



SYMCOMP2015

International Conference on Numerical and Symbolic Computation:  
Developments and Applications



Universidade do Algarve, FARO, ALGARVE, 26 - 27 de March 2015

### PROGRAMME

	Thursday: 26/03/2015	Friday: 27/03/2015
09:15 – 09:30	OPENING CEREMONY	
09:30 – 10:15	<b>PLENARY SESSION I</b> <i>ALGORITHMS FOR SYMBOLIC POLYNOMIALS, MATRICES AND DOMAINS</i> <b>Prof. Stephen Watt</b> , Distinguished Professor—University of Western Ontario - Canada	<b>PLENARY SESSION II</b> <i>HIERARCHICAL OPTIMIZATION OF THE STRUCTURE AND ITS MATERIAL: APPLICATIONS IN COMPOSITE LAMINATE DESIGN</i> <b>Prof. Helder Rodrigues</b> – LAETA – IDMEC, IST, University of Lisbon
10:20 – 10:50	<b>INVITED PAPER I</b> <i>COMPUTATIONAL MECHANICS: SYMBOLIC COMPUTATION, NONLINEAR CONTINUA, CONTACT AND FRACTURE</i> <b>Prof. Pedro Areias</b> - Department of Physics, School of Sciences and Engineering, University of Évora	<b>INVITED PAPER II</b> <i>AN OVERVIEW ON THE MULTIDIMENSIONAL OPTIMAL ORDER DETECTION METHOD</i> <b>Prof. Stéphane Clain</b> - Centre of Mathematics, University of Minho and Institut de Mathématiques de Toulouse, Université Paul Sabatier
10:50 – 11:10	Coffee-Break	
11:10 – 12:30	Session I <b>Numerical software and applications</b>	Session V <b>Symposium on Computational Mechanics: In honor to Prof. C. Mota Soares</b>
12:30 – 14:00	Lunch	
14:00 – 15:00	Session II <b>Numerical software and applications</b>	Session VI <b>Machine Learning and Optimization</b>
15:00 – 16:00	Session III <b>Numerical and Algebraic Computation for Scientific and Industrial Applications</b>	Session VII <b>Numerical and Algebraic Computation for Scientific and Industrial Applications</b>
16:00 – 16:30	Coffee-Break	
16:30 – 17:50	Session IV <b>Computer Algebra Systems in Mathematics: research and education</b>	Session VIII <b>Computer Algebra Systems in Mathematics: research and education</b> [17:30 H] Closure - Submissions to Special Issues
20:00 – 23:00	<b>Conference Dinner</b> –MapleSoft and Wolfram Prizes	

**THURSDAY, MARCH, 26, 2015**

**LOCAL: Universidade do Algarve – Anfiteatro Paulo Freire - ESEC**

**Opening Ceremony: 09:15 – 09:30**

SP I	<p><b>PLENARY SESSION I – CHAIR: Prof. Amélia Loja</b>  <b>ALGORITHMS FOR SYMBOLIC POLYNOMIALS, MATRICES AND DOMAINS</b>  <b>Prof. Stephen Watt</b>, Distinguished Professor-University of Western Ontario-Canada</p>	09:30 10:15
IP I	<p><b>INVITED PAPER I – CHAIR: Prof. Paulo Vasconcelos</b>  <b>COMPUTATIONAL MECHANICS: SYMBOLIC COMPUTATION, NONLINEAR CONTINUA, CONTACT AND FRACTURE</b>  <b>Prof. Pedro Areias</b> - Department of Physics, School of Sciences and Engineering, University of Évora</p>	10:20 10:50

SESSION I : Numerical software and applications, 11:10 – 12:30		
CHAIR: Prof. José Alberto Rodrigues and Prof. José Matos		
ID	COMMUNICATION TITLE	AUTHORS
A07	A Lanczos' tau method software library for the solution of differential equations	Marcelo S Trindade, José M Matos, Paulo B Vasconcelos
A09	PageRank computation using lumping and extrapolation techniques	I. R. Mendes, Paulo B. Vasconcelos
A13	Numerical Solution for New Neoclassical Synthesis' models	J. C. Rocha, Paulo B. Vasconcelos, P. Gil
A16	An Approach to Robust Padé Approximation of Orthogonal Polynomial Expansions	J.C. Matos, J. Matos, M.J. Rodrigues

SESSION II : Numerical software and applications, 14:00 – 15:00		
CHAIR: Prof. Pedro Areias and Prof. Paulo Vasconcelos		
ID	COMMUNICATION TITLE	AUTHORS
A05	Modelling and numerical simulation of the recent outbreak of Ebola	Amira Rachah, Delfim F. M. Torres
A10	Solution of non linear optimal control problems with the Lanczos Tau method	A. Gavina, J. Matos, Paulo B. Vasconcelos
A28	Reconstruction of Surfaces from Unstructured Points Clouds, using Compactly-Supported Radial Basis Functions	G.M.S. Bernardo, M.A.R. Loja

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<b>SESSION III : Numerical and Algebraic Computation for Scientific and Industrial Applications, 15:00 – 16:00</b>		
<b>CHAIR: Prof. Stéphane Clain and Prof. Gaspar J. Machado</b>		
<b>ID</b>	<b>COMMUNICATION TITLE</b>	<b>AUTHORS</b>
A37	A simulation tool for the design of a railway electric traction system	N. Dias, N. Henriques, J. Calado, M. Calado, S. Mariano
A32	Numerical Simulation of Electrical Problems in a Vacuum Disjuntor	Stéphane Clain, J. A. Rodrigues
A33	Finite Element Method for Didactic Purposes	Antoine Le Hyaric, José A. Rodrigues

<b>SESSION IV Computer Algebra Systems in Mathematics: research and education, 16:30 – 17:50</b>		
<b>CHAIR: Prof. Susana Fernandes and Prof. Celestino Coelho</b>		
<b>ID</b>	<b>COMMUNICATION TITLE</b>	<b>AUTHORS</b>
A02	Contractions of Particular Types of Nilpotent Lie Algebras of Lower Dimensions	J.M. Escobar, J. Núñez, P. Pérez-Fernández
A19	Interactive Learning of Modeling with Ordinary Differential Equations	Celestino Coelho, Rui Marreiros, Ana C. Conceição
A23	Moment-Curvature Diagrams for Reinforced Concrete Section Design	T. Marques, C. C. Ferreira, H. Barros
A30	Photogrametric Techniques to Health Monitoring Control of Breakwater's Structure Using Scilab	Rute Lemos, Amélia Loja, João Rodrigues, José A. Rodrigues

**FRIDAY, MARCH, 27, 2015**

**LOCAL: Universidade do Algarve – Anfiteatro Paulo Freire - ESEC**

SP II	<p><b>PLENARY SESSION II – CHAIR: Prof. Ana C. Conceição</b>  <b>HIERARCHICAL OPTIMIZATION OF THE STRUCTURE AND ITS MATERIAL:</b>  <b>APPLICATIONS IN COMPOSITE LAMINATE DESIGN</b>  <b>Prof. Hélder Rodrigues</b> – LAETA – IDMEC, IST, University of Lisbon</p>	09:30 10:15
IP II	<p><b>INVITED PAPER II – CHAIR: Prof. Luís M. C. Simões</b>  <b>AN OVERVIEW ON THE MULTIDIMENSIONAL OPTIMAL ORDER DETECTION METHOD</b>  <b>Prof. Stéphane Clain</b> - Centre of Mathematics, University of Minho and Institut de  Mathématiques de Toulouse, Université Paul Sabatier</p>	10:20 10:50

SESSION V : Symposium on Computational Mechanics: In honor to Prof. C. Mota Soares, 11:10 – 12:30 CHAIR: Prof. Carlos Mota Soares, Prof. Hélder Rodrigues and Prof. J Infante Barbosa		
ID	COMMUNICATION TITLE	AUTHORS
A36	Sizing Optimization of Concrete Cable-Stayed Bridges	A. M.B. Martins, Luís M.C. Simões, João H.J.O. Negrão
A24	A Global Optimization Approach Based on Adaptive Populations	Tiago A.N. Silva, M.A.R. Loja, Alda Carvalho, N.M.M. Maia, J.I. Barbosa
A01	Static and Free Vibrations Analysis of Particulate Composite Plates using Radial Basis Functions	G.M.S. Bernardo, M.A.R. Loja
A29	Mechanical Design Improvement Using Symbolic and Numerical Computational Tools	D.M.S. Costa, J. I. Barbosa

SESSION VI : Machine Learning and Optimization, 14:00 – 15:00 CHAIR: Prof. Amélia Loja and Prof. Antonio J. Tallón-Ballesteros		
ID	COMMUNICATION TITLE	AUTHORS
A26	Novel Methodologies to Train Evolutionary Neural Networks in Supervised Machine Learning. A Case of Study in Product and Sigmoid Units	Antonio J. Tallón-Ballesteros
A27	Decision Trees under Feature Selection Via Scatter Search in Classification Problems	Alberto Ibiza-Granados, A. J. Tallón-Ballesteros
A14	Optimization of Desalination Heat Exchanger's Geometries Using Bat-Inspired Techniques	D.M.S. Costa, J. M. F. Trindade, M.A.R. Loja

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<b>SESSION VII : , Numerical and Algebraic Computation for Scientific and Industrial Applications,15:00 – 16:00</b>		
<b>CHAIR: Prof. Stéphane Clain and Prof. José Alberto Rodrigues</b>		
<b>ID</b>	<b>COMMUNICATION TITLE</b>	<b>AUTHORS</b>
A06	A New Accurate Dry/Wet Interface Computation for the Shallow-Water Problem	Jorge Figueiredo, Stéphane Clain
A20	6th-Order Finite Volume Approximation for the Steady-State Burger and Euler Equations: The Mood Approach	Gaspar J. Machado, Stéphane Clain, R. Loubère, Steven Diot
A21	6th-Order Finite Volume Approximations for the Stokes Equations with a Curved Boundary	Ricardo Costa, Stéphane Clain, Gaspar J. Machado

<b>SESSION VIII : Computer Algebra Systems in Mathematics: research and education, 16:30 – 17:30</b>		
<b>CHAIR: Prof. José Alberto Rodrigues and Prof. Rui C. Marreiros</b>		
<b>ID</b>	<b>COMMUNICATION TITLE</b>	<b>AUTHORS</b>
A03	Some Applications of Symbolic Computation in Spectral Theory	Ana C. Conceição, J. C. Pereira
A04	Symbolic Computation Applied to Singular Integral Operators with Non-Carleman Shift and Conjugation	Ana C. Conceição, Rui C. Marreiros, José C. Pereira
A18	Learning to Solve Linear Second-Order Ordinary Differential Equations with Constant Coefficients by Using Interactive Software	Rui C. Marreiros, Celestino Coelho

[17:30 H] Closure

Information about Submissions to Special Issues  
International Journal for Computational Methods in Engineering Science and Mechanics (IJCMESM)  
Mathematics in Computer Science (MCS) (in connection with SYMCOMP2015)