

Centre For Mechanical Design - Line 1

Books / Special Issues

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3. C. Silva, B. Rocha and A. Suleman, "Design of an Active Composite Wing Spar with Bending-Torsion Coupling", Handbook of Smart Materials, Ed. Mel Schwartz, in press, 2007.
4. C.A. Mota Soares and C.M. Mota Soares, Advanced Composites, Special Issue of the International Journal of Mechanics of Advanced Materials and Structures, 2007.
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6. C.A. Mota Soares, M. Bendsoe, K.K. Choi and J. Herskovits, Structural and Multidisciplinary Optimization, Special Issue of the International Journal of Computers and Structures, 2007.
7. C.A. Mota Soares, W. Ostachowicz, J. Holnicki-Szulc, III Ecomas Thematic Conference, Special Issue, Smart Structures and Materials, 2007.
8. H.C. Rodrigues, P. R. Fernandes, A. P. Veloso, J.A. Simões e M.A. Vaz (Edts.), "Actas do 2º Encontro Nacional de Biomecânica", ISBN:978-972-8469-64-1, IST Press, Lisboa, 2007.
9. P. Flores and M. Silva, "DSM2007 Conferência Nacional de Dinâmica de Sistemas Multicorpo – Livro de Actas", ISBN: 978-989-20-0968-1, DL: 268295/07, Guimarães, Dezembro, 2007.
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1. E. Ng and A. Suleman, “Elastoplastic Modelling of Multi-phase Metal Matrix Composite with Void Growth Using the Transformation field Analysis and the Governing Parameter Method”, ECCOMAS Series Book on Mechanical Response of Composites, Editor: P. Camanho; in press, 2007.
2. Helder Rodrigues, Topology Optimization of Structures: Applications in the Simulation and Design of Cellular Materials, Computational Methods in Engineering & Science, Vol 2, 101-112, 2007.
3. J. Ambrósio, M.T. Silva, “Methodologies for Forward and Inverse Dynamic Analysis of the Biomechanics of the Human Motion”, capítulo no livro *Bioengineering Modeling and Computer Simulation* (Y. González, M. Cerrolaza, eds.), CIMNE, Barcelona, Spain 2007.
4. Jorge Ambrósio and Andrés Kecskeméthy, Multibody Dynamics of Biomechanical Models for Human Motion via Optimization. In: *Computational Multibody Dynamics* (J.C. Orden, J. Goicolea and J. Cuadrado, eds.), Springer, Dordrecht, The Netherlands, 245-272, 2007.
5. Jorge Ambrósio and João Abrantes, Developments in Biomechanics of Human Motion for Health and Sports, In: *A Portrait of State-of-Art Research at the Technical University of Lisbon*, (M. Pereira, ed.), Springer, Dordrecht, The Netherlands, 531-553, 2007.

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4. Frederico Grases Rauter, João Pombo, Jorge Ambrósio, Contact Model for The Pantograph-Catenary Interaction, *Journal of System Design and Dynamics*, Vol. 1 n° 3, 447-457, 2007.
5. J. Gerstmayr, J. A. C. Ambrósio, Component mode synthesis with constant mass and stiffness matrices applied to flexible Multibody systems, *International Journal for Numerical Methods in Engineering*, 2007.

6. J. L. M. Fernandes and P. A. F. Martins, All-Hexahedral Remeshing for the Finite Element Analysis of Metal Forming Processes, *Finite Element Analysis and Design*, 43, pp 666-679, 2007.
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8. João Pombo and Jorge Ambrósio, Modelling tracks for roller coaster dynamics, *International Journal Vehicle Design*, Vol. 45 n° 4, 470-500, 2007.
9. João Pombo, Jorge Ambrósio, Miguel Silva, A new Wheel-rail contact model for railway dynamics, *Vehicle System Dynamic*, 45 n° 2, 165-189, 2007.
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17. P. Flores. J. Ambrósio, Lankarani, Dynamic behaviour of planar rigid multi-body systems including revolute joints with clearance, *Journal of Multibody Dynamics*, Vol. 221, 161-174.
18. Rui B. Ruben, João Folgado, Paulo R. Fernandes, Three-dimensional shape optimisation of hip prostheses using a multicriteria formulation, *Structural Multidisciplinary Optimization*, Vol n° 34, 261-275, 2007.

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15. Luís Sousa, Paulo Veríssimo, Jorge Ambrósio, Development of generic Multibody road vehicle models for crashworthiness, *Multibody Systems Dynamics*, Vol. 19, 133-158, 2008.
16. M. Secanell, K. Karan, A. Suleman and N. Djilali, "Optimal Design of Platinum PEMFC Anode Electrodes", *Journal of the Electrochemical Society*, Vol 155, No. 2, 2008.
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1. Paulo R. Fernandes e Jorge C. Fialho, “Análise de Vibrações de um Fémur com e sem Prótese utilizando o método dos elementos finitos”, *Mecânica Experimental*, nº 14, pp.53-58, 2007.

B-Communications

Papers in International Conference Proceedings

1. A.Cartaxo, J.A. Almeida, O. Silva, M.M. Neves, J.L. Bento Coelho, “Numerical Study of Finite Periodic Structures and Validation of Results Obtained with Bloch Wave Techniques”. In: Maia, NMM; Silva, JMM, Ribeiro, AMR; Foutul, M (eds.) Proceedings of International Conf. on Engineering Dynamics ICED2007 (held in Carvoeiro, Portugal), paper 1057 in CD of Proceeding, 2007.
2. A.Fernandes, A. Santos, A. Silva, A., M.T. Silva, “Projecto Integrado de Ajudas Técnicas para Apoio à Locomoção – Desenvolvimento de uma Ortótese AFO”, Actas do 2º Encontro Nacional de Biomecânica, Évora, Fevereiro 8-9, 2007.
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11. A.Suleman and Carvalho, "Dynamics of a Tree Type Robot ic Structure with Application to a Human Hand Prosthesis", CCToMM Symposium on Mechanisms, Machines and Mechatronics, Canadian Space Agency, June 2007.
12. A.Suleman, C. Keulen, M. Yildiz., Manufacturing Process and Health Monitoring of Composite Structures using FBG Sensors" ECCOMAS Thematic Conference on Mechanical Response of Composites, Porto, Portugal, September 2007.
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C-Reports

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A. Fernandes, A. Santos, A. Silva, M. T. Silva, “Projecto de Ajudas Técnicas para Apoio à Locomoção – Ortótese do Tipo AFO”, Relatório Técnico IDMEC/CPM/2007/001, Instituto Superior Técnico, 2007.

F. Fraga, J. Almeida, M. T. Silva, “A Feedback-controlled System for the Dynamic Simulation of an ATD’s Head-neck Complex in Non-impact Scenarios”, Relatório Técnico IDMEC/CPM/2007/003, Instituto Superior Técnico, 2007.

F. Meireles, P. Flores, M. Silva, “KABIOS – Kinematic Analysis of Biomechanical Systems: A FORTRAN Program for Kinematic Analysis of Planar Multibody Systems – User’s Manual Version 1.0”, Relatório Técnico UMinho, Guimarães, Outubro, 2007.

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B. Santos, F. Santos, P. Castel-Branco, M. Silva., “Analytical Study of Orthoses to Support Locomotion”, Relatório Técnico IDMEC/CPM/2008/001, Instituto Superior Técnico, 2008.

D-Organization of International/National Conferences

Miguel Silva, Organizing Committee, DSM2007 – Conferência Nacional de Dinâmica de Sistemas Multicorpo, Guimarães, 6-7 Dezembro, 2007.

H. Rodrigues, Organizer of Symposium on “Optimização Estrutural”, VII Congresso de Métodos Numéricos em Engenharia , SEMNI-APMTAC, Junho 2007, Porto, Portugal.

C.A. Mota Soares Organizer, "III ECCOMAS Thematic Conference on Smart Structures and Materials, Gdansk, Poland, 9-11, July, 2007.

C.M. Mota Soares, Co-organization of" Sessão Estruturas em Compósitos: CMNE/CILAMCE/2007-Métodos Numéricos e Computacionais em Engenharia, APMAC/SEMINI/ABMEC, Porto, Portugal, Junho 2007.

Helder Rodrigues, Jorge Ambrósio, Organizers of ICCB-2007; III International Congress on Computational Bioengineering, Marguerita, Venezuela, 17-19 September, 2007.

Helder Rodrigues, Paulo Fernandes, João Folgado, Organizers of 2º Encontro Nacional de Biomecânica, Évora, 8 a 9 de Fevereiro de 2007.

Paulo Fernandes, Organizer of Special Sessions on Biomechanics in the Congresso de Métodos Numéricos em Engenharia 2007, Porto, Portugal, 13-15, June, 2007.

C. M. Mota Soares, Organizer of Symposium, “Composites and Adaptive Structures: Modeling and Simulation”, CST2008-The Ninth International Conference on Computational Structures Technology, 2-5 September 2008, Athens, Greece.

José F. Aguilar Madeira, M. Matos Neves, Organizers of Symposium, “Structural Analysis and Optimization in Acoustics and Vibrations”, CST2008-The Ninth International Conference on Computational Structures Technology, 2-5 September 2008, Athens, Greece.

T.A.N. Silva, Organization of ExpoMecânica 2008 – a forum for the announcement of new technologies in Mechanical Engineering, ISEL, Lisbon, Portugal, 26-30 May 2008.

H. Rodrigues, Organizer of ICCB2009 “International Conference on Computational Bioengineering”, Bolonha, Italia, Setembro, 14-16 2009

Paulo Fernandes, Organizer of 3º Congresso Nacional de Biomecânica, Bragança, 11-12, February, 2009.

Helder Rodrigues (Chairman) , C.A. Mota Soares, Paulo Fernandes, João Folgado, Miguel Neves and José Miranda Guedes, Organizers of WCSMO-8 - 8th World Congresses of Structural and Multidisciplinary Optimization, Lisboa, 1-5 June, 2009.

João Folgado, Paulo Fernandes Organizers of ECCOMAS Thematic Conference on Tissue Engineering, Leiria, 2-4 July, 2009.

J. Ambrósio (Chairman), Miguel Silva, C.A. Mota Soares, H. Rodrigues, M. Seabra Pereira, Organizing Committee, ESMC2009 – 7th EUROMECH Solid Mechanics Conference, Instituto Superior Técnico, Lisboa, Portugal, Setembro, 7-11, 2009.

Miguel Silva, J. Ambrósio, Organizing Committee, Euromech Colloquium on Biomechanics of Human Motion, Açores, Portugal, Março, 2010.

E-Advanced Training

PhD Theses

Aurélio Lima Araújo, “ Identification of Elastic and Piezoelectric Properties of Adaptive Materials”, Tese de Doutoramento em Engenharia Mecânica, U.T.L., I.S.T., Junho de 2007.

M. Secanell PhD, c. 2007, co-supervision W. N. Djilali, Uvic., Canada).

Pedro Gamboa, PhD, Prof. Afzal Suleman, c.2007.

Ongoing PhD Thesis

Paulo Gameiro, “Análise Dinâmica de Sistemas Rígido-Flexíveis Através da Utilização de uma Formulação de Coordenadas Cartesianas Totais e Elementos Generalizados”, DEM, IST, Iniciado em 2007.

Daniel Lopes, “Desenvolvimento de Interfaces Gráficas para a Análise Biomecânica do Movimento e da Performance Humana”, Co-orientação do Prof. Jorge Ambrósio (DEM-IST), DEM, IST, A iniciar em Setembro de 2008.

Henrique Rodrigues Borralho dos Santos, “Development of Adaptive Shell Finite Element Model”, Tese de Doutoramento em Engenharia Mecânica, UTL/IST, Março 2008 (18/3/2008).

Nuno Monteiro, “Análise do Disco Intervertebral com Metodologias de Análise de Sistemas Multicorpo e Métodos de Elementos Finitos”, Co-orientação do Prof. João Folgado (DEM-IST), DEM, IST, A iniciar no final de 2008.

Pedro Ezequiel, PhD, Prof. Afzal Suleman, c. 2008.

Ricardo Garcia Lage, “Modelação de Estruturas Adaptativas Recorrendo Modelos Mistos de Elementos Finitos ”, doutoramento Misto IST / Texas A&M University, (waiting public exam).

Andre Carvalho, (PhD, FCT Fellowship), Afzal Suleman.

Bruno Rocha, PhD, FCT Fellowship, Afzal Suleman.

Carlos Silva, (PhD, FCT Fellowship), Afzal Suleman.

Casey Keulen, (PhD, co-supervision w. M. Yildiz, Sabanci U., Turkey), Afzal Suleman.

Filipa Andreia de Matos Moleiro, “Modelos de Elementos Finitos para a Optimização de Estruturas Construídas de Materiais com Propriedades Mecânicas Variáveis e Piezo-Magnetoestretivas”, doutoramento misto IST/Texas A&M University, (em curso).

Frederico Rauter, “Dynamic Analysis of the Pantograph-Catenary Interaction in Railway Systems”, (J. Ambrósio and M. Pereira, advisers), Mechanical Engineering Department, Instituto Superior Técnico, Technical University of Lisbon, Started in 2005 and to be finished in 2008.

Joana Rocha, (PhD, FCT Fellowship), Afzal Suleman.

João Pedro Guerreiro Martins, “Modelling and Structural Optimization of Damped Adaptive Structures: Passive, Active.

Jose Lobo Vale, (PhD, FCT Fellowship), Afzal Suleman.

Kerem karakoc, (PhD Student, co-supervision with E. Park, UVic, Canada), Afzal Suleman.

Luis da Luz, (PhD, FCT Fellowship), Afzal Suleman.

Luis Felix, (PhD), Afzal Suleman.

Luís Miguel Francisco Santos, “Bone quality evaluation using DXA data – comparison with computational model for bone remodelling”, start in January 2008.

Marta Carvalho, “Dinâmica Computacional de Veículos em Condições de Impacto”, (J. Ambrósio, adviser), Mechanical Engineering Department, Instituto Superior Técnico, Technical University of Lisbon, Started in 2005 and to be finished in 2009.

Olavo Mecias da Silva Junior, “Modeling and Optimization of a Hermetic Compressor Kit”, oriented by Prof. Arcanjo Lenzi, Prof. Miguel Matos Neves and Engineer Edmar Baars (MSc). This thesis is to be concluded until October 2008 and discussed in Mechanical Engineering Department at Federal University of Santa Catarina (UFSC), Brazil.

Paula Silva, “Análise e Projecto de uma Ortótese Activa para Apoio da Marcha em Doentes com Patologias de Locomoção”, DEM, IST, started in 2006.

Pedro Samuel Gonçalves Coelho, “Hierarchical models for bone remodelling”, Start January 2004.

Ricardo Beira, “Desenvolvimento de Sistemas Robóticos Antropomórficos”, ISR/DEM, IST, started in 2006.

Ricardo Paiva, (PhD, FCT Fellowship), Afzal Suleman.

Ricardo Portal, “Metodologias para a Reconstituição de Acidentes Rodoviários Utilizando Modelos de Sistemas de Corpos Múltiplos”, Doutoramento iniciado em Janeiro 2006, (João Dias).

Roque, A.A., "Estudo do Desalinhamento de Veios em Máquinas Rotativas".

Rui Miguel Barreiros Ruben, “Shape Optimization of Orthopedic Implants, Start in May 2003 - Finished in November, 2008 (tentative date).

Master Theses

A. Carvalho (MSc, c. 2007), Afzal Suleman.

Ana Isabel Dias Romão dos Santos (L49794) “Caracterização estrutural de um reactor de reformação com queimador integrado desenvolvendo uma interface entre os programas comerciais Fluent e Ansys”, LEM, DEM, IST, UTL, finished in 14-11-2007 (Miguel Antonio Lopes de Matos Neves and Joao Luis Toste de Azevedo).

António José Ferreira Carvalho Mourão Gonçalves Cartaxo (L47041), “Caracterização de Filtros Acústicos Baseada no Método dos Elementos Finitos”, LEM, DEM, IST, UTL, finished in 14-11-2007 (Miguel Antonio Lopes de Matos Neves and Jose Luis Bento Coelho).

Carlos Silva (Msc, c. 2007), Afzal Suleman.

Fernando Meireles, “Kinematics and Dynamics of Biomechanical Models Using Multibody Systems Methodologies (A Computational and Experimental Study of Human Gait)”, Co-orientação com Prof. Paulo Flores (UMinho), Mestrado em Engenharia Biomédica, Universidade do Minho, Guimarães, 2007.

Filipe Hoffmann de Mendonça (L50364), “Structural Optimization in Acoustic Radiation”, LEA, DEM, IST, UTL, finished in 14-12-2007 (Miguel Antonio Lopes de Matos Neves and Fernando Jose Parracho Lau).

Joana Capinha, (MSc, c. 2007, co-supervision with A. Fonseca, CCTAE), Afzal Suleman.

João Velho Cabral Harding Read (L46577), “Projecto de uma Plataforma Elevatória e Basculante de Veículos Ligeiros em Fim de Vida”, LEM, DEM, IST, UTL, finished in 14-11-2007 (Miguel António Lopes de Matos Neves and Luis Filipe Galrao dos Reis).

K. Karakoc (MSc, c. 2007, co-supervision w. E. Park, UVic, Canada), Afzal Suleman.

Kishan Shirish (MSc, c. 2007), Afzal Suleman.

Liliana Vieira Pinheiro, On a Finite Element Method for the Extended Boussinesq Equations, Master Thesis, Mechanical Engineering, 2007 (with C. J. Fortes).

Luís Miguel Francisco Santos, “Análise Comparativa dos Parâmetros Quantitativos do Osso Osteoporótico – Modelo Computacional vs Resultados Clínicos de DEXA” - Finished in November, 2007. (Paulo R. Fernandes).

Maria da Conceição Marcelino da Costa e Sousa (L51166), “Projecto estrutural de uma unidade de despoluição de veículos em fim de vida (VFV)”, LEM, DEM, IST, UTL, finished in 14-11-2007 (Miguel Antonio Lopes de Matos Neves and Luis Filipe Galrao dos Reis).

Nuno Martins Soares, Numerical Modelling of a Combined Cycle Power Plant, Master Thesis in Mechanical Engineering, 2007.

Pedro Aleixo (MSc, c. 2007, co-supervision w. F. Lau, CCTAE), Afzal Suleman.

Pedro André de Carvalho Pastilha (L50382), “Structural Optimization For Flutter Instability Problems”, LEA, DEM, IST, UTL, finished in 12-11-2007 (Miguel Antonio Lopes de Matos Neves and Afzal Suleman).

R. Paiva (MSc, c. 2007), Afzal Suleman.

Rui Gabriel (Msc, c. 2007, co-supervision w. A. Gomes, IDMEC), Afzal Suleman.

D. Saraiva (MSc, c. 2008), Afzal Suleman.

V. van Doorslaere (MSc, c. 2008, co-supervision with A. Fonseca, CCTAE), Afzal Suleman.

Ongoing Master Theses

A. Fouto (MSc, co-supervision with A. Gomes, IDMEC), Afzal Suleman.

A. Leite (MSc, co-supervision with F. Lau, CCTAE), Afzal Suleman.

Agnieszka Musiolik, “Development of a Multibody Computational Model for the Simulation of a Hand Rehabilitation Device”, Co-orientação com o Prof. Pawel Jureczko (Silesian University of Technology, Gliwice, Poland), Mestrado em Engenharia Biomédica, Programa ERASMUS, SUT-IST, 2008.

Ana Santos, “Caracterização estrutural de reactor de reformação com queimador integrado”, (Miguel Neves, João Toste Azevedo).

António Cartaxo, “Optimização acustica de filtros tipo “muffler” utilizados na sucção de compressores herméticos”, (Bento Coelho, Miguel Neves).

Artur Ferreira, “Modelo de Corpos Múltiplos da Charneira Crânio-cervical e a sua Aplicação na Artrite Reumatóide”, Co-orientação com o Prof. João Levy-Melancia (IMM-FML), Mestrado em Engenharia Biomédica, DEM-FML, IST, 2008.

Carlos Miguel Fernandes Quental, com o trabalho: “Estudo da remodelação óssea e da osteointegração nos componentes glenoidal e umeral de uma prótese do ombro” – Start in February, 2008, (João Folgado, Paulo R. Fernandes).

César Blazer (LEM/IST) - “Estudo do sistema hidráulico e dos processos tecnológicos de fabrico de uma plataforma basculante de veículos em fim de vida” . Started in March 2008 (LReis and MMNeves).

Diogo Moreira Campos Ferreira de Almeida, “Análise do desgaste da componente acetabular do implante da anca” – Start in February, 2008, (Paulo R. Fernandes, João Folgado).

Edgar Arcanjo (LEM/IST) "Caracterização de Molas à Fadiga" Started in March 2008 (LReis and VInfante).

F. Alves (MSc, co-supervision with L. Reis, IDMEC), Afzal Suleman.

Fernando Ramos, "Análise de Vibrações de um Apoio de Motor", Start in February, 2008, (Helder Rodrigues, João Folgado).

Filipe Hoffman Mendonça, "Análise e Optimização Estrutural em radiação Acústica", (Miguel Neves, Fernando Lau).

Hugo Policarpo (LEM/IST) – "Dynamic behaviour of helicoidal vs multilaminated axial springs", Started in Set 2007 (MMNeves and RRibeiro).

J. Almeida (MSc, co-supervision with M. Neves, IDMEC), Afzal Suleman.

J. Loureiro (MSc), Afzal Suleman.

João Read, "Projecto de detalhe de uma Plataforma Basculante de veículos em fim de vida", (Luís Reis, Miguel Neves).

José Almeida (LEA/IST)-" FEA for a Cellular Wing Concept of a WIG", Started in Set 2007 (Afzal Suleman and MMNeves).

L. Domingues (MSc), Afzal Suleman.

M. Coelho (MSc, co-supervision with L. Reis, IDMEC), Afzal Suleman.

Marta Ribeiro Barroso Dias "Análise da permeabilidade em suportes (scaffolds) para engenharia de tecido ósseo" – Start in February, 2008, (Paulo R. Fernandes, José Miranda Guedes).

Nelson da Silva Ribeiro, com o trabalho "Estudo computacional da fixação da componente glenoideu da prótese do ombro" – Start in February, 2008, (João Folgado, Paulo R. Fernandes).

Nuno Monteiro, "Análise de Tensões nos Discos Intervertebrais Adjacentes à Fusão Intersomática Cervical", Co-orientador com os Profs. João Folgado (DEM-IST) e João Levy-Melancia (IMM-FML), Mestrado em Engenharia Biomédica, DEM-IST-FML, IST, 2008.

Patrícia Freitas, "Modelos computacionais para a investigação e reconstituição de acidentes envolvendo peões", 2007 (João Dias).

Paula Cristina do Rosário Fernandes, "Análise de tensões e remodelação óssea na fusão inter-somática cervical" – Start in February, 2008, (Paulo R. Fernandes, João Folgado).

Pedro de Almeida Santos Pinto, "Optimização de Topologia Aplicada ao Projecto de Material Circulante", (Paulo Fernandes).

Pedro Gil (LEM/IST) – “Projecto SGE - Selagem de motores a gasolina e diesel”
Started in March 2008 (LReis and MMNeves).

Pedro Pastilha, “Projecto óptimo em instabilidade do tipo Flutter”, (Bento Coelho, Miguel Neves).

R. Machado (MSc), Afzal Suleman.

Ricardo Carvalho, “Optimização Hierárquica da Topologia de material em Problemas térmicos”, Janeiro 2007 (J M Guedes, H C Rodrigues).

Rui Silva, “Modelos da dinâmica de sistemas de corpos múltiplos para o estudo de acidentes com motociclistas”, 2007 (João Dias).

Sara Adriana Loureiro Barreto, “Influência da modelação do osso ilíaco na determinação das pressões de contacto na componente acetabular de uma prótese total da anca” – Start in February, 2008, (João Folgado, Paulo R. Fernandes).

Tiago Massano (LEM/IST) Projecto ETR - Selagem de Transformadores Eléctricos .
Started in March 2008 (LReis and MMNeves).

Tiago Todo Bom (LEM/IST) – “Análise estrutural de pormenor e optimização estrutural de uma plataforma basculante de veículos em fim de vida” . Started in March 2008 (LReis and MMNeves).

Zélia Diana Viola Andrade Santos, “Análise da remodelação óssea devido ao movimento dentário provocado pelo aparelho ortodôntico”, Start in February, 2008, (Paulo R. Fernandes, João Folgado).

Post Doc

Fontul, M., “Estudo do Comportamento Dinâmico de Estruturas sob Excitação Ambiental” From 2005 to 2007. Supervisor: Prof. Ribeiro, A.M.R.

K P Jayachandran “Computational analysis and design of Polycrystalline Piezoelectric Materials”, FCT grant SFRH/BPD/20226/2004 (Helder Rodrigues).

F-Models

Fluid-Structure Intearaction Model Software Tool.

Topology Optimization based on Spectral Level Set Methodology Software Too.

Development of a multibody model of the CX Pantograph required for the dynamic analysis of the pantograph-catenary system for high speed trains.

Development of a multibody model of a Lumped Mass Pantograph required for the dynamic analysis of the pantograph-catenary system for high speed trains.

Software:

Development of a Computational Tool for the Dynamic Analysis of Multibody Systems

I-Prototypes

Active Aeroelastically Aircraft Structures Flight Demonstrator.

Electric Brake Actuator (MR Fluid Design).

Electric Brake Actuator 9Eddy Current Design).

Ground Effect Aircraft WT Model.

Passive Sound Attenuator (Periodic arrays of cylinders).

National and International Research Projects:

Project EUROPAC – European Optimized Pantograph Catenary Interface (FP6/012440), 2005-2007.

Desenvolvimento e Aplicação de Metodologias Experimentais e de Modelação”, (“Evaluation of the Biomechanical Load on the Musculoskeletal System. Development and Application of Experimental and Modelling Methodologies”), contract nbr. POCI/DES/61761/2004, 2005-2007.

“Friendcopter - Integration of technologies in support of a passenger and environmentally friendly helicopter”, Período: March 2004 – February 2008, Entidade Financiadora: Comissão Europeia.

EURNEX – European Railway Network of Excellence, TNE3-CT-2003-506513, 6th FP, priority 1.6.2, EC, 2003-2007.

APSN – Advanced Passive Safety Network of Excellence, TNE3-CT-2003-606257, 6th FP, priority 1.6.2, EC, 2003-2007.

MODTRAIN – Innovative Modular Vehicle Concepts for an Integrated European Railway System, Contract no. TIP3-CT-2003-506652, EC, 2003-2007.

EUROPAC – European Optimized Pantograph Catenary Interface, Contract no. STP4-CT-2005-012440, 6th FP, EC, 2005-2008.

APROSYS – Integrated Project on Advanced Protection Systems, Contract, FP&-PLT-506503, 6th FP, EC, 2003-2007.

SAFEINTERIORS – Train Interior Passive Safety for Europe, Contract FP6-031260, 2006-2009.

GLOBAL VIEW – Strengthening Rail Research Cooperation between Europe and Emerging International Markets for an Integrated International Research Area, Contract no. TSA-CT-2006-044709, 2006-2008.

ADIFOR – Train Crashworthiness Optimization, Contract BOMBARDIER, 2004-2007.

MORPHAIR – Desenvolvimento de Projecto Aeronautico em Estruturas com Geometria Variável, POCI/EME/61587/2004, 2005-2007.

E. Adaptativas – Estruturas Multi-Funcionais: Modelação, Projecto Óptimo, Teste e Identificação de Dano, POCI/EME/56316/2004, 2005-2008.

Técnicas de análise de ondas de bloch aplicadas ao projecto óptimo de estruturas periódicas, POCTI/EME/44728/02, 2003-2007.

Bolsa de Investigação em Doenças Ósseas Metabólicas 2007/08 atribuída pela Sociedade Portuguesa de Reumatologia e pela empresa farmacêutica Novartis, "Avaliação de osteoporose e risco de fractura – aplicação clínica de um modelo computacional de remodelação óssea".

Período: 2008 – 2009

Instituições participantes: IDMEC - Instituto de Engenharia Mecânica, Instituto Superior Técnico; Serviço de Reumatologia e Doenças Ósseas Metabólicas; Hospital de Santa Maria; Unidade de Investigação em Reumatologia, Instituto de Medicina Molecular, Faculdade de Medicina de Lisboa; Serviço de Ortopedia, Hospital de Santa Maria.

Financiamento: 20000 euros (Atribuído ao Instituto de Medicina Molecular).

Investigador Responsável no IDMEC: Paulo Fernandes

Investigador responsável: Dr. José Carlos Romeu, Serviço de Reumatologia e Doenças Ósseas Metabólicas; Hospital de Santa Maria.

Projecto PTDC/EME-PME/71436/2006, "Computational Modelling of Bone Structure – Application to Bone Tissue Engineering"

Período: 2007 –2010

Instituições participantes: IST (IDMEC), Instituto Politécnico de Leiria.

Financiamento: 95000 euros.

Investigador Responsável: Paulo Fernandes

Projecto PTDC/EME-PME/65749/2006, "Orthodontic Mechanics to Control Force and Tooth Movement – Design of a Novel Orthodontic Appliance".

Período: 2007 –2010.

Instituições participantes: IST (IDMEC), Univ. Aveiro, Univ. Évora.

Financiamento: 100000 euros (21000 euros para o IST)

Investigador Responsável no IST: Paulo Fernandes

Investigador responsável: Prof. José Simões, Univ. Aveiro

National Project PTDC/EME-PME/67687/2006, “ProPaFe – Design and Development of a Patello-Femoral Prosthesis”, 2007-2010.

National Project “Avaliação da Carga Biomecânica no Sistema Músculo-Esquelético. Desenvolvimento e Aplicação de Metodologias Experimentais e de Modelação”, (“Evaluation of the Biomechanical Load on the Musculoskeletal System. Development and Application of Experimental and Modelling Methodologies”), contract nbr. POCI/DES/61761/2004, 2005-2007.

Project European Network of Excellence (NoE) APSN from the 6th Framework Programme, “Advanced Passive Safety Network”, contract nr. TNE3CT-2003-506257, 2004-2008.

European Integrated Project (IP) APROSYS from the 6th Framework Programme, “Advanced Protection Systems”, contract nr. TIP3-CT-2004-506503, 2004-2008.

Técnicas de Análise de Ondas de Bloch aplicadas ao Projecto Óptimo de Estruturas Periódicas (Jul 2003 - Jan 2007 Closed ** /IR Prof. Miguel Matos Neves Projecto FCT: 44728/EME/2002)

Other Activities of Relevance

Journal Scientific and Editorial Boards:

Composites Part B (Elsevier) Cristóvão Mota Soares.

Int J of Multibody Systems Dynamics: M S Pereira

Struct and Multidisciplinary Optim: CA Mota Soares, HC Rodrigues, JM Guedes

Mechanics of Structures and Machines: Carlos M Soares e LT Santos

Boundary Analysis Abstracts and Newsletter: CA Mota Soares, H Pina

Mechanics of Composite Materials and Structures: CA Mota Soares

Computers and Structures: CA Mota Soares

Engineering Optimization: CA Mota Soares

Computational Engineering Science: CA Mota Soares

Applied Mathematical Modelling: H Pina

Engineering Analysis with Boundary Elements: H Pina

Advances in Fluid Mechanics: H Pina

Int J Advances in Engineering Software: A Portela

Int J of Crashworthiness: J Ambrósio

Int J on Concurrent Engineering: M S Pereira

Int J of Nonlinear Dynamics: M S Pereira

J of Composites Part B: Engineering: Cristóvão M Soares

Encyclopedia of Smart Materials, John Wiley, A. Suleman

Vehicle Systems Dynamics: J. Ambrósio

Journal of Theoretical and Applied Mechanics: J. Ambrósio

“Civil Engineering”, Periodica Polytechnica, Budapest.: Helder Rodrigues

International Journal for Computation Vision and Biomechanics: Helder Rodrigues, Jorge Ambrósio, Paulo Fernandes

International Journal for Simulation and Multidisciplinary Design Optimization: Helder Rodrigues, C.A. Mota Soares

Co-Editor:

JAC Ambrosio, Co-Editor and responsible for the office of the Int Journal of Multibody System Dynamics, since 1996.

J-Patents

Patent Application nº PT 103969, 15/02/2008 , "Multilayer Vibration Axial attenuator " , IST.

Patent Application No. PCT/MX2006/000056, “Unidirectional Flow Collective Air Pumps (UFCAP), a Wave Energy Converter”, PCT awarded 2007.

Centre For Mechanical Design - Line 2

Conferences:

Almeida, R. A. B., Urgueira, A. P. V., Maia, N. M. M.

"Evaluation of the Performance of Three Different Methods used in the Identification of Rigid Body Properties "

Proceedings of “International Conference on Engineering Dynamics” (ICED 2007), Carvoeiro, Algarve, April 2007.

Sampaio, R. P. C., Maia, N. M. M.

"Further improvements on the Detection and Relative Damage Quantification Indicator"

Proceedings of “International Conference on Engineering Dynamics” (ICED 2007), Carvoeiro, Algarve, April 2007.

Ribeiro, A. M. R., Maia, N. M. M., Fontul, M., Silva, J. M. M.

"Complete Response of an SDOF System with a Mixed Damping Model"

Proceedings of “International Conference on Engineering Dynamics” (ICED 2007), Carvoeiro, Algarve, April 2007.

Silva, F. A. P., Almas, E. M.

"Frequency Analysis and Load Capacity Calculation for Squeeze Film Gas Bearings"

Proceedings of “International Conference on Engineering Dynamics” (ICED 2007), Carvoeiro, Algarve, April 2007.

Maia, N. M. M., Ribeiro, A. M. R., , Fontul, M., Montalvão, D., Sampaio, R. P. C.

"Using the Detection and Relative Damage Quantification Indicator (DRQ) with Transmissibility"

Proceedings of "7th International Conference on Damage Assessment of Structures" (DAMAS 2007), pp. 455-460, Torino, Italy, June 2007.

J.M.M. Silva, J. Siopa

"Simple Fault Tree Approach for CBM Applicability Assessment" – Proceedings of COMADEM 2007 (20th International Congress on Condition Monitoring and Diagnostic Engineering Management), pp.575-586, Faro, Portugal, 13 to 15 June 2007.

J.M.M. Silva

"Address on Behalf of the Incoming Portuguese Presidency" – "2nd European Seminar – Radiological Risk Reduction", Brussels, Belgium, 21st of June 2007.

J.M.M. Silva, C. Ambrósio, B. Meireles, M. de Pinho

"Dinâmica de Estruturas por Modelos de Elementos Finitos Identificados Experimentalmente" – Proceedings of the "8º Congresso Iberoamericano de Engenharia Mecânica", pp. 1-10 (CD), Cusco, Peru, October 2007.

J.M.M. Silva, C. Ambrósio, B. Meireles, M. de Pinho

"Structural Dynamic Analysis by Finite Element Models Experimentally Identified – An Approach Using Experimental Data" – Proceedings da EVACES'07 (Experimental Vibration Analysis for Civil Engineering Structures, pp. 791-800, Faculdade de Engenharia da Universidade do Porto, Porto Portugal, October 2007

Roque, A. e Silva, T

"Detecção de Defeitos em Rolamentos: uma Aproximação Didáctica". In Proceedings of Engenharias07, IEEE Education Society, Covilhã, 21-23 Nov. 2007.

J.M.M. Silva, C. Ambrósio, B. Meireles, M. de Pinho

"Aplicações do Método dos Elementos Finitos a Ligações na Dinâmica de Estruturas" – Proceedings of the "Conferência Nacional de Dinâmica de Sistemas Multicorpo" DSM2007, pp. 137-143, Escola de Engenharia da Universidade do Minho, 6 to 7 of December 2007.

Sampaio, R. P. C., Maia, N. M. M.

"A Simple Correlation Factor as an Effective Tool for Detecting Damage"

Proceedings of the 9th Conference on Dynamical Systems Theory and Applications, December 17-20, 2007. Łódź, Poland.

Fontul, M., Ribeiro, A. M. R., Cota, N. M.

"Aplicação do Conceito de Transmissibilidade na Análise Acústica do Habitáculo de um Veículo Ligeiro de Passageiros"

Proceedings of DSM2007, Conferência Nacional de Dinâmica de Sistemas Multicorpo, Porto, December 2007.

Journals/Book chapters:

Almeida, R.A.B., Urgueira, A.P.V., Maia, N.M.M.

“Identification of Rigid Body Properties from Vibration Measurements”
Journal of Sound and Vibration, Volume 299, Issues 4-5, 6 February 2007, Pages 884-899.

Maia, N. M. M., Ribeiro, A. M. R., Fontul, M., Montalvão, D., Sampaio, R. P. C.
"Using the Detection and Relative Damage Quantification Indicator (DRQ) with Transmissibility"
Key Engineering Materials, Vol. 347, pp. 455-460, Trans Tech Publications, Switzerland, 2007. (online at <http://www.scientific.net>)

J.M.M. Silva,
Highly Conductive Science” – Business Week, Special Advertising Section, 14th of May 2007.

CD Edition:

Maia, N. M. M., Silva, J. M. M., Ribeiro, A. M. R., Fontul, M.
Proceedings CD of the International Conference on Engineering Dynamics, Carvoeiro, Portugal, April 2007.

Reports:

Fontul, M., Vilaça, P.M.S.S., Ribeiro, A.M.R., Faria, C.C.
Progress report of project IDMEC-339/07 CARVIBRA, requested by Mitsubishi Motors Portugal, S.A., March 2007

Fontul, M., Vilaça, P.M.S.S., Ribeiro, A.M.R.
CARVIBRA Project – Noise Level Measurement and Analysis – Final Report
Final report of project IDMEC-339/07 CARVIBRA, requested by Mitsubishi Motors Portugal, S.A., June 2007

Advanced teaching:

MSc. Theses

Santos, M. F. T. M.,
“Foguete de Propelantes Líquidos”
IST, October 2007. This thesis included the construction of mechanical components.
Supervisor: Prof. Ribeiro, A.M.R.

Cota, N.
“Aplicação de Técnicas de Transmissibilidade e Acoplamento na Análise Acústica de um Veículo Automóvel”
IST, October 2007.
Supervisor: Prof. Ribeiro, A.M.R.

Franco, D. S. C.

“Análise do Comportamento de um Vaso de Alta Pressão a Temperatura Elevada”

IST, October 2007. This thesis included the construction of a prothotype.

Supervisor: Prof. Ribeiro, A.M.R.

Ongoing:

Silva, D.C.C.M.

“Detecção de Dano em Materiais Compósitos por Técnicas de Análise Modal Experimental”

Since 2003. Supervisor: Prof. Ribeiro, A.M.R.

Batista, F.C.

"Caracterização Dinâmica de Juntas Aparafusadas"

Since Jan. 2006. Supervisor: Prof. Maia, N.M.M.

Roque, A.A.

"Estudo do Desalinhamento de Veios em Máquinas Rotativas"

Since July 2006. Supervisor: Prof. Maia, N.M.M.

Peleja, A.O.A.

"Optimização da Manutenção Centrada na Fiabilidade Aplicada a Motores Diesel Marítimos"

Since 2006. Supervisor: Prof. Almas, E.M.

Post-Doc.

Fontul, M.

“Estudo do Comportamento Dinâmico de Estruturas sob Excitação Ambiental”

From 2005 to 2007. Supervisor: Prof. Ribeiro, A.M.R.

Projects:

European:

EUROPA MOU - RTP 115.031, “Assessment of Technology Needs for Unmanned Combat Aerial Vehicles” (UCAV), from 2005 to 2008. Coordinator: Prof. Freitas, M.; Co-Coordinator: Prof. Ribeiro, A.M.R.

National:

PTDC/EME-PME/71488/2006, “Identificação e Transmissibilidade de Forças em Sistemas com Múltiplos Graus de Liberdade”, funded by “Fundação para a Ciência e a Tecnologia” (FCT), since July 2007. Coordinator: Prof. Maia, N.M.M.

“Noise Level Measurement and Analysis” (CARVIBRA), funded by Mitsubishi Motors Portugal, S.A., since June 2007. Coordinator: Prof. Fontul, M.

Organisation of Conferences/Seminars

Organisation of the international conference “International Conference on Engineering Dynamics” (ICED 2007) in Carvoeiro, Algarve, Portugal, 16 - 18 April 2007. Chairman: Prof. Maia, N.M.M.

Organisation of the seminar “Coiflet based approach to analysis of vibrations due to moving load inside a layer” given by Prof. Zdzisław Hryniewicz, from the University of Koszalin, Polónia, September 2007. Organiser: Prof. Maia, N.M.M.

Participation in the organisation of the “8th International Workshop on Berillium Technology” at the Instituto Tecnológico e Nuclear at Sacavém, Portugal, 5 to 7 of December 2007. Member of the Local Organising Committee: Prof. J.M.M. Silva

Other Relevant Activities:

Prof. Júlio Silva and Prof. Nuno Maia have been “Associate Editors” of the Journal of Shock and Vibration (SAV), (since January 2000 and October 2006, respectively), by invitation of its Editor-in-Chief, Prof. Daniel Inman.

Prof. F. Pina da Silva is currently a member of the European Transport Safety Council (ETSC), Brussels.

During 2007, Prof. Nuno Maia has been member of the Scientific Committee of 7 international conferences.

During 2007, Prof. Júlio Silva has been member of the Scientific Committee of 1 international conference and 1 national conference.

Intelligent Systems

Papers in Refereed International Journals

1. P. Gonçalves, L. F. Mendonça, J. M.C. Sousa and J. C. Pinto, “*Uncalibrated eye-to-hand visual servoing using inverse fuzzy models*”, IEEE Transactions on Fuzzy Systems, In press, 2007, doi:10.1109/TFUZZ.2007.896226.
2. L. F. Mendonça, S. M. Vieira and J. M. C. Sousa, “*Decision tree search methods in fuzzy modeling and classification*”, International Journal of Approximate Reasoning, 44(2): 106-123, February 2007.
3. L. F. Mendonça, J.M.C. Sousa and J.M.G. Sá da Costa, “*An architecture for fault detection and isolation based on fuzzy models*”, Expert Systems With Applications, In press, 2007, [doi:10.1016/j.eswa.2007.11.009](https://doi.org/10.1016/j.eswa.2007.11.009).
4. C.A. Silva, J.M.C. Sousa and T.A. Runkler, “*Optimization of logistic systems using fuzzy weighted aggregation*”, Fuzzy Sets and Systems, 158(17): 1947-1960, September 1, 2007.
5. C.A. Silva, J.M.C. Sousa and T.A. Runkler, “*Rescheduling and optimization of logistic processes using GA and ACO*”, Engineering Applications of Artificial Intelligence, In press, 2007, [doi:10.1016/j.engappai.2007.08.006](https://doi.org/10.1016/j.engappai.2007.08.006).
6. Miguel P. Silva, Luis Pina, Alberto Bemporad, Miguel Ayala Botto, José Sá da Costa, “*Robust optimal control of linear hybrid systems: an MLD approach*”, To be published in International Journal of Systems Science. (Acceptance date: 9 February 2007)
7. João M. C. Sousa, João M. Gil and Caldas Pinto, J.R., “*Word indexing of ancient Documents using Fuzzy Classification*”, IEEE Transactions on Fuzzy Systems, Vol 15, No. 15, October 2007, pp852-862.
8. Valério, Duarte; Ortigueira, Manuel Duarte; Sá da Costa, José, “*Identifying a transfer function from a frequency response*”, ASME Journal of Computational and Nonlinear Dynamics. 2007. Accepted for publication in July 28, 2007.
9. Valério, Duarte; Beirão, Pedro; Sá da Costa, José, “*Optimisation of wave energy extraction with the Archimedes Wave Swing*”, Ocean Engineering, 34. 2330-2344. 2007.

Papers in Lectures Notes

1. J. Caldeira, R. Azevedo, C. A. Silva and J. M. C. Sousa, “*Beam-ACO distributed optimization applied to supply chain management*”, In O. Castillo, P. Mellin, J. Kacprzyk and W. Pedrycz, editors, *Lecture Notes in Artificial Intelligence 4529, Foundations of Fuzzy Logic and Soft Computing, Proc.12th International Fuzzy Systems Association World Congress, IFSA 2007*, pp. 799-809, Cancun, Mexico, June 2007.
2. Pedro Castro, Caldas Pinto, J. R., “*Methods for Written Ancient Music Restoration*”, ICIAR 2007, Canada 18- 20, Montreal, Canada, August 2007, LNCS 4633, pp 1194–1205, pp, Springer-Verlag Berlin Heidelberg, 2007.
3. Pedro Castro, R.J. Almeida Caldas Pinto, J. R., “*Restoration of Double-Sided Ancient Music Documents with Bleed-Through*”, CIARP 2007: 12th Iberoamerican Congress on Pattern Recognition, Vina del Mar-Valparaiso, Chile, November 2007, pp 940-949, *Lecture Notes in Computer Science, LNCS 4756*, pp. 940–949, Springer-Verlag Berlin Heidelberg 2007.
4. Castilho, H. P., Sequeira Gonçalves, P.J., Caldas Pinto, J. R., and Limas Serafim, A. “*Intelligent Real-Time Fabric Defect Detection*” ICIAR 2007, Canada 18- 20, Montreal, Canada, August 2007, LNCS 4633, pp 1297–1307, pp, Springer-Verlag Berlin Heidelberg, 2007.
5. L.F. Mendonça, J.M.C. Sousa and J.M.G. Sá da Costa, “*Fault tolerant control of a three tank benchmark using weighted predictive control*”, In O. Castillo, P. Mellin, J. Kacprzyk and W. Pedrycz, editors, *Lecture Notes in Artificial Intelligence 4529, Foundations of Fuzzy Logic and Soft Computing, Proc.12th International Fuzzy Systems Association World Congress, IFSA 2007*, pp. 732-742, Cancun, Mexico, June 2007.
6. P. Pinto, T. A. Runkler and J. M. C. Sousa, “*Wasp swarm algorithm for dynamic MAX-SAT problems*”, In B. Beliczynski, A. Dzielinski, M. Iwanowski and B. Ribeiro, Eds., *Lecture Notes in Computer Science 4431, Proc. 8th International Conference on Adaptive and Natural Computing Algorithms, ICANNGA 2007*, pp. 350-357, Warsaw, Poland, April 2007.
7. S. M. Vieira and J. M. C. Sousa, “*Ant colony optimization applied to feature selection in fuzzy classifiers*”, In O. Castillo, P. Mellin, J. Kacprzyk and W. Pedrycz, editors, *Lecture Notes in Artificial Intelligence 4529, Foundations of Fuzzy Logic and Soft Computing, Proc.12th International Fuzzy Systems Association World Congress, IFSA 2007*, pp. 778-788, Cancun, Mexico, June 2007.

Books Chapters

1. L.F. Baptista, J.M.C. Sousa and J.M.G. Sá da Costa, “*Predictive force control of rigid manipulators in non-rigid environments*”, ISBN 3-86611-285-8. Published by V. Kordic, A. Lazinica and M. Merdan, Editions. Industrial Robotics, From Design to Applications, Advanced Robotic Systems, Vienna, Austria. January 2007, pag.841-874.
2. José Sá da Costa, Jorge Martins, Miguel Ayala Botto, “*Classical mechanics approach of modelling multi-link flexible manipulators*”, Flexible Robot Manipulators – Modelling, Simulation and Control, edited by M. O. Tokhi and A. K. M. Azad, Chapter 3, pp. 44–71, IEE Publishing, 2007, ISBN: 0-86341-448-6, 978-0-86341-448-0.
3. P. C. Pinto, T. A. Runkler and J. M. C. Sousa, “*Ant colony optimization and its application to regular and dynamic MAX-SAT problems*”, In F. Dressler and I. Carreras, Eds., In Advances in Biologically Inspired Information Systems, pp. 283-302, Springer, March 2007.
4. Valério, Duarte; Sá da Costa, José, “*Identification of fractional models from frequency data*”, In MACHADO, J. A. Tenreiro; SABATIER, Jocelyn; AGRAWAL, Om — Fractional calculus: theoretical developments and applications in Physics and Engineering. Dordrecht: Springer, 2007. 229-242.
5. Valério, Duarte; Sá da Costa, José, “*Tuning rules for fractional PIDs*”, In MACHADO, J. A. Tenreiro; SABATIER, Jocelyn; AGRAWAL, Om—Fractional calculus: theoretical developments and applications in Physics and Engineering. Dordrecht: Springer, 2007. 463-476.

Papers in National Journals

1. Carlos Cardeira, “Das Ideias à Inovação: a importância do ensino experimental”, in Revista Robótica, n. 67, 2º trimestre, 2007 pp. 30-31 (in Portuguese).
2. T. G. dos Santos, B. S. Silva, P. S. Vilaça, João M.C. Sousa, Luísa Quintino, “*Fusão de dados em ensaios não destrutivos utilizando decisão fuzzy para a avaliação de soldas obtidas pelo processo de fricção linear*”, Revista de Soldagem & Inspeção, São Paulo, 12(3):179-187, Jul/Set. 2007 (in Portuguese).

Papers in Proceedings of International Conferences

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E – Formação Avançada

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- Nuno Bandeiras, Nº 46626, “Quinagem em Matriz de Borracha - Análise Experimental, Numérica e Analítica”;
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- Pedro Monteiro, Nº 62045, “Avaliação do desempenho de blindagens na protecção de pessoas e equipamentos”;
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- José Andrade, Nº 47113, “Estudo da aplicabilidade do corte por arranque de apara ao fabrico de micro e nano-componentes”;
- Isabel Faria, Nº 62086, “Rectificação de materiais metálicos: Análise da influência da velocidade de corte”;
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- Alexandre Fernandes, Nº 46268, “Desenvolvimento de Software de Controlo Estatístico de Qualidade e Análise Experimental das Ligações Realizadas por Soldadura por Ultra-Sons e Cravamento em Cablagens para a Indústria Automóvel”;
- Pedro Pinto, Nº 50229, “Sistema Mecânico de Fixação de Painéis de Revestimento”;
- Eduardo Dias, Nº 48806, “Desenvolvimento do Conceito, Projecto, Fabrico e Ensaio de um Projétil de Accionamento Mecânico para o Combate a Incêndios Florestais”.

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- Luis Aires, Nº 48798, “Análise Experimental do Comportamento à Fadiga em Juntas Soldadas por Fricção Linear de Ligas de Alumínio para a Indústria Aeronáutica”;
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H - Instalações Piloto

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I - Protótipos laboratoriais

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K - Participação em Comissões de Normalização

Vilaça P., Colaboração entre Dezembro de 2007 e Janeiro de 2008, com o Instituto de Soldadura e Qualidade na revisão do primeiro documento de norma internacional específica para a Soldadura por Fricção Linear: Draft International Standard ISO/DIS 25239 - Friction stir welding: Aluminium (Soudage par friction-malaxage: Aluminium). Foram sugeridas alterações Editoriais e Técnicas nas 5 partes: Part 1: Vocabulary ; Part 2: Design of weld joints ; Part 3: Qualification of welding operators ; Part 4: Specification and qualification of welding procedures ; Part 5: Quality and inspection requirements.

Vilaça P., Participação entre Julho 2006 e Fevereiro de 2007, no grupo de trabalho 9 (GT9) coordenado pelo Laboratório Nacional de Engenharia Civil (LNEC), na actividade da Comissão Técnica de Normalização: CT 115, no domínio do Eurocódigo Estrutural: EUROCODE 9 – Design of Aluminium Structures. Este trabalho para o CEN – European Committee for Standardization, teve como principal resultado a preparação dos Anexos Nacionais.

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Flow Physics and Simulation

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Title: Analysis of the gradient-diffusion hypothesis in large-eddy simulations based on transport equations

Author(s): da Silva, CB; Pereira, JCF

Source: PHYSICS OF FLUIDS Volume: 19 Article Number: 035106

Published: 2007

Title: The effect of subgrid-scale models on the near wall vortices: A priori tests

Author(s): Hauet, G; da Silva, CB; Pereira, JCF

Source: PHYSICS OF FLUIDS Volume: 19 Issue: 5 Article Number: 051702

Published: MAY 2007

Title: Non-dimensional functional relationship for the fine particle fraction produced by dry powder inhalers

Author(s): Mendes, PJ; Pinto, JF; Sousa, JMM

Source: JOURNAL OF AEROSOL SCIENCE Volume: 38 Issue: 6 Pages: 612-624

Published: JUN 2007

Title: On the temporal and spatial fourth-order finite volume velocity de-averaging for unsteady incompressible flows simulation

Author(s): Trindade, JMF; Pereira, JCF

Source: ENGINEERING COMPUTATIONS Volume: 24 Pages: 738-752

Published: 2007

Title: On the efficiency of the parallel-in-time finite volume calculation of the unsteady Navier-Stokes equations

Author(s): Trindade, JMF; Pereira, JCF

Source: CMES-COMPUTER MODELING IN ENGINEERING & SCIENCES

Volume: 20 Issue: 1 Pages: 1-10 Published: JUL 2007

Title: Influence of the preheating layer characteristics in a two-layer porous burner

Author(s): Hayashi, T.C.; Malico, I.; Pereira, JCF.

Source: CLEAN AIR: INTERNATIONAL JOURNAL ON ENERGY FOR A CLEAN ENVIRONMENT Volume: 8 Issue: 2 Pages: 125-143

Published: 2007

ABSTRACTS DE COMUNICAÇÕES CIENTÍFICAS OU OUTRAS PARTICIPAÇÕES DE ÍNDOLE CIENTÍFICA EM CONGRESSOS NACIONAIS OU INTERNACIONAIS:

Title: On the differences between production and dissipation mechanisms of enstrophy and scalar gradient across the turbulent/nonturbulent interface in jets

Author(s): da Silva, CB; Reis, R. J. N; Pereira, JCF

Conference Information: 5th TURBULENCE SHEAR FLOW PHENOMENA, Date: AUG 27-29, 2007 Technical University of Munich, GERMANY,

Published: 2007

Title: Subgrid-scale transfer in wall bounded flows

Author(s): Hauet, G; da Silva, CB; Pereira, JCF
Conference Information: 5th TURBULENCE SHEAR FLOW PHENOMENA, Date:
AUG 27-29, 2007 Technical University of Munich, GERMANY,
Published: 2007

Title: Enstrophy, strain and scalar gradient dynamics across the turbulent-nonturbulent interface in jets
Author(s): Da Silva, CB; Pereira, JCF
Conference Information: 11th EUROMECH European Turbulence Conference, Date:
JUN 25-28, 2007 Univ Porto, Fac Engenharia Oporto PORTUGAL
Source: ADVANCES IN TURBULENCE XI Volume: 117 Pages: 639-641
Published: 2007

Title: On the modelling of subgrid-scale enstrophy transfer in turbulent channel flows
Author(s): Hauet, G; da Silva, CB; Pereira, JCF
Conference Information: 11th EUROMECH European Turbulence Conference, Date:
JUN 25-28, 2007 Univ Porto, Fac Engenharia Oporto PORTUGAL
Source: ADVANCES IN TURBULENCE XI Volume: 117 Pages: 734-734
Published: 2007

Title: Radiation statistics in homogeneous isotropic turbulence
Author(s): da Silva, CB; Malico, I.; Coelho, P.J.; Pereira, JCF
Conference Information: Date: JUN 17-22, 2007 Bodrum TURKEY
Source: PROCEEDINGS OF THE 5th INTERNATIONAL SYMPOSIUM ON
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Title: A virtual apparatus for design and testing of new drug formulations and devices for inhalation therapy
Author(s): Mendes, PJ; Sousa, JMM; Pinto, JF
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Title: External wind influence on a fully developed indoor fire
Author(s): Magalhaes, N.P.; Marques, N. P.C.; Pereira, JCF
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Title: Design of a trigeneration system using high temperature fuel cells.
Author(s): Carvalinho, A.P.; Terneiro, J.; Malico, I.
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Title: Effect of solar radiation reduction due to aerosol particles on stand-alone PV system performance.

Author(s): Malico, I.; Mougueira, C.; Wagner, F.

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Published: 2007

Title: Influence of the downstream conditions on the performance of a two-layer porous burner.

Author(s): Hayashi, T.C.; Malico, I.; Pereira, JCF.

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