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CIMA's Scientific Report

2023

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I. Overview of research activities in 2023

In 2023, (last official actualization up to 31st December 2023) the team of the Centro de Investigação em Matemática e Aplicações (CIMA), <https://www.cima.uevora.pt/>, was composed of 87 members: 76 Ph.D researchers and 11 non Ph.D integrated researchers, distributed over three poles: University of Évora, University of Madeira, Higher Institute of Engineering of Lisbon (ISEL).

The scientific research developed in CIMA was addressed on several topics according to the different four research groups (DEO, LAG, DS, SSPA) and two research lines: Mathematical Modelling in Life Sciences and Applications (MMLSA) and Mathematics and Applications to Technology and Industry (MATI).

Some highlights of CIMA's 2023 activity are:

- **Organization of the following meetings :**

- ◆ **International Workshop on Mathematics and Physical Sciences**, June 15-16 | 2023, University of Évora, Colégio Luís António Verney,
- ◆ **CIMA's Annual Meeting 2023**, 14th July/2022, Higher Institute of Engineering of Lisbon (ISEL). <https://cimameetup2023.isel.pt/>

- **Sponsorship of international and national meetings :**

- ◆ **Workshop on Operator Theory, Complex Analysis, and Applications 2023 - WOTCA 2023** will be held at University of Évora, Portugal, on July 24-28, 2023.

<https://sites.google.com/view/wotca23>

- ◆ **Workshop Mathematics and Applications, CIMPA (UCR) and CIMA**, Universidade de San José, Costa Rica, no período de 21 a 29 de Janeiro de 2023

<https://www.cimpa.ucr.ac.cr/index.php/inicio/notice/382-workshop-mathematics-and-applications>

- ◆ **International Meeting on Commutative Monoids 2023**, Universidade de Évora (Portugal), 18th to 20th July 2023, CLAV - Anfiteatro 1.

<https://monoidsproject.uca.es/evento/international-meeting-on-commutative-monoids-2023/?lang=en>

♦ **European Conference on Numerical Mathematics and Advanced Applications** (ENUMATH2023), September 4-8, 2023, in Lisbon, IST.
<https://enumath2023.com/>

- **Publications by CIMA's members (see Section A): 104**
- **Communications of CIMA's members in events (see Section B): 112**
- **Advanced Training (see Section E): 52 students**
- **Seminars (see Sections F and G): 60**
- **Participation in projects of CIMA's members(see Section H): 30**
- **Internationalization :**

♦ **21 Researchers of CIMA** were members of the Organizing, Scientific, Programme or Steering Committees of **42 International events** (see **section D**);

♦ **15 Researchers of CIMA** were PI or team members of **30 International Projects** (see **section G**)

♦ **4 PhD Thesis of international students** were concluded, and **28 PhD Thesis of international students** are ongoing (see **section E**)

♦ Many CIMA's researchers are members of International Societies, Prize Awarding Committees, International Jurys, Editorial Boards, Associated Editors, Guest Editors of Special Issues, or reviewers of international journals.

♦ Most of CIMA's elements collaborate with international researchers from all over the world, in terms of publications, communications, projects, work visits,...

More details about CIMA's structure can be seen at
<https://www.cima.uevora.pt/index.php>

II. Research Groups

This section contains the main scientific topics in each research group.

1. Differential Equations and Optimization (DEO)

1.1. Boundary value problems for ordinary differential equations

- Nonlinear periodic Ambrosetti-Prodi type problems: sufficient conditions on the nonlinearities to obtain the Ambrosetti-Prodi alternative.
- Coupled systems with two parameters: discussion of the Ambrosetti-Prodi alternative on both parameters.
- First-and second-order nonlinear periodic impulsive coupled systems with generalized impulsive effects: It was proved a necessary condition for the existence of solutions: the sum of the impulses must be null. Moreover, several local monotone conditions were established for the nonlinearities and the impulsive functions.
- Solvability of impulsive coupled systems with ϕ -Laplacian differential equations.
- Sufficient conditions for the solvability of third-order functional Ambrosetti-Prodi-type problems.

1.2. Calculus of Variations and Optimal Control

- Decomposition of $L^1(a,b)$ functions through a convenient convergent series.
- Determination of the sign of the Lebesgue integral of a product of two functions.
- A geometric approach to the Liapunov theorem on convexity of the range of vector measures under constraints.
- Calculus of variations and applications to material sciences. Namely, nonlocal and local supremal functionals, integral representation and homogenization and partial differential equations.
- Integral representation in the context of Structured Deformations and measures. In particular, applications to thin structures.

1.3. Non-smooth Analysis

- Geometric (local) properties of compact convex sets in $\mathbb{R}^n$, which are given (locally) through an implicit equation.
- Relationships between positive directional curvatures (in the set) and the existence of second-order derivatives (in the polar set).

1.4. Numerical methods for partial differential equations and fluid mechanics

- Research activities in the area of mathematics of fluid mechanics and its applications to hemodynamics. In particular, studies were carried out on Ambrosetti-Prodi-type differential equations.
- Research activities on Ulam Stabilities for a Class of Higher Order Integro-Differential Equations

1.5. Multiobjective optimization

Development of multi-objective optimization methods for a forestry management problems in Portugal based on constraint programming.

2. Dynamical Systems (DS)

- Study of the human behaviors subjected to couplings and strategies of suppressing chaotic behavior using couplings.
- New approaches to obtain necessary and/or sufficient conditions for quasiconvexity, in the planar case. Study of general variational problems and the numerical treatment of the problems under study.
- Theoretical models that can simulate fractures and/or lack of homogeneity in ornamental rocks, such as marble.
- Existence of trapped modes around freely-floating bodies in a multi-layer fluid
- Velocity and energy of periodic travelling interfacial waves.
- Discrete dynamical systems in two dimensions with chaotic behavior and limit cycles, in particular the Lozi maps and Lozi-type maps. The models obtained are based on a prototype of a suspended load device consisting of a drive system for a cart moving horizontally with a pendulum attached, when the model is subjected to piecewise linear control driven by a cart

speed control signal

- Development of tools associated with symbolic dynamics that will allow us to characterize qualitatively the complexity of systems, such as the calculation of topological entropy and the Lyapunov exponent.

- Development of forest management scheduling models that address wildfire risk, both at stand and landscape levels, with the incorporation of concerns about regularity of volume, wildfire resistance or adjacency constraints. This research is applied to the Zona de Intervenção Florestal (ZIF) de Paiva and de Entre-Douro e Sousa (ZIF_VS) that is in northwestern Portugal.

- Non-autonomous attractors in non-autonomous dynamical systems generated by the introduction of simple limiters, according to a temporal sequence, in the iteration of tent maps.

- Representations of Cuntz-Krieger algebras. Classification of the Cuntz-Krieger sub algebras. Branching systems and representations of graph algebras

- Cellular automata and genetic algorithms. Evolutionary dynamics of networks of automata.

- Development of composite materials, using clay, celulosis and other raw materials, for bio-climatization of buildings.

- Mini ecosystems – Experimental setup. New systems will be established, arising from previous ones.

- Study of robotic motion using the dynamical model introduced in previous year. Development of the interaction model between robots. Codification of tasks and strategies. Experimental, computational and theoretical work.

- Study of cryptographic systems using cellular automata and chaotic discrete dynamical systems

- Study of oscillations on non-homogeneous materials. Coupling of harmonic oscillators

3. Logic, Algebra and Geometry (LAG)

3.1. Numerical semigroups

- Frobenius number and genus.
- Invariants of numerical semigroups : the multiplicity, embedding dimension, degree of singularity, conductor, Apéry sets, pseudo-Frobenius number and type.

3.2. Logic

- Definition of generalizations of the Levi and Harper Identities, which are suitable to the context of non-prioritized operators of belief change defined on belief bases (i.e. sets of formulas not necessarily closed under deduction).
- Revision of our logic for contrary-to-duty conditionals, showing how to adjust our logical models in such a way as to avoid the counterintuitive results pointed out by Bjørn Kjos-Hanssen, but keep the main results that support our logical analysis of contrary-to-duty (CTD) scenarios.
- Equality in the context of Non-standard Analysis.
- Apply techniques from Proof Mining, information to obtain the strong convergence of the Halpern-Mann algorithm in the context of CAT(0) spaces.
- Theory of scales and the semantics of vague adjectives. The models of this theory are necessarily Non-standard leading to denominate our philosophical conception as *non-standard primitivism*, since in our theory vague quantities are not reducible to precise degrees.
- A realisability with states that takes advantage of the Robinson-Lightstone construction, allowing to obtain computational content of some principles of non-standard arithmetic
- Characterization of definable Skolem functions and its relationship with trichotomy in the context of o-minimal structures was obtained.
- Development of a hybrid logic with varying domains, extending earlier works in hybrid logic by Martins, Manzano and Blackburn.
- Analysis of the finite content of Dykstra's algorithm through the logic tools commonly used in the *Proof Mining* program

3.3. Neutrices and external numbers

- Polynomials with external numbers: Influence of errors in the coefficients on the roots of polynomials. A complete account on the shape of these errors could be given, both in the real and the complex setting.

- Flexible systems of linear equations or inclusions. This studies the influence of errors in the coefficients and the right-hand member (modelled by external numbers) on the solution.

3.4. Flexible linear algebra and optimization

- Flexible linear algebra and near optimization under general conditions

3.5. Active learning in teaching of Mathematics in higher education

3.6. Artinian Jordan Algebras and Algebras of Gorenstein of codimension 4

- Generalisation of results on bounds for the Jordan type of Artinian algebras, to the cases of non-graded algebras, and algebras with a non-standard grading, and free extensions.

- Study of new invariants of Artinian algebras derived from the Jordan type, and their relation to deformations.

- Study of Gorenstein homogeneous ideals

- Study of the Hodge-Riemann relations (HRR) for graded Artinian Gorenstein (AG) algebras, and classification of those AG algebras in codimension two satisfying the HRR in terms of their Macaulay dual generators

3.7. Monads on smooth projective varieties

Monads on smooth projective varieties whose bounded derived category of coherent sheaves has a semi-orthogonal decomposition.

3.8. Vector bundles on the 3-dimensional projective space

Existence of vector bundles E on the 3-dimensional projective space defined by a linear resolution and homological dimension 2, and such that the Euler characteristic of the bundle $\text{End}(E)$ is one.

4. Statistics, Stochastic Processes and Applications (SSPA)

4.1. Stochastic currents of Brownian motion.

Study of the stochastic currents of Brownian motion and its relation to Hida distributions.

4.2. Feynman integrals.

Construction of the Feynman integral for the Schrödinger propagator with combinations of exponentially growing and harmonic oscillator potentials as well-defined white noise functionals.

4.3. Random potentials for Markov processes.

Integral functionals of Markov processes in the case $d \geq 3$, and applications to compound Poisson processes, Brownian motion and diffusions.

4.4. Hydrodynamic limits for the free Kawasaki dynamics of continuous particle systems.

An infinite particle system of independent jumping particles was studied.

Their construction is recalled, further properties are derived, the relation with hierarchical equations, Poissonian analysis, and second quantization are discussed. The hydrodynamic limit for a general initial distribution satisfying a mixing condition is derived. The large time asymptotic is computed under an extra assumption.

4.5. Compound Poisson processes: potentials Green measures and random times.

Existence of Green measures for Markov processes with a nonlocal jump generator. The non-singular jump kernel has no second moment and satisfies a suitable condition on its Fourier transform. We also study the same problem for certain classes of random time changes Markov processes with jump generators.

4.6. A Biorthogonal Approach to Infinite Dimensional Fractional Poisson Measure.

The biorthogonal approach to the analysis of the infinite dimensional fractional Poisson measure on the dual of Schwartz test function space.

The kernels of the monomials may be expressed in terms of the Stirling operators of the first and second kind as well as the falling factorials in infinite dimensions. The test and generalized function spaces associated to an adequate measure are completely characterized using an integral transform as entire functions.

4.7. Stochastic differential equation

- Mixed stochastic differential equation models for individual growth, with generalization to parameter dependence on the individual genetic values: properties of the models, parameter estimation, testing significance of genetic values, and study of new approximate delta method of parameters' estimation and its comparison with previous approximate methods; application to bovine growth data.

- General stochastic differential equation growth and fishing models with Allee effects: conditions for extinction and for existence of a stationary distribution with general autonomous natural growth with Allee effects and general autonomous harvesting efforts. Cases where density-dependent intensity effects of environmental noise.

4.8. Machine learning

Application of machine learning in the detection procedure to estimate the water level of stream channels from images acquired by low-cost cameras.

4.9. Metrology

Study and evaluation of measurement uncertainty and of new theoretical and applied metrological capabilities, in several areas of physical metrology, namely those related to volume, flow and density with applications in health. Use of Monte Carlo and Bayesian methods to evaluate uncertainties in complex problems. Statistics applied to interlaboratory comparison studies.

4.10. Statistics

- Type I error and power of the alternative approaches to two-way ANOVA in the presence of heteroscedastic errors and discrete data.

- Relationship between the nursing work environment and the quality of pressure ulcer care in integrated continuing care units in Alentejo.

- Identification of sensory and emotional profiles and customer segmentation of three different types of Seaweed bonbons, to find sensory drivers of liking.

- Characterization of the sleep and physical activity and sports habits of Portuguese elementary school children and identification of factors related to the child's sleep disturbance index and respective subscales.

- A predictive model for the occurrence of Road Traffic Accidents (RTA) on a road with a high RTA rate (the prediction is obtained for each road segment for a given time and day and combines results from statistical methods, spatial analysis, and artificial intelligence models).

- GIS tools were combining with machine learning and artificial intelligence, developing spatial intelligence (departing from a heatmap analysis, and applying kernel density estimation,

new spatial approaches were used, namely DBSCAN and Getis-Ord).

- Several determinants for the type of RTA collision, crash, pedestrian running-over were identified.

- Statistical modelling of attendance at Emergency Service of the Hospital do Espírito Santo (HESE) de Évora; Profile of the hyper user of the emergency service.

- A Generalized Linear Mixed-Effects analysis was conducted to study if co-laughter, laughter rate, and the percentage of voiced frames in laughs are influenced by such factors.

- Analysis and evaluation of faults at tide gauge stations based on the Crow-AMSAA model and survival models.

- Determination of how correction with dolomitic limestone and continuous or deferred grazing affect ingesting behaviour and the use of space in natural pastures when the pasture growth rate is maximum.

- Analysis of factors associated with depression and anxiety symptoms among university students in Portugal, Sweden and Germany.

- Validation of the Medication Management Ability Assessment and determination of the level of functional ability of older adults to manage a simulated therapeutic regimen, understand their main limitations when facing changes and relationship between the functional ability to manage medication and cognitive functions.

- Assessment of the impact of implementing a “Geriatric Proximity” intervention on the functioning, satisfaction with social support, affective experience, and feelings of loneliness of institutionalized older adults in the times of the pandemic

- similarity/dissimilarity measures in time series, considering different structures of dependence between observations - for example, stationary series, non-stationary series (with trend and/or seasonality), with structural change -, exploring the difference between raw or with certain transformations.

- Evaluation, through simulation studies, of methods for testing (retrospectively) breaks or changes in structure in time series, at unknown moments of time, including determining the number of these breaks as well as the confidence intervals of break dates.

- Study of the recreational fishing to gather socioeconomic and biological information on shore angling fisheries in the Natural Marine Park of the Algarve Reef – Pedra do Valado (MPA).

- Study of differences in knowledge about sexuality depending on sexual orientation, within the scope of the study “Sexual Education of Portuguese Young People - Knowledge and Sources”

III. Research Lines

This chapter details the main research topics and tasks of each research line.

Mathematical Modelling in Life Sciences and Applications (MMLSA)

Animal Growth, Fishery and Crop Production

- Mixed stochastic differential equation models for individual growth: generalisation to parameter dependence on the individual genetic values; study of a new approximate delta method of parameters' estimation and its comparison with previous approximate methods.
- Study of general stochastic differential equation growth and fishing models with Allee effects: conditions for extinction and existence of a stationary distribution with general autonomous natural growth with Allee effects and general autonomous harvesting efforts; further generalisation to the case of density-dependent intensity effects of environmental noise.
- Study the recreational fishing to gather socioeconomic and biological information on shore angling fisheries in the Natural Marine Park of the Algarve Reef.
- Determination of how correction with dolomitic limestone and continuous or deferred grazing affect ingesting behaviour and the use of space in natural pastures when the pasture growth rate is maximum.

Epidemiology and Public Health

- Analysis of factors associated with depression and anxiety symptoms among university students in Portugal, Sweden, and Germany.
- Validation of the Medication Management Ability Assessment and determination of the level of functional ability of older adults to manage a simulated therapeutic regimen.
- Assessment of the impact of implementing a "Geriatric Proximity" intervention on the functioning, satisfaction with social support, affective experience, and feelings of loneliness of institutionalized older adults in the times of the pandemic.
- Validation of pharmaceutical pictograms from the "PictoPharma – Pharmaceutical pictogram system" database in the elderly population
- Classification of time series based on their similarity/dissimilarity measures, considering different structures of dependence between observations, exploring the difference between raw or with certain transformations, with applications in infectious diseases.
- Study of differences in knowledge about sexuality depending on sexual orientation.

- Collaboration with the Water Laboratory team at the University of Évora in the study of Phytoplankton dynamics and cyanobacteria blooms risk assessment in a large reservoir (Alqueva).
- Relationship between the nursing work environment and the quality of pressure ulcer care in integrated continuing care units in Alentejo.
- Characterization of the sleep and physical activity and sports habits of Portuguese elementary school children and identification of factors related to the child's sleep disturbance index and respective subscales.
- Statistical modelling of attendance at Emergency Service of the Hospital do Espírito Santo (HESE) de Évora; Profile of the hyper user of the emergency service.

Food

- Identification of sensory and emotional profiles and customer segmentation of three different types of Seaweed bonbons, to find sensory drivers of liking.

Safety and human well-being

- Development of a predictive model for the occurrence of Road Traffic Accidents (RTA).
- GIS tools were combined with artificial intelligence, developing spatial intelligence and providing decision-makers and authorities to foster new approaches to the prevention and mitigation of the occurrence of RTA.
- Several determinants for the type of RTA (collision, crash, pedestrian running-over were identified.
- Analysis and evaluation of faults at tide gauge stations based on the Crow-AMSAA model and survival models.

Mathematics and Applications to Technology and Industry (MATI)

Communication and social networks

Motivated by data packet sampling problems in communication networks such as the Internet, the research work consists of an inversion problem. Since these problems are ill-posed, regularization methods are needed for their solution. Through these methods, the size distribution of the Internet packet flow was estimated and a Gaussian TLC was deduced for the estimator obtained directly from the properties of the underlying operator.

Sensory and emotional profiles

Identification of sensory and emotional profiles and customer segmentation of three

different types of Seaweed bonbons, to find sensory drivers of liking

Faults at tide gauge stations

Analysis and evaluation of faults at tide gauge stations based on the Crow-AMSAA model and survival models.

Road Traffic Accidents (RTA)

A methodology has been developed to allow for archive a predictive model for the occurrence of Road Traffic Accidents (RTA) on a road with a high RTA rate (the prediction is obtained for each road segment for a given time and day and combines results from statistical methods, spatial analysis, and artificial intelligence models).

- The results obtained with this new approach provide new insights and more profound knowledge of the RTAs problem. And provide ‘food for thought’ for decision-makers and authorities to foster new approaches to the prevention and mitigation of an important societal concern.
- Several determinants for the type of RTA (collision, crash, pedestrian running-over were identified (multinomial logit model with random over-sampling examples approach- ROSE - which performance were compared with some machine learning algorithms).

Machine learning and artificial intelligence

- GIS tools were combining with machine learning and artificial intelligence, developing spatial intelligence (departing from a heatmap analysis, and applying kernel density estimation, new spatial approaches were used, namely DBSCAN and Getis-Ord).

Composite materials

Development of composite materials, using clay, celulosis and other raw materials, for bioclimatization of buildings. A paper on the subject is planned and several prototypes of building materials).

Mini ecosystems

Mini ecosystems – Experimental setup. New systems will be established, arising from previous ones.

Robotic motion

Study of robotic motion using the dynamical model introduced in previous year. Development of the interaction model between robots. Codification of tasks and strategies. Experimental, computational and theoretical work.

Cryptographic systems

Study of cryptographic systems using cellular automata and chaotic discrete dynamical systems

Dynamical systems

Study of dynamical systems, deterministic or probabilistic, applied to image processing. In particular applied to image of rocks to study fractures.

Oscillations on non-homogeneous materials

Study of oscillations on non-homogeneous materials. Coupling of harmonic oscillators.

Virtual Reality

- Project “Virtual Reality in the Social Inclusion of the Elderly” with several IPSS (Social Solidarity Private Institution): improve the physical, social and emotional conditions of the elderly. This improvement will be achieved through the implementation of a program, adapted to each reality and each individual (in depression or anxiety) through technology based on Virtual Reality, with experiences that promote the well-being and quality of life of the elderly, providing a positive social integration and promoting active and happy aging.

IV. 2023 Indicators

A – Publications

A.1. Books

Books (editor) of international circulation:

A1 Anthony Iarrobino, **Pedro Macias Marques**, Maria Evelina Rossi, and Jean Vallès (editors), Deformation of Artinian algebras and Jordan type, Contemporary Mathematics, American Mathematical Society, proceedings of the special session "Deformation of Artinian algebras and Jordan type" in the "International Meeting of the American Mathematical Society, the European Mathematical Society, and the French Mathematical Society", accepted for publication, <https://www.ams.org/publications/ebooks/conm-coll>

A2 Tomas Bodnar, Philippe Fraunié, David Simurda, Elfriede Friedmann, **Marília Pires**, SSN Applied Sciences, Topical Collection: Engineering - Recent Problems in Fluid Mechanics, Springer, volume 5, <https://link.springer.com/collections/jdeiijfic>

Books (author) of national circulation:

A3 **Infante, P., Afonso, A., Jacinto, G.**, Engana, T., Silva, F. G., Correia, R., Leão, R., Mira, D., Fonseca, J., Garção, J., Rebocho, M. (2023). *Um Olhar Sobre os Hábitos de Atividade Física e de Sono das Crianças do 1º Ciclo de Évora*. Imprensa da Universidade de Évora, Coleção Plural. ISBN: 978-972-778-313-7.

<https://doi.org/10.60506/uevora.37>.

<https://imprensa.uevora.pt/uevora/catalog/book/37>

A4 **Infante, P.**, Vítor Nogueira, V., Manuel, P.R., Góis, P., **Afonso, A.**, Santos, D., **Jacinto, G.**, Saias, J., Rego, L., Silva, M., Gonçalves, N.C., Rebisco, P., Quaresma, P., Nogueira, P., Costa, R. P., Clemente, R. (2023). *A Sinistralidade Rodoviária no Distrito de Setúbal*. Imprensa da Universidade de Évora, Coleção Plural. ISBN: 978-972-778-300-7.

<https://doi.org/10.24902/uevora.33>.

<https://imprensa.uevora.pt/uevora/catalog/book/33>

Book chapters of international circulation:

A5 António P. N. Trota, **João Cabral** e Luís M. Ferreira Gomes (2023). RESERVATÓRIOS GEOTÉRMICOS DOS AÇORES. In Cortez, J.A.S. (Coord.), Mare Liberum Editora, *Águas Minerais Naturais e de Nascente da Região Sul, Açores e Madeira* (pp. 251-330). Aveiro. ISBN: 978-972-8046-29-3.

A6 **Júlia Justino** and Silviano Rafael, Which Pathway Towards Mathematics' Assessment in Engineering Education?, Lecture Notes in Networks and Systems, volume 634, Springer, pp. 380–387, ISBN: 978-3-031-26189-3, URL: https://doi.org/10.1007/978-3-031-26190-9_39

A7 Silviano Rafael and **Júlia Justino**, Why is It so Difficult to Apply Student-Centered Approach?, Lecture Notes in Networks and Systems, volume 634, Springer, pp. 372–379, ISBN: 978-3-031-26189-3, URL: https://doi.org/10.1007/978-3-031-26190-9_38

A8 Advinha, A.M., Cachão, R.O., Raposo, A.C., Domingos, M., **Afonso, A.**, Serralheiro, A., Lopes, M.L., Oliveira-Martins, S. (2023). Validation of the Medication Management Ability Assessment Tool (MMAA) for the Portuguese Older Adults. In *Gerontechnology V. IWOG 2022* (Eds. Moguel, E., de Pinho, L.G., Fonseca, C.). Lecture Notes in Bioengineering. Springer, Cham, 412-420. https://doi.org/10.1007/978-3-031-29067-1_39

A9 Gomes, M.I., Figueiredo, F., **Henriques-Rodrigues, L.** (2023). Reliable Alternative Ways to Manage the Risk of Extreme Events. In: Kitsos, C.P., Oliveira, T.A., Pierri, F., Restaino, M. (eds) Statistical Modelling and Risk Analysis. ICRA 2022. Springer Proceedings in Mathematics & Statistics, vol 430. Springer, Cham. https://doi.org/10.1007/978-3-031-39864-3_8

A10 Quelhas, A.P., Clímaco, I.N., **Larguinho, M.** (2023). Exploratory Analysis of Financial Literacy and Digital Financial Literacy: Portuguese Case. In: Reis, J.L., Peter, M.K., Varela González, J.A., Bogdanović, Z. (eds) *Marketing and Smart Technologies. Smart Innovation, Systems and Technologies*, vol 337. Springer, Singapore. https://doi.org/10.1007/978-981-19-9099-1_48

A11 Silva, F., Cachucho, L., Matos, C., Geraldo, A., Conceição, C., Lamy, E., Capela e Silva, F., **Infante, P.**, Pereira, A. M. F. (2023). Mecanismos homeostáticos e homeorréticos decorrentes da aclimatização sazonal em bovinos leiteiros de diferente capacidade produtiva, in *Zootecnia: Desafios e tendências da ciência e tecnologia*, Organizadores: Organizadores: Pereira, A., Sousa, G., Viana, G., Atena Editora, pp. 20-34, ISBN: 978-65-258-1049-2, <http://dx.doi.org/10.22533/at.ed.4922315023>.

A.2. Scientific articles

Articles in international journals with referee

A12 F. Minhós, F. Carapau, G. Rodrigues, *Coupled systems with Ambrosetti-Prodi-type differential equations*, AIMS Mathematics, 2023, Volume 8, Issue 8: 19049-19066. MR4605773 , doi: 10.3934/math.2023972 <http://www.aimspress.com/article/doi/10.3934/math.2023972>

A13 C. Carlota, A. Ornelas, *An Extension of the 1-Dim Lebesgue Integral of a Product of Two Functions*, Mathematics, 2023, 11(15), 3341. <https://doi.org/10.3390/math11153341>

A14 C. Carlota, A. Ornelas, *Constructive decomposition of any $L_1(a; b)$ function as sum of a strongly convergent series of integrable functions each one positive or negative exactly in open sets*, Mediterranean Journal of Mathematics, 2023, 20, 226. <https://doi.org/10.1007/s00009-023-02414-1>

A15 F. Minhós, N. Oliveira, *On periodic Ambrosetti-Prodi-type problems*, AIMS Mathematics, 2023, 8 (6): 12986-12999. [MR4569519](https://doi.org/10.3934/math.2023654), Doi: 10.3934/math.2023654 <http://www.aimspress.com/article/doi/10.3934/math.2023654>

A16 F. Minhós, S. Perestrelo, *First-order periodic coupled systems with orderless lower and upper solutions*, AIMS Mathematics, 2023, 8(7): 16542–16555. [MR4569519](https://doi.org/10.3934/math.2023846), DOI: 10.3934/math.2023846, <http://www.aimspress.com/article/doi/10.3934/math.2023846>

A17 F. Minhós, G. Rodrigues, *Ambrosetti–Prodi alternative for coupled and independent systems of second-order differential equations*, Mathematics 2023, 11, 3645, <https://doi.org/10.3390/math11173645> <https://www.mdpi.com/2227-7390/11/17/3645>

A18 M. Benedicks, M. Misiurewicz, A. Rodrigues, *Expansion properties of double standard maps*, Ergodic Theory and Dynamical Systems, 2023, Volume 43, Issue 8: 2549 – 2588. <https://doi.org/10.1017/etds.2022.45>

A19 S. Kromer, M. Kruzik, E. Zappale, *Relaxation of functionals with linear growth: Interactions of emerging measures and free discontinuities*, Advances in Calculus of Variations, 2023, 16, n. 4: 835-865. <https://doi.org/10.1515/acv-2021-0063>

- A20** G. Gargiulo, **E. Zappale**, *A sufficient condition for the lower semicontinuity of nonlocal supremal functionals in the vectorial case*, European Journal of Mathematics, 2023,9, 75. <https://doi.org/10.1007/s40879-023-00668-3>
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A.4. Edited special issues of journals

A105 Special Issue of Mathematics Journal "Applied Mathematical Modelling. Mathematics (ISSN 2227-7390) – MDPI; Editors – **Cabral, João**; Fournier-Prunaret, Daniele; Rocha, José
https://www.mdpi.com/journal/mathematics/special_issues/Applied_Mathematical_Modelling_Dynamical_Systems

A106 B. Godinho, **J. A. Rodrigues**, “Deep Learning ECG Classification with Discrete Wavelet”, 1st International Conference on Challenges in Engineering, Medical, Economics and Education: Research & Solutions (CEMEERS-23) June 21-22, 2023 Lisbon (Portugal), p.21-22. <https://doi.org/10.17758/EIRAI19.F0623111>

A107 B. Godinho, **J. A. Rodrigues**, “Continuous Wavelets Transform for ECG” 6th International Conference on Numerical and Symbolic Computation Developments and Applications PROCEEDINGS, 75. ISBN: 978-989-99410-7-6

A108 **J. A. Rodrigues**, “A Finite element method for Shear Stress study on cancer cell proliferation” IEEE 7th Portuguese Meeting on Bioengineering (ENBENG) DOI: 10.1109/ENBENG58165.2023.10175367

B – Communications

Communications at international events

- B1.** F. Carapau and P. Correia, “Numerical simulations of a third-grade fluid flow on a tube through a contraction”. Workshop “Mathematics and Applications”, January 25th-27th, University of Costa Rica, 2023.
<https://www.cimpa.ucr.ac.cr/index.php/inicio/notice/382-workshop-mathematics-and-applications>
- B2.** F. Minhós, “Coupled systems of fully simply supported beam equations”. Workshop “Mathematics and Applications”, joint organization between CIMA and CIMPA (Centro de Investigación en Matemática Pura y Aplicada), Universidad de Costa Rica, San Pedro de Montes de Oca, Costa Rica, January, 25-27, 2023.
<http://www.cimpa.ucr.ac.cr/index.php/inicio/notice/382-workshop-mathematics-and-applications>
- B3.** F. Minhós, “Third-order periodic problems and application to thyroid-pituitary homeostatic mechanism”. 14th Conference on Dynamical Systems Applied to Biology and Natural Sciences, DSABNS 2023, Bilbao, Spain, February, 05-08, 2022.
<https://sites.google.com/bcamath.org/dsabns2023/scientific-programme?authuser=0>
- B4.** F. Minhós, “On first order fully nonlinear coupled functional systems”. International Workshop on Mathematics and Physical Sciences, June, 15-16, University of Évora.
- B5.** F. Minhós, “On periodic coupled systems”. Workshop on Differential Equations and Their Applications, 02.07.2023 - 08.07.2023, Będlewo, Poland.
<https://www.impan.pl/en/activities/banach-center/conferences/23-differequationsapp>
- B6.** F. Minhós, “Functional coupled systems with generalized impulsive effects”. Workshop on Operator Theory, Complex Analysis, and Applications 2023 - WOTCA 2023, University of Évora, Portugal, July 24-28, 2023.
<https://sites.google.com/view/wotca23>
- B7.** F. Pereira, “Directional curvatures of compact convex sets in R^n ”. Workshop “Mathematics and Applications”, joint organization between CIMA and CIMPA (Centro de Investigación en Matemática Pura y Aplicada), Universidad de Costa Rica, San Pedro de Montes de Oca, Costa Rica, January, 25-27, 2023.
<http://www.cimpa.ucr.ac.cr/index.php/inicio/notice/382-workshop-mathematics-and-applications>

applications

B8. E. Zappale, "*Lower semicontinuity of non local supremal functionals*". Virtual (Zoom). Workshop "*Mathematics and Applications*", joint organization between CIMA and CIMPA (Centro de Investigación en Matemática Pura y Aplicada), Universidad de Costa Rica, San Pedro de Montes de Oca, Costa Rica, January, 25-27, 2023. <http://www.cimpa.ucr.ac.cr/index.php/inicio/notice/382-workshop-mathematics-and-applications>.

B9. F.S. Cal, Velocity and energy of periodic travelling internal waves, International Conference on Applied Mathematics, May 31, 2023, City University of Hong Kong, Hong Kong <https://www.cityu.edu.hk/rcms/icam2020/index.html>, https://www.cityu.edu.hk/rcms/icam2020/Programme/Abstracts_20230526.pdf

B10. Ferreira, S. (presenter), Baptista, A.N., Baptista, D., New trends in Discrete Mathematics classes, II International Colloquium on Trends and Culture Management, May 19 and 20, 2023, School of Education and Social Sciences - Polytechnic Institute of Leiria, <http://www.trendscolloquium.pt/>, <http://www.trendscolloquium.pt/p/abstracts.html>

B11. Ferreira, S. (presenter), Baptista, A.N., Baptista, D., Innovative pedagogical practices in Discrete Mathematics, 23th International Conference Computational and Mathematical Methods in Science and Engineering, 3-8 July, 2023, Cádiz, Spain, <https://cmmse.usal.es/cmmse2023/welcome>, https://cmmse.usal.es/cmmse2023/sites/default/files/Program_CHPC_CMMSE_23.pdf

B12. Manuel Branco – Numerical semigroups with fixed multiplicity and concentration -Workshop "Mathematics and Applications" January 25th-27th, 2023- Universidad de Costa Rica

B13. Manuel Branco – (invited talk) April 19, 2023 in MSU-IIT seminar in Algebra, Iligan City, 9200 Lanao del Norte, Filipinas

B14. Pedro Macias Marques, Jordan type of Artinian Gorenstein algebras and related invariants, 25th Conference of the International Linear Algebra Society, Special session on Representations of groups and algebras and related topics, Universidad Politécnica de Madrid, 15th June 2023, <https://ilas2023.es/>, http://fgua.es/wp-content/uploads/2023/06/25th_ILAS_Conference_Abstracts_book_Madrid_2023_web_v0.pdf

B15. Pedro Macias Marques, Jordan type of Artinian algebras, finer invariants, and applications, Workshop on Lefschetz Properties in Algebra, Geometry, Topology and Combinatorics, The Fields Institute for Research in Mathematical Sciences, Toronto, 15th May 2023 <http://www.fields.utoronto.ca/activities/22-23/lefschetz> <http://www.fields.utoronto.ca/talks/Jordan-type-Artinian-algebras-finer-invariants-and-applications>

- B16. Pedro Macias Marques**, Jordan type of local Artinian Gorenstein algebras}, Workshop "Mathematics and Applications", Universidad de Costa Rica, 26th January 2023, http://www.cimpa.ucr.ac.cr/images/Cimpa/images/Noticias/Talleres/2023/Matem/Afiches-CIMA-CIMPA_Divulgac.pdf
- B17. Pedro Macias Marques**, Families of local Artinian Gorenstein algebras, Jordan type, and related invariants, Joint Mathematics Meetings, AMS Special Session "The Combinatorics and Geometry of Jordan Type and Lefschetz Properties I", Boston, 7th January 2023, <https://meetings.ams.org/math/jmm2023/meetingapp.cgi/Paper/18507>
- B18. Júlia Justino**, Mathematics learning through flipped classroom, 1st International Higher Education Pedagogy and Faculty Development Conference, 15-17 September 2023, University of Crete, Greece. URL: <https://alliancectl.wordpress.com/programme/>
- B19. Silviano Rafael and Júlia Justino**, A 5-Step Pedagogical Design for Engineering Courses, 5th International Conference of the Portuguese Society for Engineering Education (CISPEE 2023), 5-7 July 2023, University of Minho, Portugal. URL: <https://cispee2023.uminho.pt>
- B20. Júlia Justino, Silviano Rafael and Susana Lucas**, Designing a Pedagogical Framework for Transnational Training, 5th International Conference of the Portuguese Society for Engineering Education (CISPEE 2023), 5-7 July 2023, University of Minho, Portugal. URL: <https://cispee2023.uminho.pt>
- B21. Júlia Justino and Silviano Rafael**, Como enquadrar o ensino da Matemática em contexto PBL?, Seminário Internacional de Práticas Pedagógicas do IPS, 5 May 2023, Polytechnic Institute of Setúbal, Portugal. URL: <https://sippips23.wixsite.com/sipp23>
- B22. Imme van den Berg**, Functional solutions of stochastic differential equations, First SDE - Stochastic Days Encounters: Stochastic Differential Equations and Statistics, May 25,26 2023, Lisbon, <https://cemapre.iseg.ulisboa.pt/sde2023/>.
- B23. Marco Garapa, Eduardo Fermé, and Maurício D. L. Reis (2023)**, System of Spheres-based Two Level Credibility-limited Revisions, 19th Conference on Theoretical Aspects of Rationality and Knowledge (TARK 2023), June 28-30, 2023, Worcester College, Oxford, United Kingdom, <https://sites.google.com/view/tark-2023>; <https://dx.doi.org/10.4204/EPTCS.379.23> .
- B24. Eduardo Fermé, Marco Garapa, Maurício DL Reis**, Causes for Changing Profiles (Preliminary Report), 1st Workshop on AI-driven heterogeneous data management : Completing, merging, handling inconsistencies and query-answering (ENIGMA-23), September 03–04, 2023, Rhodes, Greece, <https://sites.google.com/view/enigma-2023/home-page?authuser=0> , https://ceur-ws.org/Vol-3495/paper_01.pdf
- B25. Eduardo Fermé, Marco Garapa, Maurício DL Reis**, Causes for changing profiles (Extended Abstract), 21st International Workshop on Non-Monotonic Reasoning (NMR 2023), Rhodes, Greece, September 2-4, 2023., September 03–04, 2023, Rhodes, Greece, <https://nmr.krportal.org/2023/>, <https://ceur-ws.org/Vol-3464/short3.pdf>

B26. Rui Albuquerque-1/08/2023, G_2 and $Spin(7)$ structures on tangent bundles, poster presented at the Workshop on Curvature and Global Shape, July 31st -- August 4th, 2023, Westfälische Wilhelms-Universität Münster, Germany. https://www.uni-muenster.de/Diffgeo/cgs_2023/index.html

B27. Rui Albuquerque -26/01/2023, G_2 twistor space applied to the study of vector fields, CIMA-CIMPA Workshop “Mathematics and Applications”, online, between Portugal and Costa Rica.

B28. Marília Pires, Stabilization of Fluid Flow Oldroyd-B Simulations based on Eigenvalues of Conformation Tensor, CIMA Annual Meeting 2024, Universidade da Madeira, Portugal. February 1 – 2, 2024

B29. Marília Pires, Application of artificial diffusion in simulations of Oldroyd-B type viscoelastic fluids for biomedical flows, ENUMATH2023 -The European Conference on Numerical Mathematics and Advanced Applications, Mini-Simpósio Problems in Biomedical Fluid Mechanics, Lisboa, Portugal. September 4 – 8, 2023 <https://enumath2023.com/wp-content/uploads/2023/03/MS08.pdf>

B30. Marília Pires, Artificial Stress Diffusion Applied to the Simulations of Oldroyd-B Fluid Flows, Workshop on Mathematics and Applications, San José, Costa Rica. January 25 – 27, 2023 <http://www.cimpa.ucr.ac.cr/index.php/inicio/notice/382-workshop-mathematics-and-applications>

B31. Joaquim Correia, et al., “Modelling Dialysis”, 171st ESGI (European Study Group with Industry), University of Edinburgh, 21st July, 2023, Edinburgh, UK

B32. Braumann, C. A. (presenter; virtual); joint work with Brites, N. M. Harvesting in random environments and profit optimization: The effects of Allee effects. 3rd International Workshop on Stochastic Processes and Their Applications - IWSPA23, January 12, 17, 19, 24, and 26, 2023, hosted by Universidad de Extremadura, Badajoz, Spain, <https://sites.google.com/view/iwspa2023-gt-seio/home>, Abstract in: *3rd International Workshop on Stochastic Processes and their Applications. Program and Abstracts*, p. 65-66, https://drive.google.com/file/d/1lzoH024iBNXz_YxZo4utFEFOuDCH_7R4/view

B33. Brites, N.M. (presenter; virtual); joint work with **Braumann, C. A.** First passage time moments and density using a logistic growth model with Allee effects and sustainable harvesting. 3rd International Workshop on Stochastic Processes and Their Applications - IWSPA23, January 12, 17, 19, 24, and 26, 2023, hosted by Universidad de Extremadura, Badajoz, Spain, <https://sites.google.com/view/iwspa2023-gt-seio/home> Abstract in: *3rd International Workshop on Stochastic Processes and their Applications. Program and Abstracts*, p. 67-68, https://drive.google.com/file/d/1lzoH024iBNXz_YxZo4utFEFOuDCH_7R4/view

B34. Braumann, C. A. (presenter; virtual); joint work with Brites, N. M.; **Carlos, C.** SDE harvesting models in random environments: The effect of Allee effects, model robust properties and profit optimization. Workshop "Mathematics and Applications", hybrid Workshop organized by CIMA-Universidade de Évora and CIMPA-Universidad de Costa Rica, January 25-27 2023, San José, Costa Rica, <http://www.cimpa.ucr.ac.cr/index.php/inicio/notice/382-workshop-mathematics-and-applications> Abstract in: *Workshop Mathematics and Applications Book of Abstracts*, p. 21

B35. Jacinto, G. (presenter; virtual); joint work with **Filipe, P. A.; Braumann, C. A.; Jamba, N. T.** Individual Growth Models With Stochastic Differential Equations. Workshop "Mathematics and Applications", hybrid Workshop organized by CIMA-Universidade de Évora and CIMPA-Universidad de Costa Rica, January 25-27 2023, San José, Costa Rica, <http://www.cimpa.ucr.ac.cr/index.php/inicio/notice/382-workshop-mathematics-and-applications> Abstract in: *Workshop Mathematics and Applications Book of Abstracts*, p. 22.

B36. Sousa-Ferreira, I.(presenter), **Abreu, A.M.** and Rocha, C. (2023). A flexible non-mixture cure model for recurrent gap time data. , The 37th International Workshop on Statistical Modelling, July 17-21, 2023, IWSM 2023 in Dortmund - IWSM2023 - TU Dortmund (tu-dortmund.de) , Short paper in:: IWSM 2023 Conference Proceedings.pdf (tu-dortmund.de), p. 615-619

B37. Sousa, J. A., Ribeiro, A. S., Pires, C. M., Ribeiro, L. F. (2023). The key role of metrology laboratories in shaping the future. 12th CBM (Brazilian Metrology Congress) - Itaipava, Petropolis, Brazil, 27-30 November, 2023. CBM – Congresso Brasileiro de Metrologia – Metrologia 2023

B38. Furtado, K. (presenter), Jaco, V., **Infante, P., Anabela, A.,** Lopes, M. (2023). O impacto do ambiente de prática de enfermagem na qualidade da assistência ao doente com úlcera por pressão nas unidades de cuidados continuados em Portugal. 17^º Seminário Internacional de Investigação em Enfermagem, 11 e 12 de maio, Lisboa e Porto (online). <https://www.apenfermeiros.pt/17a-conferencia-internacional-de-investigacao-em-enfermagem/>

B39. Custódio, S., Carmo, M., Ferreira, T. (2023). – *Econometrics Methods in the Evaluation of Impact of Economic Receptions on Tourists' Choice of Accommodations and Regions*. Oral communication held at the XXXVI International Conference ASEPELT – *Inequality, poverty exclusion and policy implications for a better world*, Évora University, 5th–7th July 2023. <https://www.congresoasepelt.com/uploads/app/1647/elements/file/file1688454662.pdf>

B40. Henriques-Rodrigues, L., Caeiro, F. and Gomes, M. Ivette (2023). Improvements in the estimation of the Weibull tail coefficient - a comparative study. 23th edition of the international conference Computational and Mathematical Methods in Science and Engineering (CMMSE2023), Cádiz, 3-8 July 2023.

B41. Gomes, M. Ivette, Caeiro, F., Figueiredo, F. and **Henriques-Rodrigues, L.** (2023). The Role of Best Linear Combinations in the Weibull Tail Coefficient Estimation. 13th International Conference on Extreme Value Analysis, Probabilistic and Statistical Models and their Applications (EVA 2023 Milano).

https://bocconi-my.sharepoint.com/personal/stefano_rizzelli2_unibocconi_it/_layouts/15/onedrive.aspx?ga=1&id=%2Fpersonal%2Fstefano%5Frizzelli2%5Funibocconi%5Fit%2FDocuments%2FEVA%202023%20Program%2FEVA2023%5FProgram%5Fand%5FBook%5Fof%5FAbstract%2Epdf&parent=%2Fpersonal%2Fstefano%5Frizzelli2%5Funibocconi%5Fit%2FDocuments%2FEVA%202023%20Program

B42. **Henriques-Rodrigues, L.** (2023). Recent contributions in the semi-parametric estimation of parameters of extreme events. Mathematics and Applications Workshop organized by CIMA- Universidade de Évora and CIMPA-Universidad Costa Rica, 25th-27th january 2023.

<http://www.cimpa.ucr.ac.cr/index.php/inicio/notice/382-workshop-mathematics-and-applications>

B43. **Larguinho, M.**, Viseu, C., Sousa, S. Correia, E. (2023). Análise exploratória sobre o consumo de água engarrafada e da torneira: estudo de uma IES portuguesa. XXXII Jornadas Luso-Espanholas de Gestão Científica. At: Aveiro, Portugal, fevereiro de 2023.

B44. Sousa, S., Correia, E., Viseu, C., **Larguinho, M.** (2023). Consumption Behavior of Bottled and Tap Water in an HEI. 2nd World Conference On Business, Management, Finance, Economics and Marketing. May 25-26, 2023, London, United Kingdom.

B45. Sousa, S., Correia, E., **Larguinho, M.**, , Viseu, C. (2023). Applying the Theory of Planned Behavior to Study Tap and Bottled Water Consumption: Analysis of the Effects of Pro-Environmental Measures Adopted in a HEI. The 4th International Conference on Environmental Science and Applications (ICESA 2023). DOI: [.10.11159/icesa23.132](https://doi.org/10.11159/icesa23.132)

B46. Diogo, H., **Jacinto, G.**, Veiga, P., Rangel, M. (2023). Evaluation of a telephone survey as a complementary tool to integrate in the systematic data collection on marine recreational shing in Azores. ICES WGRFS 2023 Survey methods, 19 a 23 de junho, Ancona, Italy.

B47. **Jorge Santos.** (2023). Aproximations to the binomial distribution, its bounds, relative and absolute precision . Mathematics and Applications Workshop organized by CIMA- Universidade de Évora and CIMPA-Universidad Costa Rica, 25th-27th january 2023.

<http://www.cimpa.ucr.ac.cr/index.php/inicio/notice/382-workshop-mathematics-and-applications>

B48. Furtado, K., Jaco, V., **Infante, P.**, **Anabela, A.**, Lopes, M. (2023). O impacto do ambiente de prática de enfermagem na qualidade da assistência ao doente com úlcera por pressão nas unidades de cuidados continuados em Portugal. 17º Seminário Internacional de Investigação em Enfermagem, 11-12 May, Lisboa e Porto (online).

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B49. Branco, C., Trancoso, I., **Infante, P.**, Truong, K.P. (2023). Laughter in task-based settings: whom we talk to affects how, when, and how often we laugh, INTERSPEECH 2023, 20-24 August, Dublin, <https://interspeech2023.org/programme-overview-sample/>

B50. **José Luís da Silva.** Green Measures for Markov Processes Non-Local Generators and Singular Kernels, 3rd International Conference on Applied Mathematics and Computer Science, Polydisciplinary Faculty of Safi, Morocco. June 20-22, 2023. <https://icamcs.uca.ma/keynote.php>

B51. **José Luís da Silva.** Green Measures for (Non) Markov Processes with Nonlocal Jump Generator, Stochastics in Mathematical Finance and Physics, October16-20, 2023, Hammamet, Tunisia. <https://www.mn.uio.no/math/english/research/projects/storm/events/conferences/Stochastic%20in%20Mathematical%20Finance%20and%20Physics/>

Invited communications at international events

B52. P. Ashwin, N. Cockram, P. Peres, A. Goetz and **A. Rodrigues**, “Invariant curves for Planar Piecewise Isometries: Recent Advances”. International workshop Dynamical systems in Porto, University of Porto. September 7, 2023. <https://sites.google.com/view/oporto2023dysys/dynamics-of-foliations>

B53. P. Ashwin and **A. Rodrigues**, “Sn-symmetry and nonlinearly coupled phase oscillators”. International Workshop on Mathematics and Physical Sciences. University of Evora. 15th June 2023. <https://www.cima.uevora.pt/index.php?view=article&id=266:international-workshop-on-mathematics-and-physical-sciences&catid=29:highlights>

B54. **E. Zappale**, “Optimal design problems and applications to thin structures”, 11-15 december 2023, ESI, Vienna. <https://esi.ac.at/events/e504/>, <https://www.esi.ac.at/events/t1641/>

B55. **L. Bandeira** and **C. Correia Ramos**, Non-homogeneous chains of damped harmonic, Oscillators, International Workshop on Mathematics and Physical Sciences, June 15-16 | 2023, University of Évora, Colégio Luís António Verney, Portugal

B56. Peter Ashwin, Noah Cockram, Pedro Peres, Arek Goetz and **Ana Rodrigues**. Title: Invariant curves for *Planar Piecewise Isometries: Recent Advances.*, International workshop

Dynamical systems in Porto. University of Porto. September 7, 2023.
<https://sites.google.com/view/oporto2023dysys/dynamics-of-foliations>

B57. Peter Ashwin and **Ana Rodrigues**, *Sn-symmetry and nonlinearly coupled phase oscillators*. International Workshop on Mathematics and Physical Sciences. University of Evora. 15th June 2023. <https://www.cima.uevora.pt/index.php?view=article&id=266:international-workshop-on-mathematics-and-physical-sciences&catid=29:highlights>

B58. **J.Dias**, Shintani Descent and Supercharacter Theory, International Workshop on Mathematics and Physical Sciences 16 de Junho de 2023, Universidade de Évora

B59. **J.Dias**, Shintani Descent and Supercharacter Theory, Winter Meeting in Lisbon 19 de Dezembro de 2023, Universidade de Lisboa

B60. B. Godinho, **J. A. Rodrigues**, "Continuous Wavelets Transform for ECG" 6th International Conference on Numerical and Symbolic Computation Developments and Applications, https://www.symcomp2023.uevora.pt/SYMCOMP2023_Programme_Final.pdf

B61. **J. A. Rodrigues**, "Isogeometric Analysis For The Platelets Role On Shear Stress Effect Over The Cancer Cells Into The Blood Vessel" , CILAMCE 2023 - The XLIV Ibero-Latin American Congress on Computational Methods in Engineering , 12-16 novembro 2023, https://cilamceporto2023.com/images/program/cilamce-023_program_detailed_14112023.pdf

B62. **Pedro Macias Marques**, Jordan type of Artinian Gorenstein algebras and related invariants, CIMA Annual Meeting 2023, Instituto Superior de Engenharia de Lisboa, 14th July 2023 , <https://cimameetup2023.isel.pt/>

B63. **B. Dinis**, How I learned to stop worrying and divide by zero, September 7, 2023 - Università degli studi di Napoli "Federico II".

B64. **B. Dinis**, B. Jacinto. Marginal and Large differences, June 16, 2023 - International Workshop on Mathematics and Physical Sciences, University of Évora. <https://dspace.uevora.pt/rdpc/bitstream/10174/35379/1/Book%20of%20Abstract%20of%20the%20MatPhys23.pdf>

B65. **Marília Pires** , On the Conformation Tensor Based Artificial Diffusion for Stabilization of Viscoelastic Fluids Flows Simulations, Workshop on Biomedical Fluid Mechanics, Praga, República Checa, June12 – 16, 2023 <http://workshop.math.cas.cz/bio/>

B66. **Marília Pires** , Stabilization of Fluid Flow Oldroyd-B Simulations Based on Eigenvalues of Conformation Tensor, SYMCOMP 2023, 6th International Conference on Numerical and Symbolic Computation Developments and Applications. Sessão temática Simulation and Optimization of Fluid Flow, Heat and Mass Transfer, March 30-31, 2023 https://www.symcomp2023.uevora.pt/SYMCOMP2023_Programme_Final.pdf

B67. Marília Pires Localized numerical stabilization based on conformation tensor spectrum for viscoelastic fluids flows simulations, Algoritmy2024 - Central-European Conference on Scientific Computing. Mini-Simpósio Computational methods and algorithms for biomedical applications, High Tatra Mountains, Slovakia. March 15 – 20, 2024 https://www.math.sk/alg2024/minisymposia-abstracts/#biomedical_applications

B68. Braumann, C. A. (Invited Speaker); **Carlos, C.**; Brites, N. M. Allee effects in randomly varying environments: Impact on extinction, existence, and nature of a stochastic equilibrium. DSABNS2023 - 14th International Conference on Dynamical Systems Applied to Biology and Natural Sciences, February 5-8, 2023, BCAM, Bilbao, Spain, <https://sites.google.com/bcamath.org/dsabns2023/home> Abstract in: *DSABNS 2023 14th International Conference Dynamical Systems Applied o Biology And Natural Sciences (DSABNS). Book of Abstracts*, Bilbao, Spain, ©DSABNS, ISBN: 978-989-53589-0-8, p. 41-42, <https://sites.google.com/bcamath.org/dsabns2023/scientific-programme/book-of-abstracts> and in <https://drive.google.com/file/d/11wcu8hbysFb4d9fyUEqKU6PAN0bAmOzn/view>, https://drive.google.com/file/d/1BRRenMOMNO78kgBzhON_vXSG886DKYsd/view

B69. Braumann, C. A. (Invited Plenary Opening Keynote Lecture); **Jacinto, G.**; **Filipe, P. A.** Animal growth in a randomly varying environment with an application to optimization in cattle raising. MPDEE 2023 - Mathematical Population Dynamics, Ecology and Evolution, April 24-28, 2023, Marseille, France, <https://conferences.cirm-math.fr/2769.html> Abstract in: *Abstracts_MPDEE2023.pdf*, p. 5-6, https://conferences.cirm-math.fr/wp-content/uploads/2023/04/Abstracts_MPDEE2023-1.pdf **VIDEO (Selected for video in CIRM “Audiovisual Mathematics Library”): Braumann, Carlos A.** (2023). Animal growth in a randomly varying environment with an application to optimization in cattle raising. CIRM, , <http://dx.doi.org/10.24350/CIRM.V.20039203>. Also accessible on conference webpage, button “Audiovisual Mathematics Library”. Direct link to see the video: https://videos.cirm-math.fr/2023-04-24_Braumann.mp4

B70. Braumann, C. A. (Invited Plenary Speaker); **Jacinto, G.**; **Filipe, P. A.** Stochastic differential equation models of individual growth with application to optimization in cattle raising. First SDE - Stochastic Days Encounters: Stochastic Differential Equations and Statistics, May 25-26, 2023, ISEG, Lisboa, Portugal, <https://cemapre.iseg.ulisboa.pt/sde2023/> Abstract in: *Book of Abstracts*, p. 2-3, <https://cemapre.iseg.ulisboa.pt/sde2023/boa.pdf>

B71. Braumann, C. A. (online talk; Invited by Special Session organizers); **Carlos, C.**; Brites, N. M. Allee effects in random environments: impact on harvested populations and their sustainability. In: Special session 2 - Mathematical models in population dynamics: applications, modelling and numerical methods (Organizers: Luis M. Abia, Óscar Angulo, Juan C. López-Marcos, Miguel A. López-Marcos). MMME&HB 2023 - Mathematical Modelling in Engineering & Human Behaviour 2023, June 11-14, 2023, Hybrid, València, Spain, <https://imm.webs.upv.es/jornadas/2023/home.html>, Abstract in: <https://imm.webs.upv.es/jornadas/2023/abstracts/abstract4.pdf>

B72. Infante P., Nogueira V., Rebelo Manuel P., Góis P., **Afonso A.,** Santos D., **Jacinto G.,** Saias J., Rego L., Silva M., Carocha Gonçalves N., Rebisco P., Quaresma P., Nogueira P., Clemente R. (2023). Mais Segurança Rodoviária: Alguns Caminhos para uma Prevenção Mais Eficaz, 14-15 de Abril, Escola Superior Agrária do IPCB, Castelo Branco. <https://www.ipcb.pt/jornadas-ibericas-de-protecao-civil-0>

B73. Sousa-Ferreira, I. (presenter), Rocha, C. and **Abreu, A.M.** (2023). Recurrent event analysis: basic concepts and some recent contributions. 2023 IMS International Conference on Statistics and Data Science (ICSIDS), December 18-21, 2023, ICSIDS2023 (google.com)

Communications at national events

B74. C. Carlota and **A. Ornelas**, “Necessary and sufficient conditions for applicability of the pointwise constrained Liapunov convexity theorem in the 2x2 case”, CIMA’s Annual Meeting 2023, July 14, 2023, Instituto Superior de Engenharia de Lisboa, Lisbon. <https://cimameetup2023.isel.pt/>
<https://cimameetup2023.isel.pt/wp-content/uploads/2023/07/abstacts.pdf>

B75. F. Minhós, “Heteroclinic Solutions for Strongly Nonlinear Differential Equations”, CIMA’s Annual Meeting 2023, July 14, 2023, Instituto Superior de Engenharia de Lisboa, Lisbon. <https://cimameetup2023.isel.pt/>, <https://cimameetup2023.isel.pt/wp-content/uploads/2023/07/abstacts.pdf>

B76. L. Bandeira, A-policonvexidade, Encontro Anual CIMA 2023, 14 de julho, ISEL Lisboa, <https://cimameetup2023.isel.pt/>, <https://cimameetup2023.isel.pt/wp-content/uploads/2023/07/abstacts.pdf>

B77. Ana Rodrigues, Arek Goetz, Peter Ashwin, Pedro Peres and Noah Cockram). Title: Invariant curves for piecewise isometries, CIMA - Annual Meeting 2023, Instituto Superior de Engenharia de Lisboa. 14th July 2023. <https://r.ipl.pt/cimameetup2023>

B78. Daniela Pedrosa (presenter), Carlos Neves, **Diogo Baptista**, Modeling and controlling the movement of suspended loads WapMath - Workshop em Aplicações da Matemática, ESTG-Politécnico de Leiria, 20 de novembro de 2023, <https://wapmath.ipleiria.pt/>, <https://wapmath.ipleiria.pt/programa/>

B79. Ferreira, S. (presenter), **Baptista, A.N., Baptista, D.**, Práticas Pedagógicas Inovadoras em Matemática Discreta, VIII Jornadas Pedagógicas do Politécnico de Leiria - projeto "Skills4Future: Innovative Practices", 11-13 Julho, 2023, Escola Superior de Artes e Design (ESAD.CR) do Politécnico de Leiria, Caldas da Rainha, <https://www.ipleiria.pt/innovativepractices/3p/>

B80. J. A. Rodrigues, " A Finite element method for Shear Stress study on cancer cell proliferation " , 7th IEEE Portuguese Meeting on Bioengineering (ENBENG 2023), 21-23 junho 2023, <https://drive.inesctec.pt/s/nrJ4wAKgYXfPpCr>

B81. B. Dinis, Strolling through a meadow, October 13, 2023 - Seminário de Lógica Matemática, Universidade de Lisboa. <https://ciencias.ulisboa.pt/pt/evento/13-10-2023/strolling-through-a-meadow>

B82. B. Dinis, What if worlds could vary?, March 23, 2023 - Seminário de Lógica Matemática, Universidade de Lisboa. <https://ciencias.ulisboa.pt/pt/evento/24-03-2023/what-if-worlds-could-vary>

B83. B. Dinis, Do I dare to divide by zero?. Seminar CIMA/DMat/PDout Matemática - Universidade de Évora - Évora, October 4, 2023.

B84. B. Dinis, And now worlds may vary!, CIMA Anual Meeting, Instituto Superior de Engenharia de Lisboa - Lisbon, July 14, 2023. <https://cimameetup2023.isel.pt/>

B85. Maurício D. L. Reis and Marco Garapa (2023). Belief change: basic concepts and some recent contributions, Annual Meeting 2023 – CIMA, Lisboa, 14th July, 2023. <https://cimameetup2023.isel.pt/> <https://cimameetup2023.isel.pt/wp-content/uploads/2023/07/abstacts.pdf>

B86. Pedro Macias Marques, Perspectiva na arte do Renascimento, ÉvoraMat 2023, Escola Secundária de Alcácer do Sal, 4th March 2023, <https://www.apm.pt/evoramat2023>, <https://www.apm.pt/evoramat2023#plenaria>

B87. Braumann, C. A. (presenter); **Carlos, C.**; Brites, N. M. General environmental stochasticity models for harvested populations: impact of Allee effects. Encontro Anual do CIMA 2023 /CIMA Anual Meeting 2023, July 14, 2023, Instituto Superior de Engenharia de Lisboa, Portugal, <https://cimameetup2023.isel.pt/> Abstract in: Book of Abstracts, p. 4-5, <https://cimameetup2023.isel.pt/wp-content/uploads/2023/07/abstacts.pdf>

B88. Carlos, C. (presenter); Brites, N. M.; **Braumann, C. A.** Impact of Allee effects on constant effort harvesting of populations in random environments: logistic type models. Encontro Anual do CIMA 2023 /CIMA Anual Meeting 2023, July 14, 2023, Instituto Superior de Engenharia de Lisboa, Portugal, <https://cimameetup2023.isel.pt/> Abstract in: Book of Abstracts, p. 6-7, <https://cimameetup2023.isel.pt/wp-content/uploads/2023/07/abstacts.pdf>

B89. Carlos, C. (Poster presenter); Brites, N. M.; **Braumann, C. A.** Constant effort harvesting with Allee effects in random environments using logistic type models: Optimization and an application. SPE 2023 - XXVI Congresso da Sociedade Portuguesa de Estatística, October 11-14, 2023, Guimarães, Portugal, <https://w3.math.uminho.pt/SPE2023> Abstract in: *Programa e Livro de Resumos* (Editors: Luís Meira-Machado, Maria Conceição Serra, Marta Ferreira, Raquel Menezes), Sociedade Portuguesa de Estatística, ISBN: 978-972-8890-49-0, p. 136, https://w3.math.uminho.pt/SPE2023/img/Programa_e_LResumos.pdf

B90. Filipe, P. A. (presenter); **Jacinto, G.**; **Jamba, N. T.**; **Braumann, C. A.** Stochastic differential equations mixed models to describe individual growth. Encontro Anual do CIMA 2023 /CIMA Annual Meeting 2023, July 14, 2023, Instituto Superior de Engenharia de Lisboa, Portugal, <https://cimameetup2023.isel.pt/> Abstract in: Book of Abstracts, p. 20-21, <https://cimameetup2023.isel.pt/wp-content/uploads/2023/07/abstacts.pdf>

B91. Gomes, D. (presenter), Silva, C. J. and **Filipe, P. A.** Classic and deep learning techniques for temporal clustering and mathematical modeling. Encontro Anual do CIMA 2023 /CIMA Annual Meeting 2023, July 14, 2023, Instituto Superior de Engenharia de Lisboa, Portugal, <https://cimameetup2023.isel.pt/> Abstract in: Book of Abstracts, p. 8-9, <https://cimameetup2023.isel.pt/wp-content/uploads/2023/07/abstacts.pdf>

B92. Henriques, P., Caldeira-Araújo, H., Brazão, M.L., **Abreu, A.M.**, Vigário, A.M. and Rosa, A. (presenter) (2023). Long-term Health Status Following Madeira Dengue Outbreak. 6.^o Congresso Nacional de Medicina Tropical, Lisboa-Portugal, April 20-21, 2023, [6^o Congresso Nacional de Medicina Tropical » Página Inicial \(admeus.pt\)](https://www.admeus.pt/)

B93. Sousa-Ferreira, I. (presenter), Rocha, C., **Abreu, A. M.** Parametric cure models with application to hospital readmission data. Ciência 2023 – Encontro com a Ciência e Tecnologia em Portugal, Aveiro-Portugal, July, 5-7, 2023, [Ciência 2023 - Encontro com a Ciência e Tecnologia em Portugal \(encontrociencia.pt\)](https://www.encontrociencia.pt/)

B94. Abreu, A. M. (presenter), Sousa-Ferreira, I. and Rocha, C. (2023). Topics on the analysis of recurrent events. Annual Meeting, CIMA, 2023, Lisboa-Portugal, July 9, 2023, [cimameetup2023.isel.pt – Annual Meeting 2023](https://cimameetup2023.isel.pt/) , Abstract in: Book of Abstracts, p. 1, [abstacts.pdf \(isel.pt\)](https://cimameetup2023.isel.pt/wp-content/uploads/2023/07/abstacts.pdf)

B95. Sousa-Ferreira, I. (presenter), **Abreu, A.M.** and Rocha, C. (2023). An additive shared frailty model for recurrent gap time data in the presence of zero-recurrence subjects. XXVI Congresso da Sociedade Portuguesa de Estatística, Guimarães-Portugal, October 11-14, 2023, [XXVI Congresso da Sociedade Portuguesa de Estatística \(uminho.pt\)](https://www.uminho.pt/)

B96. Lopes, M., **Pereira, D. G.**, **Afonso, A.**, Melo, F. (presenter) (2023). Estimativas da abundância do milhafre (*Buteo buteo rothschildi*). XI Congresso de Ornitologia da SPEA & II Jornadas Macaronésicas de Ornitologia, 22-26 novembro, Ponta Delgada, Açores. <https://spea.pt/congresso-de-ornitologia-2023/>

B97. Furtado, K. (presenter), Jaco, V., **Infante, P.**, **Anabela, A.**, Lopes, M. (2023). The relationship between nursing practice environment and pressure ulcer care quality in Portugal's long-term care units. 4th Comprehensive Health Research Centre Annual Summit, 25-26 de maio, Évora. <https://www.chrcam.uevora.pt/>

B98. Henriques-Rodrigues, L. (2023). Recent contributions in risk assessment. Encontro Anual do CIMA 2023, 13 de Julho, Instituto Superior de Engenharia de Lisboa. [cimameetup2023.isel.pt – Annual Meeting 2023](https://cimameetup2023.isel.pt/)

B99. Henriques-Rodrigues, L., Gomes, M. Ivette, Figueiredo, F. and Caeiro, F. (2023). A new class of conditional tail expectation estimators. XXVI Congresso da Sociedade Portuguesa de Estatística, 11-15 Outubro 2023, Guimarães.[XXVI Congresso da Sociedade Portuguesa de Estatística \(uminho.pt\)](#)

B100. Gomes, M. Ivette, Caeiro, F. and Henriques-Rodrigues, L. (2023). Location invariant estimation of the Weibull tail coefficient. XXVI Congresso da Sociedade Portuguesa de Estatística, 11-15 Outubro 2023, Guimarães.[XXVI Congresso da Sociedade Portuguesa de Estatística \(uminho.pt\)](#)

B101. Caeiro, F., Gomes, M. Ivette and Henriques-Rodrigues, L. (2023). A partially reduced bias Hill estimator of the Extreme Value Index. XXVI Congresso da Sociedade Portuguesa de Estatística, 11-15 Outubro 2023, Guimarães.[XXVI Congresso da Sociedade Portuguesa de Estatística \(uminho.pt\)](#)

B102. Ascenso, L, **Jacinto, G.** Infante, P. and Quintino, H. (2023). The profile of the hyper user in an emergency department. XXVI Congresso da Sociedade Portuguesa de Estatística, 11-15 Outubro 2023, Guimarães.[XXVI Congresso da Sociedade Portuguesa de Estatística \(uminho.pt\)](#)

B103. Carinhas, D., Picoto, M., **Infante, P.** (2023). Evolution of mean sea level: the particular case of the port of Viana de Castelo, XXX Meeting of the Portuguese Association for Classification and Data Analysis – JOCLAD2023, 20-22 April, Viana do Castelo, file:///Users/pauloinfante/Downloads/JOCLAD_2023.pdf

B104. Carinhas, D., **Infante, P.**, Martinho, A. (2023). Análise e avaliação de falhas em estações maregráficas, XXVI Congresso da Sociedade Portuguesa de Estatística– SPE2023, 11-14 October, Guimarães, <https://w3.math.uminho.pt/SPE2023/programa.html#>

B105. Francisco, C.; **Oliveira, M.**; Carvalho, F.; Mexia, T. Multialphabetic hypercubes and disaggregation of sums of squares. XXVI Congresso da Sociedade Portuguesa de Estatística, 11-14 October 2023, Universidade do Minho, Guimarães, Portugal. Event's URL: <https://w3.math.uminho.pt/SPE2023/>. Abstract in Book of Abstracts, p. 162, https://w3.math.uminho.pt/SPE2023/img/Programa_e_LResumos.pdf.

B106. Mendes, A.; Carvalho, M.; **Oliveira, M.**; Silva, P. R.. Plano Estratégico da Biblioteca da Universidade de Évora: em direção a uma biblioteca 4.0. 14º Congresso Nacional BAD, 3-5 May 2023, Universidade do Algarve. Event's URL: <https://eventos.bad.pt/14congresso/programa-detalhado/#maio4>

Invited communications at national events

B107. **Braumann, C. A.** (Talk invited by Thematic Session organizer); **Carlos, C.**; Brites, N. M. General models for harvesting in randomly varying environments: Impact of Allee effects. In: Thematic Session Stochastic Models for Population Dynamics SPE 2023 - XXVI Congresso da Sociedade Portuguesa de Estatística, October 11-14, 2023, Guimarães, Portugal, <https://w3.math.uminho.pt/SPE2023> Abstract in: *Programa e Livro de Resumos*, Sociedade

C – Reports

C1 Guimaráes, Stephen Cowley, James Andrews, Ankush Aggarwal, Irving Calderon, Robert Whittaker, Charlie Egan, Panagiotis Kaklamanos, Matthew Durey, Katarzyna Kowal, **Joaquim Correia**, Anushka Herale, Torin Fastnedge, Peter Hicks, Madeleine Moore, Richard Purvis, Tarek Acila, Maxim Zyskin, “Modelling Dialysis”, 171st ESGI (European Study Group with Industry) Report for Quanta, University of Edinburgh, 2023, Edinburgh, UK

C2 **Infante P.**, Nogueira V., Rebelo Manuel P., Góis P., **Afonso A.**, Santos D., **Jacinto G.**, Saias J., Rego L., Silva M., Carocha Gonçalves N., Rebisco P., Quaresma P., Nogueira P., Pisco Costa R., Clemente R. (2023). Modelação e Predição de Acidentes de Viação no distrito de Setúbal - Relatório Final. Évora: Universidade de Évora (13 pp.).
<https://drive.google.com/file/d/1hja6jS4bEG6q7iOm6LTFcjArmvcS2Q/view?usp=sharing>

D – Organization of conferences and seminars

International Meetings

D1. **V. Bushenkov**: XIV International Conference Optimization and Applications (OPTIMA-2023), Petrovac, Montenegro, September 18-22, 2023., Member of the Program Committee , <http://agora.guru.ru/display.php?conf=OPTIMA-2023>.

D2. **F. Carapau**: International Workshop on Mathematics and Physical Sciences, CIMA-UÉ, Universidade de Évora, 15-16 june 2023.
<https://www.cima.uevora.pt/index.php?view=article&id=266:international-workshop-on-mathematics-and-physical-sciences&catid=29:highlights>
 Member of the Organizing Committee.

D3. **P. Correia**: International Workshop on Mathematics and Physical Sciences, CIMA-UÉ, Universidade de Évora, 15-16 june 2023.
<https://www.cima.uevora.pt/index.php?view=article&id=266:international-workshop-on-mathematics-and-physical-sciences&catid=29:highlights>
 Member of the Organizing Committee.

D4. F. Minhós: Member of the Steering Committee of The 15th International Conference on Pure Mathematics, Applied Mathematics and Computational Methods, Bern, Switzerland, December 21-23, 2023.
<https://www.inase.org/conferences/2023/december1/pmamcm.htm#tpc>

D5. F. Minhós: Member of the Program Committee of The 15th International Conference on Physics and Mathematics, Izmir, Turkey, August 29-31, 2023.
<http://www.inase.org/conferences/2023/august-turkey/pm.htm#tpc>

D6. F. Minhós: Member of the Program Committee of The 15th International Conference on Pure Mathematics, Computational Mathematics, Applied Mathematics, Venice, Italy, June 20-22, 2023.
<http://www.inase.org/conferences/2023/june/pmcmam.htm#tpc>

D7. F. Minhós: Member of the Steering Committee of The 15th International Conference on Mathematics in Science and Engineering, Venice, Italy, June 20-22, 2023.
<http://www.inase.org/conferences/2023/june/mse.htm#tpc>

D8. F. Minhós: Member of the Scientific Committee of the International Workshop on Mathematics and Physical Sciences, Universidade de Évora, June, 15-16, 2023.

D9. F. Minhós: Member of the Steering Committee of The 15th International Conference on Mathematical Models and Methods in Applied Sciences, Ierapetra Beach, Ierapetra, Crete, Greece, April 11-13, 2023.
<http://www.inase.org/conferences/2023/april/mmms.htm#tpc>

D10. F. Minhós: Member of the Program Committee of The 15th International Conference on Pure Mathematics-Applied Mathematics, Athens, Greece, January 21-23, 2023.
<http://www.inase.org/conferences/2023/january/pm-am.htm#tpc>

D11. F. Minhós: Member of the Steering Committee of The 15th International Conference on Mathematical Methods, Mathematical Models and Simulation in Science and Engineering, Athens, Greece, January 21-23, 2023.
<http://www.inase.org/conferences/2023/january/mmss.htm>

D12. E. Zappale, Sixth Workshop on Thin Structures, Napoli, 7-9/9/2023- Organizer.
<https://sites.google.com/view/sixthworkshoponthinstructures/home>

D13. Sara Fernandes, SYMCOMP 2023 - 6th International Conference on Numerical and Symbolic Computation Developments and Applications, Évora, Portugal, 30-31 March 2023, <https://www.symcomp2023.uevora.pt>, Member of the Local Organizing Committee and Scientific Committee

D14. Ana Rodrigues. Co-organizer of the semester Two-dimensional maps, at the Mittag-Leffler Institute (The Royal Swedish Academy of Sciences), Sweden. January 18 April – 28 April, 2023. Other organizers: M. Benedicks (KTH – Royal Institute of Technology, member of the Royal Swedish Academy of Sciences) R. Krikorian (University of Cergy-Pontoise) Hakan Eliasson (Paris-Cite).

D15. Alexandra Batista, Seventh International Workshop New Trends in Quaternions and Octonions - NTQO 2023, School of Technology and Management of the Polytechnic of Leiria, October 27th to 28th 2023, local organizing committee member, <https://sites.google.com/view/ntqo2023>.

D16. J.A.Rodrigues, 6th International Conference on Numerical and Symbolic Computation Developments and Applications March, 30 - 31, UE – Universidade de Évora, Évora, Organizing Committee and Executive Committee.

D17. J.A.Rodrigues, International Conference CEMEERS-23b, IASET-23, FBESR-23 & LEHSS-23 Nov. 23-24, 2023 Istanbul (Turkey), Scientific Committee and Proceedings' editor

D18. José Carmo- 16th International Conference on Deontic Logic and Normative Systems (DEON 2023), Université du Québec à Trois-Rivières (Trois-Rivières, Canada), July 5-6-7 2023, Member of the Program Committee

D19. Bruno Dinis- Special session on Applied proof theory - Logic colloquium 2023, Milan, 5-9 June 2023, co-organizer with Thomas Powell, <https://lc2023.unimi.it/>

D20. Marco Garapa- 32nd International Joint Conference on Artificial Intelligence (IJCAI 2023), Macao, August 19-25, 2023, <https://ijcai-23.org/>, Program Committee member

D21. Marco Garapa and Maurício Reis -18th Edition of the European Conference on Logics in Artificial Intelligence (JELIA 2023), TU Dresden, Germany, September 20-22, 2023, <https://jelia2023.inf.tu-dresden.de/>, Program Committee member

D22. Marília Pires, Internacional European Conference on Numerical Mathematics and Advanced Applications (ENUMATH2023), Instituto Superior Técnico, Portugal. September 4 – 8, 2023 <http://enumath2023.com/>

D23. Marília Pires, Mini-Simpósio Problems in Biomedical Fluid Mechanics, Internacional European Conference on 2023 AESIM School - Mathematics for Health Sciences, <https://sites.google.com/uevora.pt/aesim-birla2023/programme/committees>

D24. Marília Pires , WOTCA workshop: Operator Theory, Complex Analysis and Applications, Évora University, Portugal. July 24 – 28, 2023
<https://sites.google.com/view/wotca23/home>

D25. Marília Pires , YRFAMP'23: Young Researchers in Functional Analysis and Mathematical Physics, Universidade de Évora, Portugal. July 25 – 28, 2023.
<https://sites.google.com/view/yrfamp23>

D26. Carlos A. Braumann. DSABNS 2023, 14th International Conference on Dynamical Systems Applied to Biology and Natural Sciences (DSABNS 2023), Bilbao, Spain, February 5-8, 2023, <https://sites.google.com/bcamath.org/dsabns2023>

Member of the International Organizing Committee (also functions as Scientific Committee): <https://sites.google.com/bcamath.org/dsabns2023/organizing-committee>

D27. Carlos A. Braumann. DSABNS 2024, 15th International Conference on Dynamical Systems Applied to Biology and Natural Sciences (DSABNS 2024), FCT-UNL, Caparica, Portugal, February 6-9, 2024, <https://sites.google.com/view/dsabns2024>

Member of the Scientific Committee:

<https://sites.google.com/view/dsabns2024/organizing-committee>

D28. Carlos A. Braumann. Models in Population Dynamics, Ecology, and Evolution (MPDEE'24). Leicester, UK, April 15-19, 2024, <https://web.mat.bham.ac.uk/N.B.Petrovskaya/MPDEE24.htm>

Member of the International Scientific Advisory Committee: same webpage.

D29. Carlos A. Braumann. ICMASC'2024 - International Conference on Mathematical Analysis and Applications in Science and Engineering, Porto, Portugal, June 20-22, 2024, <https://www2.isep.ipp.pt/icmasc/>

Member of the Honorary Committee: https://www2.isep.ipp.pt/icmasc/?page_id=2

D30. João A. Sousa, SMSI 2023 - Topical Chair (Measurement Science) of the Sensor and Measurement Science International (SMSI) Conference, 8-11 May, Nuremberg, Germany. [SMSI Conference Committee · SMSI 2023 - Sensor and Measurement Science International \(smsi-conference.com\)](https://smsi-conference.com)

D31. Lígia Henriques-Rodrigues, IDWSDS 2023. 2o International Day of Women in Statistics and Data Science (IDWSD), 10 october 2023. Member of the International Organizing Committee, <https://www.idwsds.org/committees/>.

D32. Lígia Henriques-Rodrigues, IDWSDS 2023. Portuguese session on the 2º IDWSDS 2023 entitled: "Portuguese contributions in Statistics and Data Science". <https://www.idwsds.org/program/>

D33. Lígia Henriques-Rodrigues, SPE 2023. XXVI Congresso da Sociedade Portuguesa de Estatística (SPE 2023), 11 a 15 de Outubro de 2023, Guimarães. <https://w3.math.uminho.pt/SPE2023/comissoes.html#>

D34. Dulce G. Pereira. The 52th International Biometrical Colloquium, Szamotuly (Poland), September 10-13, 2023, URL: <https://kzmi.up.lublin.pl/cb52/>. Member of the Scientific Committee

D35. Jorge Santos ISCSI 2023 - CONFERENCE ON INDUSTRY SCIENCE & COMPUTER SCIENCE INNOVATION Lisbon, Portugal from 4 to 6 October 2023 [Committee – iSCSi – International Conference 2023 \(iscsi-conference.org\)](#) Member of the Scientific Committee

D36. Infante, P. Seminário "Brincar Lá fora com Prof. Carlos Neto", 13 July, Évora – Member of the Organizing Committee. <https://www.cm-evora.pt/conferencia-organizada-pela-cme/>

D37. Infante, P. Workshop “O Brincar, o sono das crianças dos 5 aos 11 anos”, 27 April, Évora - Member of the Organizing Committee. <https://www.cm-evora.pt/sono-das-criancas-debatido-por-familias-e-tecnicos-em-evora/>

D38. da Silva, J.L. Madeira Math Encounters I, Infinite Dimensional Analysis and Applications and Nonlinear Differential Equations. Aug. 28 to Sep. 1, 2023, University of Madeira. <http://ccm.uma.pt/mme50/>

D39. Cantarinha, A.I.G. 23rd Conference of the Portuguese Association of Information Systems with the theme “our data, our future: towards digital humanism”, Institute Polytechnic of Beja, Oct. 19-21, 2023, Member of the Scientific Committee. <https://capsi2023.apsi.pt/index.php/pt/m23-conferencia/m23-comissoes>

National Meetings

D40. Diogo Batista, Mat-Oeste – Matemática na Região Oeste, ESTG-Politécnico de Leiria, 14 de julho de 2023, Member of the Organizing Committee , <https://www.ipleiria.pt/estg-dmat/mat-oeste-2023/>,

D41. Diogo Batista, WapMath - Workshop em Aplicações da Matemática, ESTG-Politécnico de Leiria, 20 de novembro de 2023, Member of the Organizing Committee , <https://wapmath.ipleiria.pt/>

D42. Alexandra Batista, Workshop em Aplicações da Matemática – WapMath, Escola Superior de Tecnologia e Gestão de Leiria, 20 de novembro de 2023, [https](https://wapmath.ipleiria.pt/) organizing committee member, [://wapmath.ipleiria.pt/](https://wapmath.ipleiria.pt/),..

E – Advanced training

PhD Thesis (Concluded)

E1 Márcio André Traesel, Estudo de algumas variedades do número de Frobenius. Advisors: José C. Rosales e Manuel Branco, PhD in Mathematics, Universidade de Évora

E2 Ivo Miguel Sousa Ferreira, Modelos de Sobrevivência Paramétricos para Acontecimentos Múltiplos. Supervisors: Cristina Maria Tristão Simões Rocha and **Ana Maria Abreu**

E3 Mahdi Rahimi Pordanjani, A Comparative Study of Impacts and Implications of Climate Change on Tourism in Portugal and Iran .Supervisors: Antónia de Jesus Correia and **Manuel do Carmo**, University of Évora.

E4 ALVIU REY NASIR, Perturbative Exponentially Growing Potentials on Quantum Mechanical Systems, **da Silva, J.L.**, University of Madeira, Jingle B. Magallanes, MSU-IIT, Iligan City, Philippines

Master Thesis (Concluded)

E5 Eduardo Eloy, *“Models and Methods for the Modelling of Forest Managing”*. Advisors: Salvador Abreu, Adviser: **Vladimir Bushenkov**.

E6 Gabriel Vidal de Carvalho, *“Asymptotic analysis of a clamped thin multidomain allowing for fractures and discontinuities”*. IST – Lisbon, Applied Mathematics. Advisors: **Elvira Zappale**, José Matias.

E7 Diogo Gomes, Geração de números aleatórios - autómatos celulares, Master in Engineering Informatics, Supervisor: **Carlos Ramos**, co-supervisor: Irene Rodrigues, Universidade de Évora. (2023).

E8 João Cardoso, Algoritmos genéticos para famílias de autómatos celulares em dimensão 1 Master in Engineering Informatics, Supervisor: **Carlos Ramos**, co-supervisor: Lígia Ferreira, Universidade de Évora. (2023)

E9 Francisco José Correia Sardinha, Recolha de dados meteorológicos utilizando LoRa, Advisor : Joaquim Amândio Rodrigues Azevedo.

E10 Ricardo Manuel Sampaio Jorge Rolim. Previsão de vendas para apoio em gestão de farmácias. Mestrado em Ciência de Dados. Iscte-Instituto Universitário de Lisboa. Supervisor: **Patrícia A. Filipe**

E11 Loide Ascenco (2023). Modelação da ausência ao serviço de urgência do HESE. Master's Course in Statistical Modeling and Data Analysis at the University of Évora. Supervisors: **Gonçalo Jacinto** and **Paulo Infante**.

E12 Pedro Valente. Prevenção e alerta da sinistralidade rodoviária com o contributo da inteligência artificial. Projeto de Investigação do Curso de Estado-Maior Conjunto 2022/2023, Instituto Universitário Militar. Supervisor: **Paulo Infante**, Mário Guedelha (Individual research work, similar to a master's thesis)

Curricular and Scientific Internships (Concluded)

E13 José Adilson Rodrigues Alves, Tradução, Adaptação Transcultural e Validação de um Questionário de Avaliação de Satisfação de Médicos com o Laboratório de Patologia Clínica. Supervisors: **Dulce Gomes** e Emanuel Catumbela. Escola Nacional de Saúde Pública, Universidade Nova de Lisboa.

E14 Lorena Santos, Modelação e Predição de Eventos Raros – um estudo comparativo, CIMA/ BI_MMEAD /2023, Supervisors: **Paulo Infante**, **Gonçalo Jacinto**, **Anabela Afonso**.

E15 Mariana Beatriz Freitas Teles, Topological Vector Spaces, **da Silva, J.L.**, Universidade da Madeira

E16 .Sofia Matilde Jardim Caetano, Green Measures for Fractional Poisson Processes, **da Silva, J.L.**, Universidade da Madeira

Post-Doctoral supervision (ongoing)

E17 **João Cardoso Dias**, Combinatory, number theory and algebra through artificial intelligence , Supervisors: **Carlos Ramos**, co-supervisor: **Manuel Branco**, Irene Rodrigues. Universidade de Évora. (2023)

E18 Kapil K. Choudhary, “Mathematical Study of a Prion Dynamic Model with Chaperone and Interferon Treatments”, Dept. Mathematics, Manipal University Jaipur, Rajasthan, India

PhD Thesis (ongoing)

E19 Gracino Francisco Rodrigues, *“Existence, non-existence and multiplicity of solutions for higher order boundary value problems”*, Advisors: **Feliz Minhós, Fernando Carapau**.

E20 Mário Eduino Pina dos Santos Lopes, *“Nonconvex differential inclusions”*, Advisors: **Clara Carlota, António Ornelas**.

E21 Nuno Miguel Granja de Oliveira, *“Higher order boundary value problems with parameters”*, Advisor: **Feliz Minhós**, University of Évora.

E22 Sara Isabel Aleixo Perestrelo, *“Periodic coupled systems and synchronization”*, Advisors: Henrique Oliveira, IST, University of Lisbon, **Feliz Minhós**.

E23 Noah Cockram, *“Dynamics of Translate Exchange Transformations”*. Supervisors: **Ana Rodrigues**, and Peter Ashwin, University of Exeter, UK.

E24 Maria Isabel de Magalhães Colaço , Betti numbers of some semigroup rings , Advisors: **Manuel Branco** , Ignácio Ojeda, University of Évora

E25 K. Vongsavang, *“Diffusive-Dispersive Conservation Laws in Coagulation-Fragmentation”* Advisors: F. P. da Costa, Univ. Aberta, Portugal, **Joaquim Correia**

E26 G. Maypaokha, *“The Effect of Saturating Diffusion on Hyperbolic Partial Differential Equations”* Advisors: N. Bedjaoui, Univ. de Picardie Jules Verne, France, **Joaquim Correia**

E27 B. Doungsavanh, *“Mathematical Analysis of Structured Models of Waterborne Diseases: Application to Laos”* Advisors: Y. Mammeri, Univ. Jean Monnet, France, **Joaquim Correia**

E28 Bui Dang Hanh Uyên, *“Structured Population Models for a Water Purification Process”*, Advisors: M. Grinfeld, Univ. Strathclyde, UK, **Joaquim Correia**

E29 Nguyen Truc Thien Huong, *“Mathematical Modelling of Bone Diseases: a Study on Osteoporosis”*, Advisors: E. Hingant, Univ. de Picardie Jules Verne, France, **Joaquim Correia**

E30 Logarakshagi Loganathan Uma Kalyani, title TBA, Advisors: N. Bedjaoui, Univ. de Picardie Jules Verne, France, **Joaquim Correia**

E31 Manuel Ana Alberto, Séries Temporais: Uma aplicação à Sinistralidade Rodoviária em Angola 2002 – 2015. Doutoramento em Matemática/PhD in Mathematics (University of Évora). Supervisors: **Dulce Gomes** and **Patrícia A. Filipe**

E32 Jaime Agostinho Jerónimo, Análise de sobrevivência de mulheres diagnosticadas com cancro de mama em Angola no período de 2013 a 2017. Doutoramento em Matemática/PhD in Mathematics (University of Évora). Supervisors: **Patrícia A. Filipe** and **Dulce Gomes**

E33 Luana Sales, Impacto de comorbidades diabetes mellitus e COVID-19 na Tuberculose no estado de São Paulo. Doutoramento de Enfermagem em Saúde Pública/ PhD in Public Health Nursing (Escola de Enfermagem de Ribeirão Preto da Universidade de São Paulo, Brasil). Supervisors: Ricardo A. Arcêncio and **Dulce Gomes**

E34 Sérgio Castigo, Aglomerados temporais em Epidemiologia: Estudos comparativos e aplicação ao número de casos e de mortes por COVID-19 em Moçambique. Doutoramento em Matemática/PhD in Mathematics (University of Évora). Supervisors: **Dulce Gomes** and Cristiana J. Silva

E35 Maria Teresa Ferreira, A Influência das Crises Económicas e Pandémicas no Turismo Português: uma perspetiva econométrica, PhD in Tourism, Algarve University. Supervisors: **Manuel do Carmo** and Sandra Custódio.

E36 Nádia Bachir, Statistical and machine learning for complex spatio-temporal fire data. PhD de Matemática, com especialização em Estatística e Gestão do Risco, Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa. Supervisors: Regina Bispo (Departamento de Matemática da Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa) e **Lígia Henriques-Rodrigues**

E37 Nelson T. Jamba. Modelos mistos de crescimento individual em ambiente aleatório. Doutoramento em Matemática, Universidade de Évora.
Supervisors: **Gonçalo Jacinto** and **Patrícia A. Filipe**

E38 Samira Velaquez. Marine recreational shing in Portugal: Estimating ecological, biological and economic impacts and unaccounted shing mortality. Doutoramento em Biologia Marinha, Universidade do Algarve.
Supervisors: Rangel, M., Guerreiro, P. and **Jacinto, G..**

E39 Sónia Barbosa. Monitorização Escolar no Ensino Básico. Doutoramento em Matemática, Universidade de Évora. Supervisors: **Paulo Infante** and **Anabela Afonso**.

E40 Hugo Salgueiro. Funcionalidade, Saúde e Qualidade de Vida na População Mais Velha com Multimorbilidade da Região do Alentejo Central, Doutoramento em Ciências da Saúde e Bem Estar, Universidade de Évora e Universidade Nova de Lisboa. Supervisors: Manuel Lopes and **Anabela Afonso**.

E41 Ana Pedro Costa. Determinantes da Depressão e Ansiedade na Qualidade de Vida e Funcionalidade da População Adulta Portuguesa. Doutoramento em Ciências da Saúde e Bem Estar, Universidade de Évora e Universidade Nova de Lisboa. Supervisors: Manuel Lopes and **Anabela Afonso**.

E42 Maria João Inácio, Cartas de Controlo: Monitorização de Perfis e Risco Ajustado. Doutoramento em Matemática, Universidade de Évora. Supervisors: **Paulo Infante**, Fernanda Figueiredo.

E43 Dora Carinhas, Modelação Estatística das Marés. Doutoramento em Matemática, Universidade de Évora. Supervisors: **Paulo infante**, António Martinho.

E44 Fonseca, Gabriel. *Modelação da previsão da velocidade do vento com recurso a estatística Bayesiana e a algoritmos de machine learning*. Programa de Doutoramento em Matemática, Universidade de Évora. Supervisor: **Manuela Oliveira**.

E45 Martins, Vitor. *Modelação da previsão da radiação solar com recurso a estatística Bayesiana e a algoritmos de machine learning*. Programa de Doutoramento em Matemática, Universidade de Évora. Supervisor: **Manuela Oliveira**.

E46 Lorenzo Cristofaro, Non-Gaussian Analysis Related to Incomplete Gamma and Fox-H Functions and Bernstein Gaussian Processes, co-supervisor: **da Silva, J.L.**

Master Thesis (ongoing)

E47 Hasim Çapın, Reconstructing Gompertz Model: Invariant features on Gompertz model, Intelligent Systems Engineering Master's Program, Intelligent Systems Engineering / Applied Mathematics and Computational Sciences, Izmir Bakircay University – Graduate Education Institute (supervisor: **J. Cabral**)

E48 Filipe Miguel Ferreira Santos Duarte, “Controlling the Movement of Suspended Loads using Predictive Control” (supervisor: **D. Batista**)

E49 Daniela Sofia Duarte Pedrosa, “Suspended load system motion control” (supervisor: **D. Batista**)

E50 João Vasconcelos, Blockchain: conceitos, técnicas e aplicações, Master in Engineering Informatics, Supervisor: **Carlos Ramos**, co-supervisor: Salvador Abreu, Universidade de Évora. (2023)

E51 Fligêncio Hermogenes Gomes, Análise e previsão do número de casos e de mortes por COVID-19 na Guiné-Bissau: Estudo comparativo entre modelos ARIMA e modelos de redes neuronais (LSTM). Supervisor: **Dulce Gomes**

E52 Teotónio Gaspar Feliciano, Modelação e previsão das taxas de mortalidade infantil nos países da CPLP entre 1985 e 2020 usando modelos de Séries Temporais. Supervisor: **Dulce Gomes**

E53 Samira Cardoso Chicha, Análise e previsão da produção de eletricidade a partir de energias renováveis em Cabo Verde. Supervisor: **Dulce Gomes**

E54 Student: Vânia Domingas de Sousa Figueira
Title: Métodos geradores de distribuições de probabilidade
Supervisor: **Ana Maria Abreu**

E55 Catarina Wengorovius Viana de Sousa, Análise de indicadores sobre o acesso a equipamentos sociais e a igualdade de género: Modelos de Análise de Regressão e Correlação, e Modelos Estatísticos de Previsão. Master's Course in Statistical Modeling and Data Analysis at the University of Évora.

Supervisor: **Dulce G. Pereira**

E56 Edelise Moreno, Uma aplicação da teoria de valores extremos na modelação da qualidade do ar durante a época de fogos extremos em Portugal. Master's Course in Statistical Modeling and Data Analysis at the University of Évora.

Supervisors: **Lígia Henriques-Rodrigues and Ediclê Duarte**

E57 Ana Rita Ambrósio, Modelação estatística das temperaturas máximas na região do Alentejo. Master's Course in Statistical Modeling and Data Analysis at the University of Évora.

Supervisor: **Lígia Henriques-Rodrigues**

E58 Nuno Miguel Martins da Fonseca. Previsão de Vendas de Grupos Farmacêuticos para Auxílio da Gestão de Stock - Abordagem Low-Code. Masters Course in Data Science. Iscte-Instituto Universitário de Lisboa.

Supervisor: **Patrícia A. Filipe**

E59 António Luís Prates Carlinhos. Análise da propagação de Malware através de modelos epidemiológicos. Master's Course in Statistical Modeling and Data Analysis at the University of Évora. Supervisor: **Gonçalo Jacinto**

E60 Belna Quefade Bequinsa. Modelos Matemáticos de Crescimento Populacional Master's Course in Statistical Modeling and Data Analysis at the University of Évora. Supervisor: **Gonçalo Jacinto**

E61 Luis Ferreira. Impacte das pressões antrópicas e das condições bioclimáticas sobre populações de zimbrais dunares (2250*): modelos de distribuição de espécies. Mestrado em Modelação Estatística e Análise de Dados, Universidade de Évora. Supervisors: **Anabela Afonso**, Catarina Meireles and Diogo Alagador

E62 Dinis Silva. Abandono de Árbitros no Futsal. Mestrado em Direção e Gestão Desportiva, Universidade de Évora. Supervisors: Mário Teixeira, Fernando Starepravo and **Anabela Afonso**

E63 Gonçalo Mendes. eSports no contexto universitário em Portugal: caracterização dos gamers estudantes do ensino superior. Mestrado em Direção e Gestão Desportiva, Universidade de Évora. Supervisors: Mário Teixeira, **Anabela Afonso** and **Jerónimo García-Fernández**

E64 Lassana Luis Mendes. Estimação da prevalência de doenças com o método de captura-recaptura. Mestrado em Modelação Estatística e Análise de Dados, Universidade de Évora. Supervisor: **Anabela Afonso**

E65 Lorena Santos, Modelação e Predição de Eventos Raros – um estudo comparativo, Mestrado em Modelação Estatística e Análise de Dados, Supervisor: **Paulo Infante**

E66 Helena Leitão, Avaliação e Modelação Estatística do Impacto da Mobilidade Elétrica no Perfil de Carga do Sistema Electroprodutor Português: Análise Atual e Projeções do Consumo, Mestrado em Modelação Estatística e Análise de Dados, Supervisor: **Paulo Infante**, Pedro Horta

Curricular and Scientific Internships (Ongoing)

E67 Jorge Manuel Candeias Coveiro, “*Study and computational implementation of numerical methods for initial value problems*”, Bolsa de Iniciação à Investigação-CIMA., Advisors: **Paulo Correia**, **Fernando Carapau**

E68 Jacinto Rebelo, Early-stage research grant on the Jordan type of nilpotent matrices, Advisor: **Pedro Macias Marques**, Research Center of Mathematics and Applications (CIMA , University of Évora

F – Invited talks and seminars

F1 . **F. Carapau** and **P. Correia**, *“Three-dimensional velocity field for blood flow using the power-law viscosity function”*, Instituto Superior de Economia e Gestão (ISEG), 30 January 2023, seminars of ISEG/DMAT.

F2 **F. Pereira**, *“Geometric conditions to existence and uniqueness of projection in Hilbert spaces, and directional curvatures in finite dimensional spaces”*, Mathematics Department, University of Aveiro (online), May 24, 2023. https://cidma.ua.pt/files/files/events/group_seminars/SCG/2023.05.24_FatimaPereira.pdf.

F3 **A. Rodrigues**, *“Invariant curves for Planar Piecewise Isometries: Recent Advances”*. Colloquium talk-, School of Mathematics and Statistics, Center for Mathematical Sciences, Hubei Key Laboratory of Engineering Modeling and Scientific Computing, Huazhong University of Sciences and Technology, Wuhan, China. 9 June 2023.

F4 **E. Zappale**, *“Optimal design problems and applications to thin structures”* at Università della Campania ‘L. Vanvitelli’ 14/11/2023. <https://www.matfis.unicampania.it/dipartimento/convegni-seminari-appuntamenti/240>

F5 **E. Zappale**, *“Optimal design problems and applications to thin structures”* at University of Modena and Reggio Emilia, 5/12/2023. <https://www.fim.unimore.it/site/home/archivio-eventi/articolo1001068287.html>

F6 **E. Zappale**, *“Optimal design problems and applications to thin structures”*, University of Lisbon, 28/11/2023., <https://wade.ulisboa.pt/seminars?id=7098>

F7 **F. S. Cal** and **B. M. Pereira**, *Trapped modes in a multi-layer fluid*, Mathematica Seminaria, Instituto Superior de Engenharia de Lisboa, April 20, 2023

F8 **João Dias**. (Common) Meadows: A field of rings, Universidade de Évora, 18 de Outubro de 2023

F9 **João Dias**. The representation theory of the unitriangular group and other related groups, Universidade de Évora, 22 de Março de 2023

F10 **C. Correia Ramos** Pseudo random number generators using cellular automata and genetic algorithms, International Workshop on Mathematics and Physical Sciences 15-16 de Junho 2023, Universidade de Évora. (2023) <https://www.cima.uevora.pt/index.php?view=article&id=266:international-workshop-on-mathematics-and-physical-sciences&catid=29:highlights>

F11 **C. Correia Ramos** Nonlinear phenomena - symbolic dynamics and natural computing, 6th International Conference on Numerical and Symbolic Computation

Developments and Applications 30-31 de Março 2023, Universidade de Évora. (2023)
<https://www.symcomp2023.uevora.pt/>

F12 C. Correia Ramos On the classification of sub Cuntz-Krieger algebras. Seminário DMat/CIMA-UE, Março 2023, Universidade de Évora. (2023)
<https://www.cima.uevora.pt/index.php?view=article&id=203:on-the-classification-of-sub-cuntz-krieger-algebras&catid=38>

F13 Pedro Macias Marques, Families of local Artinian Gorenstein algebras, Jordan type, and related invariants, Stockholm Mathematics Centre (Stockholm University, Royal Institute of Technology), Stockholm, 13th March 2023, <https://www.math-stockholm.se/en/kalender/commalg/pedro-marcias-marques-families-of-local-artinian-gorenstein-algebras-jordan-type-and-related-invariants-1.1237483?date=2023-03-13&orgdate=2023-03-01&length=1&orglength=306>

F14 Rui Albuquerque-14/07/2023, *Spin(7)-structures on tangent bundles*, Encontro Anual do CIMA, ISEL.

F15 Rui Albuquerque -12/04/2023, *Um sistema diferencial fundamental numa variedade riemanniana de dimensão 3*. PhD seminar, Mathematics Department, University of Évora.

F16 Rui Albuquerque -31/03/2023, *On three recent applications of a fundamental differential system of Riemannian geometry*, CMUP, University of Porto

F17 Carlos A. Braumann. 10 hour post-graduate course on Stochastic Differential Equations at the invitation of and organized by Modestya - Modelos de Optimización, Decision, Estadística y Aplicaciones in collaboration with Universidade de Santiago de Compostela, Xunta de Galicia e CITMAGA – Centro de Investigación e Tecnoloxía Matemática de Galicia, November 13-16, 2023, Universidade de Santiago de Compostela, Espanha, <https://www.usc.gal/gl/centro/facultade-matematicas/eventos/curso-ecuciones-diferenciales-estocasticas>

F18 Dulce Gomes. Talk titled A importância da Epidemiologia espacial e temporal na saúde pública. Epidemiological-Operational Studies in Tuberculosis Group (GEOTB). Escola de Enfermagem da Escola de Enfermagem de Ribeirão Preto da Universidade de São Paulo, Brasil, October 17, 2023.

F19 Dulce Gomes. Talk titled Séries Temporais Interrompidas. Epidemiological-Operational Studies in Tuberculosis Group (GEOTB). Escola de Enfermagem da Escola de Enfermagem de Ribeirão Preto da Universidade de São Paulo, Brasil, October 18, 2023.

F20 Dulce Gomes. 3 hours post-graduate workshop on Modelos clássicos de modelagem temporal univariada (modelos de decomposição e suavização exponencial) e

modelos de regressão temporal. Escola de Enfermagem da Escola de Enfermagem de Ribeirão Preto da Universidade de São Paulo, Brasil, October 18, 2023.

F21 Dulce Gomes. 3 hours post-graduate workshop on Modelos SARIMA: modelagem em R Studio. Escola de Enfermagem da Escola de Enfermagem de Ribeirão Preto da Universidade de São Paulo, Brasil, October 20, 2023

F22 .Dulce Gomes. 3 hours post-graduate workshop on Modelos dinâmicos de regressão temporal. Escola de Enfermagem da Escola de Enfermagem de Ribeirão Preto da Universidade de São Paulo, Brasil, October 23, 2023.

F23 Dulce Gomes. 3 hours post-graduate workshop on Modelos avançados de previsão. Escola de Enfermagem da Escola de Enfermagem de Ribeirão Preto da Universidade de São Paulo, Brasil, October 24, 2023.

F24 João Alves e Sousa, 1,5 hours lecture to Physics Engineering undergraduates at ISEL (Lisbon Engineering Polytechnic Institute) on “Importance and Evaluation of Measurement Uncertainty”, November 10, 2023.

F25 Paulo Infante, Estratégia da Saúde na Área das Demências – Questionário para Diagnóstico da Situação, Dia Mundial da Doença de Alzheimer, organization by UCC de Évora, 21 September, <http://www.arsalentejo.min-saude.pt/arsalentejo/eventos/Paginas/UCC-de-%C3%89vora----Dia-Mundial-da-Doen%C3%A7a-de-Alzheimer---21-de-Setembro-de-2023.aspx>

F26 Paulo Infante, Nuno Carocha Gonçalves - Algumas Considerações sobre Explicação e Predição da Sinistralidade Rodoviária, 5th Edition of a Monographic Course on Homeland Security (CIESI), Instituto Universitário Militar, 16 November.

F27 Marcelo Godinho, Paulo Infante, Pedro Nogueira, Vitor Nogueira - Zonas de acumulação de Acidentes, Workshop Prevenção e Segurança Rodoviária, Organization by Cmdt Terr GNR Évora, 24 January, Évora, <https://www.facebook.com/profile/100064388244183/search/?q=WORKSHOP%20PREVEN%C3%87%C3%83O%20E%20SEGURAN%C3%87A%20RODOVI%C3%81RIA>

F28 Paulo Infante, Vitor Nogueira., Pedro Nogueira, Marcelo Godinho - Condução sob o efeito do Álcool, Workshop Prevenção e Segurança Rodoviária, Organization by Cmdt Terr GNR Évora, 24 January, Évora, <https://www.facebook.com/profile/100064388244183/search/?q=WORKSHOP%20PREVEN%C3%87%C3%83O%20E%20SEGURAN%C3%87A%20RODOVI%C3%81RIA>

F29 Paulo Infante, Anabela Afonso, Gonçalo Jacinto, Teresa Engana, Filipe Glória e Silva, Rosário Correia, Rita Leão, Dulce Mira, Jesus Fonseca, José Garção, Marta Rebocho

- Hábitos da Atividade Física e Hábitos do Sono no 1º Ciclo do Concelho de Évora, organization by Câmara Municipal de Évora and Universidade de Évora, Évora, 14 July, <https://www.cm-evora.pt/conferencia-organizada-pela-cme/>

F30 **José Luís da Silva**, Webinar, CIDMA–Seminar: Functional Analysis, Universidade de Aveiro, Mar. 23, 2023. Title: A Biorthogonal Approach to Infinite Dimensional Fractional Poisson Measures.
https://cidma.ua.pt/files/events/group_seminars/FAAG/GAFASeminar23-03-23.pdf

F31 **José Luís da Silva**, Bielefeld Stochastic Afternoon, University of Bielefeld, Dec. 20, 2023. Title: Cameron-Martin Formula for a Class of non-Gaussian Measures.
<https://stochana.math.uni-bielefeld.de/#talks?week=-4>

F32 **José Luís da Silva**, Department of Mathematics, Sanata Dharma University Yogyakarta, Indonesia. Jul. 21, 2023. title: Poisson Analysis and Stirling Operators in Infinite Dimensions.

F33 **José Luís da Silva**, III Academy Workshop: Stochastic Analysis and Applications: Physics and Finance Academia de Ciências de Lisboa, May 19, 2023. Title: Poisson Analysis and Stirling Operators in Infinite Dimensions.

F34 **José Luís da Silva**, Madeira Math Encounters L, University of Madeira, Sep. 01, 2023. Title: Cameron-Martin Formula for a Class of non-Gaussian Measures.
<http://ccm.uma.pt/mme50/styled/>

F35 **José Luís da Silva**, Sapienza, University of Rome, Oct. 23, 2023. Title: A Biorthogonal Approach to Infinite Dimensional Fractional Poisson Measures.
<https://www.dss.uniroma1.it/it/node/8396>

G. Joint Seminars CIMA/DMAT/PDM

G1 "Artificial Stress Diffusion Applied to the Simulations of Oldroyd-B Fluid Flows" (08/02/2023), **Marília Pires**, Universidade de Évora

G2 "Risk assessment in Statistics of Extremes" (15/02/2023), **Lígia Henriques-Rodrigues**, Universidade de Évora

G3 "On Computational Properties of Cauchy Problems" (22/02/2023), **Pedro Pinto**, Technische Universität Darmstadt

G4 "On the classification of sub Cuntz-Krieger algebras" (08/03/2023), **Carlos Ramos**, Universidade de Évora

G5 "Structural equation modeling to evaluate the stress-burnout relationship in Portuguese college students" (20/03/2023), **Luís M. Grilo**, Universidade de Évora, NOVA Math (Centro de Matemática e Aplicações) Universidade Nova de Lisboa

G6 "The representation theory of the unitriangular group and other related groups" (22/03/2023), **João Dias**, Universidade de Évora

G7 "A fundamental differential system of a 3-dimensional Riemannian manifold" (12/04/2023), **Rui Albuquerque**, Universidade de Évora

G8 "Coupled systems with Ambrosetti-Prodi-type differential equations" (17/04/2023), **Gracino Rodrigues**, Universidade de Évora

G9 "On the existence of vector bundles E of homological dimension 2 and $\chi(\mathrm{End}\ E)=1$ " (26/04/2023), **Helena Soares**, ISCTE – Instituto Universitário de Lisboa, Centro de Investigação em Matemática e Aplicações, Universidade de Évora

G10 "Approximation by certain positive linear operators" (04/05/2023), **Ana Maria Acu**, Lucian Blaga University of Sibiu

G11 "On the applicability of the pointwise constrained Liapunov convexity theorem" (10/05/2023), **Clara Carlota**, Universidade de Évora

G12 "First-order non-linear coupled systems - Existence and localization of periodic solutions" (12/05/2023), **Sara Perestrelo**, Universidade de Évora

G13 "Dynamics of envy behavioural decisions in a game with two types of homogeneous players" (15/05/2023), **Abdelrahim S. Mousa**, Birzeit University

G14 "Optimal consumption, investment and life-insurance purchase under a stochastically fluctuating economy" (17/05/2023), **Abdelrahim S. Mousa**, Birzeit University

G15 "Data Transformations and learning" (18/07/2023), **Milan Stehlík**, Johannes Kepler University in Linz, Universidad de Valparaíso

G16 "Do I dare to divide by zero?" (04/10/2023), **Bruno Dinis**, Universidade de Évora, Portugal

- G17** "Polytopes and graded rings" (10/10/2023), **Balázs Szendroi**, University of Vienna, Austria
- G18** "(Common) Meadows: A field of rings" (18/10/2023), **João Dias**, CIMA, IIFA, Universidade de Évora, Portugal
- G19** "On the well-posedness of the WBK system" (25/10/2023), **Youcef Mammeri**, Université Jean Monnet, France
- G20** "Decomposing Diversity into Measures of Evenness, Similarity, and Richness" (08/11/2023), **Michael Grinfeld**, Department of Mathematics and Statistics, University of Strathclyde, UK, and CIMA, Portugal
- G21** "Renormalization of Translated Cone Exchanges" (15/11/2023), **Noah Cockram**, University of Exeter, UK
- G22** "Quadratic and semiparametric approaches for nonlinear latent relationships - An empirical study" (22/11/2023), **Fan Yang-Wallentin**, Uppsala University, Sweden
- G23** "On the use of Machine Learning to solve Data Assimilation and Inverse Problems" (29/11/2023), **M. Asch**, Université de Picardie Jules Verne, LAMFA, CNRS-UMR 7352, France
- G24** "Stochastic Answer Set Programming" (11/12/2023), **Francisco Coelho**, NOVA LINCS & High Performance Computing Chair & Departamento de Informática, Universidade de Évora, Portugal
- G25** "Data Science for Tourism of Thailand" (13/12/2023), **Thidaporn Supapakorn**, Statistics Department, Kasetsart University, Bangkok, Thailand

H. Projects and scientific contracts

FCT Projects

H1 V.Bushenkov: PCIF/MOS/0217/2017, A multiple criteria approach to integrate wildfire behavior in forest management planning, UÉvora research team's responsible. 3000 €/UE (in 2023).

H2 Alexandra Batista, PCIF/MOS/0217/2017, "MODFIRE, A multicriteria approach to integrate wildfire behavior in forest management planning", 19-03-2019 a 18-03-2023, PI: Susete

Marques; Fundação para a Ciência e a Tecnologia (2019-2023).. Researcher.
<https://www.uevora.pt/investigar/projetos?id=4044>

H3 Marco Garapa and Maurício Reis, Project PTDC/CCI-COM/4464/2020, “Dinâmica de Perfis baseada em Conhecimento”/“Knowledge-Driven Profile Dynamics”. Execution Period: from 29-03-2021 to 28-03-2024. Principal Investigator: Prof. Dr. Eduardo Fermé. Total Funding: 154.922,26€.

H4 Lúgia Henriques-Rodrigues: Projeto CEECINST/00054/2018/CP1522/CT0003, 2019/02/16 - 2025/02/15,. Universidade de Évora
[10.54499/CEECINST/00054/2018/CP1522/CT0003](https://www.uevora.pt/investigar/projetos?id=10.54499/CEECINST/00054/2018/CP1522/CT0003)

International projects

H5 E. Zappale: Host professor for the INdAM GNAMPA 2023 project for visiting professor: Guest prof. Stefan Kroemer – UTIA Prague, (3 weeks).

H6 E. Zappale: Host professor for the INdAM GNAMPA 2023 project for visiting professor: Guest prof. A. C. Barroso, Univ. of Lisbon (10 days).

H7 E. Zappale: Host professor for the programme 'Professori visitatori 2023' Sapienza- Univ. of Rome Guest prof. José Matias, Univ. of Lisbon (3 months).

H8 E. Zappale: P.I for GNAMPA- INdAM 2023 Project Modelli Variazionali ed Analisi Asintotica per la scienza dei materiali (3500 Euro).

H9 E. Zappale: Participant at the national project PRIN 2022 (started in 2023), P.I. professor Emilio Cirillo, durata 2 anni : Oggetto: Piano Nazionale di Ripresa e Resilienza (PNRR) - Missione 4 "Istruzione e Ricerca"

Componente C2 Investimento 1.1, "Fondo per il Programma Nazionale di Ricerca e Progetti di Rilevante Interesse Nazionale (PRIN)" - Decreto Direttoriale n. 104 del 2 febbraio 2022 Awiso pubblico per la presentazione di Progetti di ricerca di Rilevante Interesse Nazionale (PRIN) da finanziare nell'ambito del PNRR - CUP 853D23009360006

H10 Pedro Marques, PID2019-104844GB-I00, "Álgebra Conmutativa y sus Interacciones", 2020-2023 Principal Investigator: Santiago Zarzuela Armengou, funded by Ministerio de Ciencia, Innovación y Universidades, España

H11 Manuel Branco- Monoides y semigrupos afines (IP's Alberto Tenório y José Carlos Rosales González) - Partially supported by Junta de Andalucía group FQM-298, Proyecto de Excelencia de la Junta de Andalucía ProyExcel 00868, Proyecto de investigación del Plan Propio–UCA 2022-2023 (PR2022-011) (Member).

H12 Manuel Branco- Estudio y aplicaciones de semigrupos numéricos y afines, MTM2017-84890-P (IP's: Juan Ignacio García García y José Carlos Rosales González) (El período del proyecto, 01/01/2018 - 31/12/2020).

<https://www.imus.us.es/assets/imusuca/docs/proyectos/juan-garcia.pdf>

H13 Julia Justino, 2021-1-PT01-KA220-HED-000032138, Training for Sustainable and Healthy Building for 2050 (BUILD2050), 2022-2025, Susana Lucas, Erasmus

H14 Marília Pires, Member of the Project SDEFish: Gestão Sustentável de Pescarias através de Equações Diferenciais Estocásticas, Researcher center CEMAPRE, P.I.Nuno Brites, EXPL/EGE-IND/0351/2021, January 1, 2022 – June 30, 2023, (31 765 EUR)

H15 Marília Pires, Research grant of Præmium Academiæ of S. Necas Czech Science Foundation, RVO:67985840, Czech Academy of Sciences, Praga, March 6 – June 30, 2023

H16 Dulce Gomes, Project 22/08510-7 (Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP)), ``Interação e efeito da pandemia por COVID-19 no controle da tuberculose no estado de São Paulo: aspectos político-sociais, clínico-epidemiológicos e práticas inovadoras". Escola de Enfermagem de Ribeirão Preto da Universidade São Paulo (EERP-USP). PI: Ricardo Alexandre Arcêncio (No direct financing)

H17 Dulce Gomes, Project 29/2023: 445741/2023-6 (Conselho Nacional de Desenvolvimento Científico e Tecnológico/Ministério da Ciência do Brasil, Tecnologia e Inovações (CNPq/FNDCT)), ``Implementação de tecnologias para o rastreamento e adesão ao tratamento da Tuberculose infecção ou doença entre Migrantes Internacionais, Refugiados e Apátridas no Brasil (Projeto MIRATB). EERP-USP. PI: Ricardo Alexandre Arcêncio (No direct financing)

H18 Dulce Gomes, Project 2023/01879-8 (FAPESP), "Avaliação de custo e efetividade da estratégia de Sistema de Telecuidado de Pessoas Acometidas por Tuberculose". EERP-USP. PI: Ione Carvalho Pinto (No direct financing)

H19 Dulce Gomes, Project 88887.657730/2021-00 (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior/Ministério da Educação (CAPES)), "Termômetro Social COVID-19: Análise da percepção de risco, dos padrões de comportamento da população, violência e adesão às medidas de proteção consideradas no combate à pandemia no Brasil". EERP-USP. PI: Ricardo Alexandre Arcêncio (No direct financing)

H20 Dulce Gomes, Project 2021/08263-7 (FAPESP), "Termômetro Social COVID-19: Fatores associados à percepção de risco, aos padrões de comportamento e à adesão às medidas de proteção que influenciam no combate à pandemia no Brasil". EERP-USP. PI: Pedro Fredemir Palha (No direct financing)

H21 Dulce Gomes, Project 405902/2021-2 (CNPq/FNDCT), "Impacto da COVID-19 na prevenção e controle da Tuberculose no Brasil: Análise das políticas de proteção social, da situação epidemiológica e de incorporação tecnológica". EERP-USP. PI: Ricardo Alexandre Arcêncio (No direct financing)

H22 Dulce Gomes, Project 304483/2018-4 (CNPq/FNDCT), “Os determinantes da tuberculose multidroga-resistente no estado de São Paulo: um estudo misto sobre tuberculose multidroga-resistente e seus determinantes”. EERP-USP. PI: Ricardo Alexandre Arcêncio (No direct financing)

H23 João Alves e Sousa, EURAMET Project 22DIT02 FunSNM of the programme European Partnership on Metrology, “Fundamental Principles of Sensor Network Metrology”. Project has started in October 2023 and lasts for 26 months.

H24 Manuel do Carmo, Project 07/2021-12/2025 (a project co-financed by PRR Interface and developed by KIPT Colab - *Knowledge to Innovate Professions in Tourism, Collaborative Laboratory for Tourism and Innovation*), Project to create, validate and implement a Tourism Barometer. PI: Antónia Correia (No direct financing)

H25 Manuela Oliveira, Project *Decision support for the Supply of Ecosystem Services under Global Change*, granted by the European Commission (Brussels, BE), from the 1st July 2021 to the 30th June 2025. Grant number: 101007950. More information: <https://app.dimensions.ai/details/grant/grant.9488645>

H26 José Luís da Silva, Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) -- Project-ID 317210226 -- SFB 1283

Bilateral Projects

H27 PESCADATA2 - Recolha de dados sobre a pesca recreativa em Portugal. Projeto financiado pela DGRM. Participantes: CCMAR/ Universidade do Algarve, 2020-2022., PI: Rangel, M. participant: **Jacinto, G**

H28 IEA (International Emerging Actions) project “Mathematical Modelling and Analysis of the Tumor Coagulum”, 2023–2024, CNRS, France, **Joaquim Correia**, Team member

H29 Project S2R (Soutien au Rayonnement de la Recherche) “Approximations des Lois de Conservation”, 2023, LAMFA (Laboratoire Amiénois de Mathématique Fondamentale et Appliquée), UMR CNRS 7352, UPJV, Amiens, France, **Joaquim Correia**, Team member

H30 “Mathematical Modelling of Bone Diseases”, Projeto Luso-Francês CNRS/FCT, PESSOA 2023, **Joaquim Correia**, Team member 2024–2025 (submitted)

Summary of CIMA 2023 indicators

A.1. Books	Books	4
	Chapters	7
A.2. Papers	Internationals	63
	Nationals	2
A.3. Proceedings	Internationals	25
	Nationals	3
A.4. Special Issues Edited		4
Total Publications		109
B. Communications	Internationals	73
	Nationals	34
Total Communications		107
C. Reports		2
D. Organization of events	Internationals	39
	Nationals	3
E. Advanced Training	PhDs	32
	Masters	28
	Post-Doc	2
	Others	6
Total Advanced Training		68
F. Invited Seminars		35
G. Joint Seminars CIMA/DMAT/PDM		25
H. Projects		30