Background on nonlinear Dynamics and control.**

- Part 1 Developments in the perturbation theory of algebraically manipulations. Nonlinear Modal Interactions
- Part 2 Computational Methods in Nonlinear dynamics.
- Part3 Fractional Derivatives and Peridynamics -Modeling: Mini overview.
- Part4 Pendular nonlinear dynamics.
- Part 5 Comments on Nonlinear Control theory in engineering.

J M Balthazar (UTFPR, Ponta Grossa, PR, and UNESP –Bauru, SP). Angelo M. Tusset, Mauricio A. Ribeiro, Jeferson Lima (UTFPR, Ponta Grossa, PR). Clivaldo Oliveira, Rafael Avanço (UFGD, Dourados, MS), J.L.P. Felix( Federal da Fronteira Sul. Cerro Largo, São Pedro , Rio Grande do Sul, Eduardo AbuhamadPetrocino, UNESP –Bauru, SP, Brazil

10:30 – 11:00Interval

11:00 – 11:30 Keynote speaker

Bifurcation analysis and energy harvesting of Vibro-impact systems. Daniil Yurchenko. Institute of Sound and Vibration Research. University of Southampton, UK.

11:30 – 12:00 Invited lecture

Symmetry Methods for the Computation of Mode Shapes of Structures. Samuel Silva. São Paulo State University (UNESP)Mechanical Engineering Department Ilha Solteira, SP. Brazil.

12:00 – 13:50 Lunch

**14:00 – 15:30 Short Course II**

**Theme:Fundamentals of Astronautics.**

Antônio Fernando Bertachini de Almeida Prado. Instituto Nacional de Pesquisas Espaciais, São José dos Campos, SP, Brazil.

15:30 – 16:00 Keynote Speaker

Effects of space manipulator operations on the satellite control system – the state of the art and overview of challenges and progress. Tomasz Barciński, Center for Space Research, Polish Academy of Sciences. Poland

16:00 – 16:30 Interval

**16:30 – 18:00 Short Course III –**

**Theme:Nonlinear-Aerodynamics: An Overview.**

Robeto Gil. InstituteofAeronautics (ITA), São José dos Campos, SP. Brazil.

## Third day-Wednesday, Nov 08

8: 40: –9:10keynote lecture

Experimental and numerical analysis of the effect of geometric nonlinearity in a beam supporting a non-ideal motor. Reyolando Manoel Lopes Rebello da Fonseca Brasil. Federal University of ABC, Santo André, and University of SP, SP. Brazil.

9:10 –9 30: Interval

9:30 – 9:50Invited lecture

Nonlinear Dynamics analysis of particle-in-a-box applied to bio signals.Cristhiane Gonçalves( Federal University of Technology Paran´a, UTFPR, Ponta Grossa, PR, Brazil), Sheila Travessa( Federal University of Santa Catarina, UFSC, Blumenau-SC, Brazil), Gabriella de O. M, Ribeiro, Mauricio A R( Federal University of Technology Paran´a, UTFPR, Ponta Grossa, PR, Brazil), Balthazar J M (Federal University of Technology Paran´a, UTFPR, Ponta Grossa, PR, Brazil and UNESP Bauru, FEB, Bauru, SP), Luiz Gonçalves Federal University of Technology Paran´a, UTFPR, Ponta Grossa, PR, Brazil)

9 :50 - 10: 25– Keynote lecture

Epidemic modeling via cross-entropy approximate Bayesian computation. Americo Barbosa da Cunha Junior. Applied Mathematics, Rio de Janeiro StateUniversity - UERJ, RJ, Brazil.

10:25 – 10: 45Invited lecture

Aspects of online Metaheuristics optimization for Self-Tuning Controllers .Mauricio dos Santos Kaster. UTFPR-Ponta Grosa, PR. Brazil.

10: 45 – 11:05Invited lecture

Minimax optimal control problems with mixed constraints. Geraldo Nunes da Silva, UNESP, IBILCE São Jose do Rio Preto, SP, Brazil.

**11: 05 – 11: 25** Invited lecture Magnetoelectric Composites for magnetic field sensing. Luiz Fernando Cótica, Physics Department, S. U.of Maringá. Brazil.

11:30 – 14:00 Lunch

14: 00 – 14: 30 Keynote lecture

Extreme events in nonlinear wave interactions (Dragon King). Antonio Marcos Batista. StateUniversityof Ponta Grossa. Ponta Grossa, PR. Brazil.

14:30 – 14:50 Invited lecture

Parameter Identification of Flexible Aircraft. Raphaela Carvalho Machado. São Paulo StateUniversity (UNESP) ElectricalEngineering, Guaratinguetá, SP, Brazil, D. C. F. Zúniga (FESJ – Câmpus Experimental de São João da Boa Vista,SP, Brazil) L. C. S. Góes( InstituteofAeronautics (ITA), São José dos Campos, SP, Brazil)

14: 50 – 15:30 keynote Lecture

Space Robotics by using artificial Intelligence. Ijar da Fonseca. InstituteofAeronautics (ITA), São José dos Campos, SP, Brazil.

15:30 – 16:00 Interval

16:00 – 16:30 Keynote lecture

Vibrations and aeroelastic instabilities of Variable Stiffness Composite Laminated panels. Pedro Ribeiro and Hamed Akhavan. DEMec. Faculty of Engineering, University of Porto. Portugal.

16:30 – 17:00 Keynote lecture

Modeling Dynamic Systems with Hamiltonian Neural Networks. Zihan Liu, Prashant N. Kambali and C. Nataraj. Villanova Center for Analytics of Dynamic Systems. Villanova, PA. USA

17:00 – 17:30 Keynote lecture

Control Dedicated Dynamics Modeling of Constrained Mechanical. Systems.Elżbieta arzębowska Warsaw University of Technology: Polytechnical Warszawska. Poland.

17:30 – 17:50 Invited lecture

Control of homoclinic bifurcation in a bi- dimensional dynamical system using the Lp feedback control method. Vinicius Piccirillo, UTFPR, Ponta Grossa, PR. Brazil.

17:50 – 18:20 Invited lecture

Technology and New Trends in Hybrid Vehicles. Ludmila Corrêa de Alkmine e Silva. UNICAMP, Campinas, SP, Brazil.

## Fourth day-Thursday, Nov 09

8:00 – 8:30 Keynote lecture

ShearlessTransportBarriers. Iberê L. Caldas, G. C. Grime, Z. O. Guimarães-Filho, F. A. Marcus, L. A. Osorio, Instituto de Física, Universidade de São Paulo, Brazil;Y.Elskens, Aix-Marseille Université, France; K. Gentle, Institute for Fusion Studies, The Universityof Texas at Austin, USA; M. Roberto, Instituto Tecnológico de Aeronáutica, Brazil; D. L.Toufen, Instituto Federal de Educação, São Paulo, Brazil; R. L. Viana, Departamento de Física, Universidade Federal do Paraná, Brazil.

8:30 – 9:00 Keynote lecture

The nonlinear coupling and synchronization in the dynamics of complex systems. Julijana Simonović, Department for Mechanics. Faculty of mechanical engineering, University of Nis, Serbia.

9:00 – 9:30 Keynote lecture

Quasiperiodic birhythmicity in a multicycle van der Pol oscillator with modulated time delay. M. Hamdi University Abdelmalek Essaâdi, Faculty of Sciences and Technology-Al Hoceima, Morocco and M. Belhaq University Hassan II Casablanca, Faculty of Sciences Ain Chock, Morocco.

9:30 – 10:00 Keynote lecture

Recent applications of chaotic systems in science and engineering. Sundarapandian Vaidyanathan Professor, Centre for Control Systems, Vel Tech University, Avadi, Chennai-600 062, Tamil Nadu. India.

10:00 – 10:30 keynote lecture

A survey on applications and new horizons in nonlinear dynamics.Mikhail E. Semenov. Voronezh. Russia.

10:30 – 11:00 Interval

**11:00 – 12:00 Distinguished Keynote lecture**

Control of tipping points in stochastic mutualistic complex networks. Celso Grebogi. King 's College. University of Aberdeen, Aberdeen. UK.

12:00 – 14:00 Lunch

14:00 – 14:30 Keynote lecture

The Nonlinear Dynamics of Multistable Systems and Their Applications in Engineering and Sciences. Paulo Batista Gonçalves. Department of Civil and Environmental Engineering, PUC-Rio. Brazil.

14:30 – 15:00 Keynote lecture

An overview: Rolling of a heavy ball on curvilinear paths and surfaces of the basis of nonlinear dynamics of radial and spherical ball bearings in machine systems. Katica Hedrih. Mathematical Institute of Serbian Academy of Science and Arts, Belgrade, Serbia.

15:00 – 15:30 Keynote lecture

Resonance behavior and transient in non-ideal systems. Yu. Mikhlin and Ya. Lebedenko, Dept. of App. Math. National Technical University, Kharkiv. Ukraine.

15:30 – 16:00 Keynote lecture

On nonlinear effects during the vibration of an unbalanced rotor axis. N. Yaroshevich and T. Yaroshevich, Lutsk National Technical University, Lutsk. Ukraine.

16:00 – 16:30 Interval

16:30 – 17:00 Keynote lecture

Complex phenomena in Nonlinear Dynamics of Shells. Francesco Pellicano. Dept. of Engineering Enzo Ferrari, University of Modena and Reggio Emilia, Modena. Italy.

17:00 – 17:30 Invited lecture

Dynamical stability of thin shells. Frederico M. A. Silva. School of Civil and Environmental Engineering, Federal University of Goiás. Brazil.

17:30 – 18:00 Keynote lecture:

Nonlinear vibration of functionally graded shallow shells resting on elastic foundation. Lidiya Kurpa, Tetyana Shmatko, National Technical University, Kharkiv Polytechnic Institute. Ukraine.

## Fifth day Friday. Nov 10

8:00 – 8:20 Invited Lecture

Nonlinear dynamics of memristor oscillators. Silvio L.T. de Souza. Federal Universityof São João del-Rei. Divinópolis, MG, Brazil.

8:20 – 8:40 Invited lecture

Characterization of a continuous phase transition in a chaotic system. Edson D. Leonel, Makoto Yoshida UNESP - Rio Claro and Juliano Antonio de Oliveira, UNESP - São João da Boa vista, SP. Brazil.

8:40 – 9:10 Keynote lecture

Dynamics of the connected pendulums under a magnetic field. Yu. Mikhlin and Yu. Surhanova, Dept. of App. Math., National Technical University, Kharkiv. Ukraine.

9:10 – 9:40 keynotelecture

Synchronization of phase oscillators with chemical coupling. Ricardo Viana. Institute of Physics, UFPR, Curitiba.

9:40 – 10:00 Invited lecture

Statements on synchrosqueezed and synchroextracting transform in nonstationary operations: A nonlinear dynamics perspective. Marcos Varanis. Institute of Physics, UFMS. Brazil.

10:00 – 10:30 Interval

10:30 – 11:00 Keynote lecture:

Topologically Protected Wave Propagation in Acoustic Metamaterials. C.W. Lim, Department of Architecture and Civil Engineering, City University of Hong Kong, Tat Chee Avenue, Kowloon, Hong Kong SAR, P.R. China.

11:00 – 11:30 Keynote lecture

Maximizing Energy Harvesting: The Advantages of Optimization. Daniil Yurchenko, Institute of Sound and Vibration Research. University of Southampton.UK.

11:30 – 14:0 Lunch

## FIFTH DAY- FRIDAY. NOV 10

## CONTRIBUTE PAPERS: ORAL PRESENTATIONS.

**1.**14:00 – 14:10 **Global dynamics of a slowly modulated resonator affected by bounded frequency noise**, K C. Benedetti, Universidade Federal de Goiás, Goiana, Brazil, P. Belardinelli, Polytechnic University of Marche, Ancona, Italy

**2.**14:10 – 14:20 **Stochastic global dynamics of a Helmholtz-Duffing oscillator with symmetry- breaking parameter**. K.C. Benedetti, Federal University of Goiás, P.B. Gonçalves Pontifical Catholic University of Rio de Janeiro, RJ, Brazil, S. Lenci, Polytechnic University of Marche, Ancona Italy, G. Rega, Sapienza University of Rome,Italy.

**3.**14:20 – 14: 30 **Confined Chaos and the Radial Contribution of the Lyapunov Exponent**. L. S. Pereira, D. C. Mourão, O. C. Winter. Feg Unesp- Guaratingueta, SP, Brazil.

**4.** 14:30 – 14:40 **Remarks on the Numerical analysis of basins of attraction using complex variables.** Mauricio A. Ribeiro PPGEE - UTPFR; Pamela Rafaela Martins, DeFis – PUC; Hilson Henrique Daum, PPGEP – UTFPR; Ângelo M. Tusset, PPGEP – UTFPR; Jose Manoel Balthazar, PPGEP – UTFPR;FEB-UNESP-Bauru, SP, Brazil.

**5.** 14:40 – 14:50 **Local and global complexity-entropy analysis of numerical simulations of drift-wave turbulence in tokamaks**. G. S. P. Costa, R. A. Miranda, A. L. P. Freire. University of Brasilia, Brasilia-DF Brazil.

**6.** 14:50 – 15:00 **Dynamics at the Onset of Chaos Synchronization in a Network of Rulkov Neurons**. G. Marghoti, F. Ferrari, R. Viana, S. Lopes, T. Prado. Universidade Federal do Paraná, Curitiba, Paraná, Brazil.

**7.** 15:00 – 15:10 **Nonlinear model of a single-module solar battery charging system using the Buck converter.**Mario Henrique Bigai, Matheus Tauffer de Paula, Eloi Agostini Jr., Fernanda Cristina Corrêa. Federal University of Technology - Parana (UTFPR), PR, Ponta Grossa, Brazil.

**8.** 15:10 – 15:20 **Nonlinear free vibration analysis of hyperelastic circular cylindrical shells.** Daniella M. O. Aguiar, Frederico M. A. Silva, Renata M. Soares. School of Civil and Environmental Engineering, Federal University of Goiás, Goiania, Goias, Brazil.

**9.** 15:20 – 15:30 **Particle-in-Cell Numerical Simulations of Plasma Particles in a Cylindrical Hall Thruster.**Sergio T. T. S. Junior, Rodrigo A. Miranda. UniversityofBrasilia, UnB-Gama Faculty, Brasilia. Brazil.

**10.** 15:30 – 15:40 **On nonlinear normal modes to derive reduced order models of cylindrical shells with 1:1 internal resonance**. Jonathas K. A. Pereira1, Frederico M. A. Silva. School of Civil and Environmental Engineering, Federal University of Goiás, Goiânia, Brazil.

**11.** 15:40 – 15: 50 **Nonlinear dynamic analysis of cables with identification of flexural-torsional stiffness.**N. Barbieri, G. S. V. Barbieri, R. Barbieri, K. F. Lima, L. S. V. Barbieri. Pontifícia Universidade Católica do Paraná- PUCPR, Universidade Tecnológica Federal do Paraná – UTFPR, Curitiba, Brazil.

**12.** 15:50 – 16:00 **Operational modal analysis of a metallic bridge prototype**. N. Barbieri, L. S. V. Barbieri, J. T. Legat, K. F. Lima, G. S. V. Barbieri. PontifíciaUniversidade Católica do Paraná-, Cuririba, Brazil.

16:00 – 16:30 Coffee break

**13.** 16:30 – 16:40 **Machine Learning Applied to Vibration Monitoring in Rotating Machines using Order Analysis**. Flavio Canfilde Alves Pereira, Eduardo Luiz Ortiz Batista, Eduardo Márcio de Oliveira Lopes. Federal University of Paraná, Curitiba, Brazil.

**14.** 16:40 – 16:50 **Classic Control and Perception Neural Net applied in a Combustion HCCI Engine - A First Approach**. Buiar.C.L., Velasquez, J.A. IFPR Campus Pinhais, Curitiba, PR, Brazil.

**15.** 16:50 – 17:00 **Design of Multiple Degree-of-Freedom Viscoelastic Dynamic Neutralizers by Response Reanalysis.**Gabriel Ruggiero do Amaral, Alexandre de Macêdo Wahrhaftg, José Manuel Balthazar, Kevin, Mauricio Menon Ribeiro, Eduardo Márcio de Oliveira Lopes. Federal University of Paraná (UFPR), Curitiba, Pr, Brazil.

**16.** 17:00 – 17:10 **Controllability of switched linear Hamiltonian systems**. A. Chanes-Espigares, M.I. García-Planas. UniversitatPolitècnica de Catalunya, Spain.

**17.** 17:10 – 17:20 **PID controller gain adjustment in a CSTR reactor.**Vinicius Perosa, Vinicius Piccirillo, Everton Moraes Matos. Federal TechnologicalUniversityofParana - UTFPR, Ponta Grossa – PR, Brazil.

**18.** 17:20 – 17:30**Dependence on the local dynamics of a network phase synchronization process**. E. B. S. A. Cambraia, J. V. V. Flauzino, T. L. Prado, S. R. Lopes. Universidade Federal do Paraná, Universidade Federal do Paraná, PR. Brazil.

**19.** 17:30 – 17:40**Properties of time series via recurrences and applications in neuroscience**. V. V. Flauzino, A, T. L. PRADO, S. R. Lopes. FEDERAL UNIVERSITY OF PARANÁ, CURITIBA, PR, BRAZIL

**20.** 17:40 – 17:**50 Influence of connection stiffness on the multistability of coupled von Mises trusses**.C.H.L. de Castro, Pontifical Catholic University of Rio de Janeiro – PUC-Rio, D. Orlando, State University of Rio de Janeiro – UERJ, P.B Goncalvez b,Pontifical Catholic University of Rio de Janeiro – PUC-Rio

**21.** 17:50-18:00.**Approaches to Quality of Work Life (QWL) and work: integrative literature. Review**. G. Gustavo, P.Claudia , R.Priscila , G.Lilian Department of Production Engineering, Federal Technological University of Paraná – (UTFPR), Ponta Grossa.

**22.** 18:00- 18:10 **NonidealVan der Pol Oscillator applied to Hemodynamics**. Gabriella De Oliveira Mendes Silva, Cristhiane Gonçalves( Universidade Tecnológica Federal do Paraná, UTFPR, Ponta Grossa, PR, Brazil), Jose M. Balthazar( Universidade Tecnológica Federal do Paraná, UTFPR, Ponta Grossa, PR, Brazil) Universidade De São Paulo, UNESP, Bauru, SP, Brazil, Mauricio A. Ribeiro( Universidade Tecnológica Federal do Paraná, UTFPR, Ponta Grossa, PR, Brazil), Marcus Varanis( Universidade Federal do Mato Grosso do Sul, UFMG, Campo Grande, MS, Brazil) Angelo M. Tusset( Universidade Tecnológica Federal do Paraná, UTFPR, Ponta Grossa, PR, Brazil), Jorge LuisPalacios Felix, Alegrete Technological Center, Federal Universityof Pampa, RS, Brazil

## Sixth day Saturday, Nov 11( Morning)

## CONTRIBUTE PAPERSPOSTER SESSION

Coordinators :Gustavo TadraWalmannandProfa Itamar Illuik, UTFPR, Ponta Grossa, PR, Brazil

**1.** 8:00 – 8:05 **Sampling Frequency Definition for a Pavement Anomaly Detection System**. G. S. Lima (Departament of System Engineering - Polytechnic School of the University of São Paulo), M. J. S. Paixão (Departament of Civil Engineering - Polytechnic School of the University of São Paulo) , G. M. Oliveira(Mauá Institute of Technology, SP) , A. S. Zanini (Mauá Institute of Technology) , F. L. Maranhão (Departament Civil Engineering - Polytechnic School of the University of São Paulo) , J. R. C. Piqueira (Departament of Telecommunications and Control Engineering - Polytechnic School of the University of São Paulo)

**2.** 8:05 – 8:10 **Automation of a Vibration Machine for Stockbridge Damper Testing**. E. Marchi 1, N. Barbieri, K. F. De Lima. Pontifícia Universidade Católica do Paraná – PUC-PR

**3.** 8:10 – 8:15 **The role of allocation of distributed generators to improve power quality and hosting capacity**. A. G dos Santos, André N. de Souza, T. E. Castelo, F. Carvalho, D. Sinkiti, A. Gifalli. Instituto Federal de Ciência e Tecnologia de São Paulo IFSP, Brazil.

**4.** 8:15 – 8:20**A Behavioral Analysis Device for Candidates with Visual Impairments**. Q. Pereira, D. P. Renaux, S. M. Tebcherani, L. A. Pilatti. Federal University of Technology, Brazil.

**5.** 8:20 – 8:25 **Discussion of a Mathematical modeling of a non-ideal rotor-tower interaction**. Rodrigo do Nascimento e Silva, Universidade Tecnológica Federal do Paraná Campus Ponta Grossa; Jose Manoel Balthazar, Universidade Tecnológica Federal do Paraná Campus-Ponta Grossa, São Paulo StateUniversity, FacultyofMechanicalEngineeringof Bauru, Bauru, SP, Brazil; Mauricio Aparecido Ribeiro, Universidade Tecnológica Federal do Paraná Campus Ponta Grossa; Angelo Marcelo Tusset, Universidade Tecnológica Federal do Paraná Campus Ponta Grossa; Jorge LuisPalacios Felix, Alegrete Technological Center, Federal Universityof Pampa, RS, Brazil; Hilson Henrique Daum, Universidade Tecnológica Federal do Paraná-Campus Guarapuava.

**6.** 8:25 – 8:30**Multiphysics Simulation of the thermal management in a lithium battery pack**. F.J. ROMMEL, Y.W. Ott, J.R.H. Queiroz, B.F.P. Serillo, F.C. Corrêa, W.C. Godoi, E.R. Viana, Universidade Tecnológica Federal do Paraná.

**7.** 8:30 – 8:35**Utilization of Residual Oil from Aluminum Cans in the Production of Lithium/Potassium Grease**. Douglas Luiz Mazur and Erica Roberta L. R. Watanabe, Federal Technological University of Paraná; Matheus Lopes Demito, State University of Maringá.

**8.** 8:35 – 8:40**Environmental resource management in the paper industry and promoting continuous improvement in the sector**. Maria Eduarda Vieira Holtz. Federal TechnologicalUniversityof Paraná (UTFPR), Paulo Cesar Zadra Filho. Polytechnic Institute of Bragança (IPB). Portugal

**9.** 8:40 – 8:45**Perception of technology transfer and smart business: A case study**. Gustavo Tadra Waldmann, Claudia Tania Picinin, Priscila Rubbo, João Luiz Kovaleski,, Federal TechnologicalUniversityofParana - UTFPR, Ponta Grossa – PR, Brazil

**10.** 8:45 – 8:50**Characterization of babaçu seed oil by extraction in ultrasonic bath using different organic solvents**. Karolina S. Yaekashi , Matheus Josefovicz , Erica Roberta L. R. Watanabe, Simone DelezukInglez . Federal Technological University of Parana - UTFPR, Ponta Grossa – PR, Brazil

**11.** 8:50 – 8:55**Basaltic rock powder in the treatment of industrial effluent containing yellow dye**. L. Mulek, M. Hawerroth , J. M. T. de A. Pietrobelli. Federal Technological University of Parana - UTFPR, Ponta Grossa – PR, Brazil

**12.** 8:55 – 9:00**Biogas production by anaerobic codigestion of agaricus bisporus mushroom and whey residues**. N. Cirqueira, A. H. Cintra., J. M. T. DE A. Pietrobelli. Federal Technological University of Parana - UTFPR, Ponta Grossa – PR, Brazil

**13.** 9:05 – 9:10**Enhancing Buck Converter Performance Through K-Factor Control and Mathematical Modeling**.S. Custódio, M. A. Gonçalves, J. M. Pedroso, UNINTER, Curitiba, PR.

**14.** 9:10 – 9:15**Prediction of CO2 uptake on activated carbon by artificial neural networks**. Suzan Roberta Tombini Venturella, Claiton Zanini Brusamarello, , Fernanda Batista de Souza. Utfpr, Campus Francisco Beltrão, PR. Brazil

**15.** 9:15 – 9:20**The interaction between two Taylor bubbles flowing in a stagnant liquid: effect of the bubblesvolumes**.L. Ienke , E. L. C. Cominese , L. E. M. Lima Federal University of Technology, Ponta Grossa, Paraná, Brazil

**16.** 9:20 – 9:25**Closing parameters influence on the model of liquid film thickness for stratified and annular gas-liquid flows**. E. L. C. Cominese, L. E. M. Lima . Federal University of Technology, Ponta Grossa, Paraná, Brazil

**17.** 9:25 – 9:30**In Silico modeling for interminttent radiofrequency ablation of benign thyroid nodules**. A. Angie Daniela Ibarra Benavides (MechanicalEngineering,

UniversityofBrasilia, Brasilia, DF, Brazil, B.Suelia de Siqueira Rodrigues Fleury Rosa Facultyof Gama, UniversityofBrasilia, Gama, Brasila , DF. Brazil.

**18.** 9:30 – 9:35**Comparison between phase change materials (PCM) to improve thermalmanagement in electric car batteries**. Y. W. Ott, F. J. Rommel, , E. R. Viana.Universidade Tecnológica Federal do Paraná, Curitiba, Brazil

**19.** 9:35 – 9:40**The rise velocity of an elongated gas bubble flowing into a stagnant liquid: dependence on the pipe inclination**. B. Baldykowski , E. L. C. Cominese , V. V. Dimbarre , F. M. Biglia , T. A. Alves , L. E. M. Lima. Federal University of Technology, Paraná, Campus Ponta Grossa, PR, Brazil

**20.** 9:40 – 9:45**Experimental thermal performance of an evacuated tube solar collector using graphene oxide as working fluid in wickless heat pipes**. V.V. Dimbarre, F.M.Biglia, G.A. Bartmeyer, R.F.Turchiello, , P.H.D. Santos, T. Antonini Alves, Federal University of Technology , Parana.

**21.** 9:45 – 9:50**Predicting the Thermal Performance of Heat Pipes with Grooved Wick Structure using Artificial Neural Networks**. T. S. Pereira, P.L.O. Machado, H.V. Siqueira, Y.S. Tadano, T. Antonini Alves. Federal University of Technology – Parana. Brazil.

**22.** 9:50 – 9:55**Evaluation of the regenerative potential in a quarter car with aball screw damper**. L. Ferreira, N. L. Fenner, J. G. B. Duarte, E. A. Perondi. UFRGS, Porto Alegre, RS. Brazil.

**23.** 9:55 – 10:00**Mathematical modeling using system identification of the temperaturevariable in a new Organ-on-a-Chip platform**. Christian França Gonçalves, Karoany Maria Martins Ibiapina, Ana Karoline Almeida da Silva, Gustavo Adolfo Marcelino de Almeida Nunes, Mário Fabrício Fleury Rosa, Suélia de Siqueira Rodrigues Fleury Rosa. University of Brasilia, Brasilia, DF, Brazil

10:00 – 10:30 Coffee break

**24.** 10:30 – 10:35**PID Controller Optimization Using the Grey Wolf Optimizer Algorithm for Roll-Off Displacement in Radiofrequency Ablation of Liver Tumors**. Mendes Faria, Ana Karoline Almeida da Silva , Gustavo Adolfo Marcelino de Almeida Nunes,Klériston Silva Santos , Mário Fabrício Fleury Rosa , Suélia de Siqueira Rodrigues Fleury Rosa. University of Brasilia, Brasilia, DF, Brazil

**25.** 10:35 – 10:40**Theoretical analysis of a non-intrusive capacitive sensor for determination of the bubble velocity and phases' fractions in gas-liquid intermittent flows**. A. Seifert, J. J. R. de Andrade, V. V. Dimbarre, F. M. Biglia, L. E. M. Lima, F. C. Corrêa. Federal University of Technology—Paraná—, Campus Ponta Grossa

**26.** 10:40 – 10:45**Maximum power point tracking control for a wind microgeneration system: PIand fuzzy control**. Marques. Taysa, Bigai. Mario, Silva.

João Pedro, Santos. João Lucas Correa. Fernanda Siqueira. Hugo, IllaFont. Carlos. Federal Universityof Technology – Parana, Ponta Grossa, Brazil.

**27.** 10:45 – 10:50 **Exploring Information Correlation in Turbulent Flows Across Varied Scales via Recurrence Analysis**. J. V. M. da Silveira. T. L. Prado, G. L. Vasconcelos. Universidade Federal do Paraná, Curitba PR, Brazil.

**28.** 10:50 – 10:55**Uniform asymptotic approximation for a nonlinear electromechanical dynamic model**. G.A. Kurina.Voronezh State University, Voronezh; Federal Research Center;Computer Science and Control; of Russian Academy ofSciences, Moscow, Russia

**29.** 10:55 – 11:00**Nonlinear Control of a Pneumatic Positioning System with Pressure-RegulatorServo-Valves**. Felipe Barreto Campelo Cruz, Thiago Antonini Alves. Universidade Tecnológica Federal do Paraná (UTFPR), Campus Ponta Grossa, PR. Brazil

**30.** 11:00 – 11:05**Regulation of Organs-on-a-Chip Devices in the Era of Industry 4.0: Advancing Translational Research in Health in Brazil**. Ana Karoline Almeida da Silva, Gustavo Adolfo Marcelino de Almeida Nunes, Rafael Mendes Faria, Mário Fabrício Fleury Rosa, Suélia de Siqueira Rodrigues Fleury Rosa, UniversityofBrasilia, DF. Brazil.

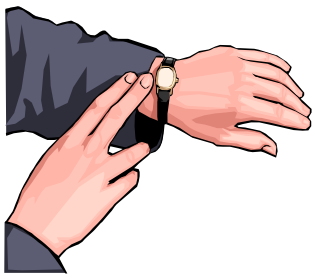
**31.** 11:05-11:10**Empowering Edge: Exploring Tiny Machine Learning Model for Efficient Edge Computing Applications**.Carlos E. O. Zurlo, Itamar Iliuk, Jeane P. S. Iliuk,; Mauricio Aparecido Ribeiro, Universidade Tecnológica Federal do Paraná Campus Ponta Grossa; José Manoel Balthazar, Universidade Tecnológica Federal do Paraná Campus-Ponta Grossa, São Paulo StateUniversity, FacultyofMechanicalEngineeringof Bauru, Bauru, SP, Brazil, Mauricio Aparecido Ribeiro, Angelo Marcelo Tusset, Universidade Tecnológica Federal do Paraná Campus Ponta Grossa, PR, Brazil

**32.** 11:10 -11:15**Remarks on nonlinear dynamics of a suspension bridge model a note on fractional order**. Felipe Lima de Abreu, Murilo Cesar Filipus, Clivaldo de Oliveira, Federal University of Grande Dourados, Dourados, MS. José Manoel Balthazar(UTFPR, Ponta Grossa, PR, and UNESP –Bauru, SP)., Mauricio Aparecido Ribeiro ,Ângelo Marcelo Tusset(UTFPR, Ponta Grossa, PR).

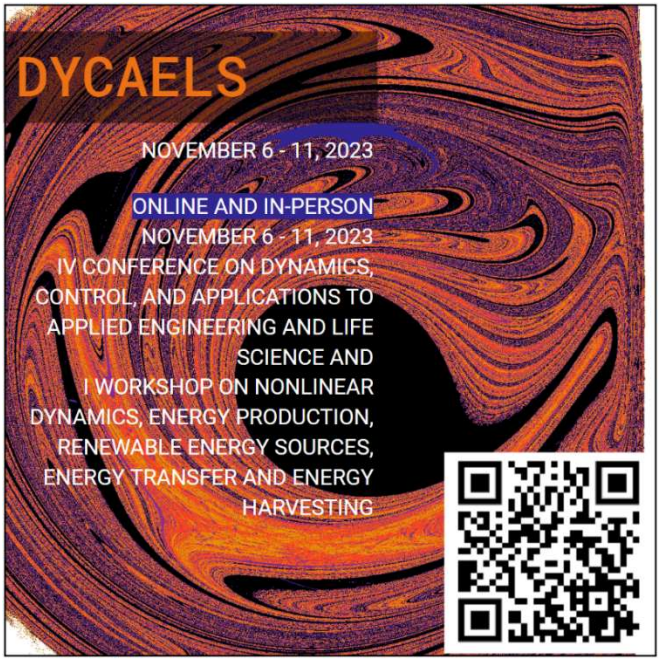
**33**.11: 15 11: 20 **A Note on Nonlinear and Nonideal Dynamical Behavior of Mathieu equation.**Sérgio Barbosa de Miranda,Universidade Tecnológica Federal do Paraná Campus Ponta Grossa; Jose Manoel Balthazar, Universidade Tecnológica Federal do Paraná Campus-Ponta Grossa, São Paulo StateUniversity, FacultyofMechanicalEngineeringof Bauru, Bauru, SP, Brazil; Mauricio Aparecido Ribeiro, Universidade Tecnológica Federal do Paraná Campus Ponta Grossa; Angelo Marcelo Tusset, Universidade Tecnológica Federal do Paraná Campus Ponta Grossa; Jorge LuisPalacios Felix, Alegrete Technological Center, Federal Universityof Pampa,

RS, Brazil; Hilson Henrique Daum, Universidade Tecnológica Federal do Paraná-Campus Guarapuava

34. 11: 20 11: 25 **CommentsontheInteractionwithMotorcycleandSmallTruckCargo Transportation** Lidiane de Vilhena AmanajasMranda ,Universidade Tecnológica Federal do Paraná Campus Ponta Grossa; Jose Manoel Balthazar, Universidade Tecnológica Federal do Paraná Campus-Ponta Grossa, São Paulo StateUniversity, FacultyofMechanicalEngineeringof Bauru, Bauru, SP, Brazil; Mauricio Aparecido Ribeiro, Universidade Tecnológica Federal do Paraná Campus Ponta Grossa; Angelo Marcelo Tusset, Universidade Tecnológica Federal do Paraná Campus Ponta Grossa; Jorge LuisPalacios Felix, Alegrete Technological Center, Federal Universityof Pampa, RS, Brazil; Hilson Henrique Daum, Universidade Tecnológica Federal do Paraná-Campus Guarapuava




**Sixth day Saturday, Nov 11Afternoon ( free time )**




# INTERNATIONAL DYCAELS PROGRAMME

PONTA GROSSA, BRAZIL, NOVEMBER 6 - 11, 202