

**Group Report 2010**  
**R&D group of Prof. Paulo M.S. Tavares de Castro**  
 4 Jan. 2011

**Main contributors in the period**

Carlos M.C. Albuquerque  
 Daniel F.C. Peixoto  
 Miguel A.V. de Figueiredo  
 Paulo M.S.T. de Castro  
 Pedro M.G.P. Moreira  
 Roberto M.C. Miranda  
 Sérgio M.O. Tavares  
 Stefan D. Pastrama  
 Valentin Richter-Trummer

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**Papers in journals and/or included in SCOPUS or ISI (alphabetic order of first author)**

- L.F.M. da Silva, N.M.A.J. Ferreira, V. Richter-Trummer, E.A.S. Marques, 'Effect of grooves on the strength of adhesively bonded joints', **International Journal of Adhesion and Adhesives**, vol.30, (8), 2010, pp.735-743.
- P.M.G.P. Moreira, P.M.S.T. de Castro, 'Fractographic analysis of fatigue crack growth in lightweight integral stiffened panels', **International Journal of Structural Integrity**, vol. 1 No. 3, 2010, pp. 233-258.

- P.M.G.P. Moreira, V. Richter-Trummer, M.A.V. de Figueiredo, P.M.S.T. de Castro, 'Comportamento à fadiga de painéis aeronáuticos fabricados por processos emergentes', **Ciência e Tecnologia dos Materiais**, vol.22, (3/4), 2010, in press
- P.M.G.P. Moreira, V. Richter-Trummer, R.A.M. da Silva, M.A.V. de Figueiredo, P.M.S.T. de Castro, 'Residual stress evaluation of a MIG butt welded aluminium alloy plate', **Mecânica Experimental**, (17), 2009, pp.29-39
- P.M.S.T. de Castro, P.P. Camanho, L.F.M. da Silva, P.M.G.P. Moreira, 'IDMEC – Faculdade de Engenharia da Universidade do Porto - Concise presentation with focus on aeronautics R&D', **International Journal of Structural Integrity**, vol.1, (2), 2010, pp.161-172.
- S.M.O. Tavares, P.M.S.T. de Castro, 'Impact of integral structures in the design for manufacture and assembly of airframes', **Key Engineering Materials**, vol. 450, 2011, pp.279-282.
- S.M.O. Tavares, R.A.S. Castro, V. Richter-Trummer, P. Vilaça, P.M.G.P. Moreira, P.M.S.T. de Castro, 'Friction stir welding of T-joints with dissimilar aluminium alloys: mechanical joint characterisation', **Science and Technology of Welding and Joining**, 2010, vol.15, (4), pp.312-318.
- V. Richter-Trummer, E.A.S. Marques, F.J.P. Chaves, J.M.R.S. Tavares, L.F.M. da Silva, P.M.S.T. de Castro, 'Analysis of crack growth behavior in a double cantilever beam adhesive fracture test by different digital image processing techniques', **Materialwissenschaft und Werkstofftechnik / Materials Science and Engineering Technology**, accepted, 2010.
- V. Richter-Trummer, P.M.G.P. Moreira, S.D. Pastrama, M.A.P. Vaz, P.M.S.T. de Castro, 'Methodology for in-situ stress intensity factor determination on cracked structures by digital image correlation', **International Journal of Structural Integrity**, vol. 1, ( 4), 2010, pp. 344-357.
- V. Richter-Trummer, P.M.G.P. Moreira, J. Ribeiro, P.M.S.T. de Castro, 'The contour method for residual stress determination applied to an AA6082-T6 friction stir butt weld', **Materials Science Forum**, accepted Nov. 2010.
- V. Richter-Trummer, P.M.G.P. Moreira, P.M.S.T. de Castro, 'Medição de tensões residuais', **Manutenção**, in press,2010.
- V. Richter-Trummer, S.M.O. Tavares, D.F.C. Peixoto, S.O. Silva, O. Frazão, P.M.G.P. Moreira, P.M.S.T. de Castro, 'Welding monitoring using FBG sensors', **International Journal of Advances in Mechanics and Applications of Industrial Materials (AES Technical Reviews Int. J., Part B) – ISSN 1718-5505**, vol.1, (1), 2010, pp.27-33.
- V. Richter-Trummer, S.O. Silva, D.F.C. Peixoto, O. Frazão, P.M.G.P. Moreira, J.L. Santos, P.M.S.T. de Castro, 'Fibre Bragg grating sensors for monitoring the metal inert gas and friction stir welding processes', **Measurement Science and Technology**, vol. 21, 2010, 085105 (8pp).

### Patent application

- S.M.O. Tavares (FEUP), M. Pacchione, H. Ostersehlte (AIRBUS Operations GmbH), 'Sliding backing bar'.

### Book chapters

- C.M.C. Albuquerque, P.M.S.T. de Castro, R.A.B. Calçada, 'Estudos avançados de análise à fadiga da nova ponte ferroviária sobre o rio Sado', March 23, 2010, chapter for a book to be published by REFER, on the new Sado river railway bridge.

### Book review

- P.M.S.T. de Castro, 'Fitness-for-service fracture assessment of structures containing cracks: a workbook based on the european SINTAP/FITNET procedure, U. Zerbst, M. Schödel, S. Webster, R. Ainsworth. Academic Press (2007)', **Engineering Failure Analysis**, vol.17, (5), July 2010, pp.1260-1261.

### **Presentations at conferences (chronological sequence)**

- C.M.C. Albuquerque, P.M.S.T. de Castro, R.A.B. Calçada, 'Aplicação da mecânica da fractura no contexto da análise dinâmica de estruturas pelo método da sobreposição modal', Actas do VII Congresso de Construção Metálica e Mista, (L. Simões da Silva et al, eds), LNEC, Lisboa, **Nov-19-20, 2009**.
- Ricardo Alves de Sousa Castro, 'Experimental characterization of residual stress fields in T-joints welded by friction stir welding', 3rd meeting of young researchers at UP – IJUP'10, abstract in: proceedings, p.206 ( <http://ijup.up.pt/2010/> ); **Feb. 17-19, 2010**
- CIFIE 2010 – Iberian Conference on Fracture and Structural Integrity, Porto, FEUP; **March 17-19, 2010**:
  - C.M.C. Albuquerque, P.M.S.T. de Castro, R.A.B. Calçada, 'Aplicação de técnicas de sub-modelação no contexto da análise de propagação de fendas de fadiga em estruturas de grandes dimensões'.
  - D.F.C. Peixoto, L.A.A. Ferreira, P.M.S.T. de Castro, 'Non-linear analysis of the wheel / rail contact'.
  - P.M.G.P. Moreira, A.M.P. de Jesus, M.A.V. de Figueiredo, M. Windisch, G. Sinnema, P.M.S.T. de Castro, 'Fatigue crack growth behaviour of friction stir welded aluminium-lithium alloy 2195 T8X'.
  - P.M.G.P. Moreira, V. Richter-Trummer, M.A.V. Figueiredo, P.M.S.T. de Castro, 'Lightweight stiffened panels fabricated using emerging fabrication technologies: fatigue behaviour'.
  - S.M.O. Tavares, P.M.S.T. de Castro, 'Stress intensity factor calibration for a longitudinal crack in a fuselage barrel'.
  - S.M.O. Tavares, V. Richter-Trummer, P.M.G.P. Moreira, P.M.S.T. de Castro, 'Modeling of fatigue crack growth in monolithic integral stiffened panels taking into account residual stress'.
  - V. Richter-Trummer, P.M.G.P. Moreira, S.D. Pastrama, M.A.P. Vaz, P.M.S.T. de Castro, 'Methodology for in-situ stress intensity factor determination on cracked structures by digital image correlation'.
- D.F.C. Peixoto, L.A.A. Ferreira, P.M.S.T. de Castro, 'Non-linear analysis of the wheel / rail contact', CTF2010 – First International Congress on Rail Transport Technology, Zaragoza, Spain, **April 12-14, 2010**.
- CNME 2010 - 8º Congresso Nacional de Mecânica Experimental, APAET, Univ. Minho, Guimarães, **April 21-23, 2010**:
  - P.M.G.P. Moreira, P.C.M. Azevedo, M.A.V. de Figueiredo, M. Windisch, G. Sinnema, P.M.S.T. de Castro, 'Fracture and fatigue crack growth behavior of friction stir welded AL-Li 2195-T8X'.
  - P.M.S.T. Castro, S.M.O. Tavares, V. Richter-Trummer, P.F.P. de Matos, P.M.G.P. Moreira, L.F.M. da Silva, 'Damage tolerance of aircraft panels'.
  - R.A.S. Castro, V. Richter-Trummer, S.M.O. Tavares, P.M.G.P. Moreira, P. Vilaça, P.M.S.T. de Castro, 'Friction stir welding on T-joints: Residual stress evaluation'.
  - V. Richter-Trummer, P.M.G.P. Moreira, S.D. Pastrama, M.A.P. Vaz, P.M.S.T. de Castro. 'A hybrid experimental-numerical methodology for fracture mechanics analysis of cracked structures'.
- V. Richter-Trummer, P.M.G.P. Moreira, J. Ribeiro P.M.S.T. de Castro, 'The contour method for residual stress determination applied to an AA6082-T6 friction stir butt weld', ECRS8 8th European Conference on Residual Stresses, Riva del Garda, Trento, Italy, **June 26-28, 2010**.
- S.M.O. Tavares, 'New design concepts for aeronautical products welded by friction stir', oral presentation, and poster, Sessão 2: Engenharia, Design e Processos Avançados de Manufatura, Ciência 2010 – Encontro com a Ciência e Tecnologia em Portugal, Lisboa, **July 5-7, 2010**.
- S.M.O. Tavares, P.M.S.T. de Castro, 'Impact of integral structures in the design for manufacture and assembly of airframes', ADM 2010 - 3rd International Conference on Advanced Design and Manufacture, University of Nottingham, UK, **Sept. 8-10, 2010**.
- S.D. Pastrama, P.M.G.P. Moreira, V. Richter-Trummer, P.M.S.T. de Castro, M.A.P. Vaz, 'A digital image correlation methodology for obtaining fracture mechanics parameters', 27th DANUBIA ADRIA

- Symposium on Advances in Experimental Mechanics, Wroclaw University of Technology, Poland, **Sept. 22-25, 2010** (extended abstract in proceedings, ISBN 978-83-87982-59-1, pp. 169-170).
- S.M.O. Tavares, M. Papadopoulos, M. Pacchione, 'Mechanical behaviour of friction stir overlap welds for aeronautical applications', 2nd General Assembly of the EASN Association combined with the 1st EASN Association Workshop on Aerostructures, at EADS-Suresnes, Paris, France, **Oct. 7-8, 2010**.
  - S.M.O. Tavares, A. Turon, P. Camanho, P.M.S.T. de Castro, 'Structural aircraft materials weight assessment based on the fatigue behaviour', 2nd Aircraft Structural Design Conference, Royal Aeronautical Society, London, UK, **Oct. 26-28, 2010**.

### Theses (MSc)

- Pedro Barbosa Ribeiro, 'Competitividade de máquinas-ferramenta – Conceitos inovadores aplicados a uma quinadora', Master in Mechanical Engineering, FEUP, **February 2010**, (work carried out at ADIRA); supervisors: Eng. T. Faro, ADIRA, Prof. Abel Dias dos Santos, FEUP, and Prof. P.M.S.T. de Castro, FEUP.
- André F.S. Ramos, 'Estudo de metodologias de análise e a sua aplicação prática na optimização e fabricação de carroçarias de autocarros', Master in Mechanical Engineering, FEUP, **July 2010** (work carried out at CaetanoBus); supervisors: Eng. F. Fernandes, CaetanoBus, Dr. Pedro M.G.P. Moreira, INEGI, and Prof. P.M.S.T. de Castro, FEUP.
- Bruno Santos, 'Optimização de máquina laser', Master in Mechanical Engineering, FEUP, **July 2010**, (work carried out at ADIRA); supervisors: Eng. J. Figueira, ADIRA, Dr. Pedro M.G.P. Moreira, INEGI, and Prof. P.M.S.T. de Castro, FEUP.
- Carlos M.C.G. Fernandes, 'Optimização do projecto de processos para produção de protótipos', Master in Mechanical Engineering, FEUP, **July 2010** (work carried out at EDAETECH); supervisors: Eng. A. Morais, EDAETECH, Prof. Mário A.P. Vaz and Prof. P.M.S.T. de Castro, FEUP.
- Roberto M.C. Miranda, 'Study of fatigue crack propagation in metallic structures', Master in Mechanical Engineering, FEUP, **July 2010**, supervisors: Eng. Miguel A.V. de Figueiredo, Prof. P.M.S.T. de Castro.
- Rui Pedro Vieira Garrido, 'Modelação de autocarros em elementos finitos' Master in Mechanical Engineering, FEUP, **July 2010** (work carried out at CaetanoBus); supervisors: Eng. F. Fernandes, CaetanoBus, Dr. Pedro M.G.P. Moreira, INEGI, and Prof. P.M.S.T. de Castro, FEUP.

### Seminars, workshops and the like

- Roberto M.C. Miranda, seminar presentation: progress report of DEMec contribution to FCT project PTDC/ECM/69697/2006 'Advanced methodologies for the assessment of the dynamic behaviour of high speed railway bridges', sala Nobre do DEC-FEUP, **March 15, 2010**.
- P.M.S.T. de Castro, presentation of objectives of FCT project Railways at IST, during visit of Prof. D. Socie (University of Illinois, USA), **April 14, 2010**.
- D.F.C. Peixoto, 'Metodologias para a determinação experimental do módulo de Young de um material (Methodologies for the experimental determination of a material Young's modulus), Seminário no âmbito da disciplina 'Inst. para Medição. Aquis. e Trans. de Dados'; sob orientação da regente da disciplina Dr Teresa Restivo, (work performed under the supervision of Dr Teresa Restivo), PRODEM, FEUP, **April 28, 2010**.
- P.M.S.T. de Castro, 'Materials and railways: fatigue behaviour of rolling stock and infrastructure', Sessão12E: Transporte ferroviário: tecnologias e sistemas, Ciência 2010 – Encontro com a Ciência e Tecnologia em Portugal, Lisboa, **July 5-7, 2010**.
- P.M.S.T. de Castro, 'Fracture and fatigue of FSW Al joints: focus on Al-Li 2195', VI-IPSUS Summer School 2010, GKSS, at the Ramada Hotel Hamburg-Bergerdorf (invited lecture), **Aug. 30-Sept. 3, 2010**.
- S.M.O. Tavares, 'New design concepts for aeronautical products welded by friction stir', presentation of thesis and project progress, in: Third-annual EDAM All-Faculty Meeting, Universidade do Minho, Guimarães, **Sept. 24-25, 2010**

- S.M.O. Tavares, 'New design concepts for aeronautical products welded by friction stir', poster presented at: 'Creating Value through Systems Thinking, 2nd MIT Portugal annual conference, FEUP, **Sept. 28, 2010**; poster in proceedings, p.75.
- P.M.G.P. Moreira, V. Richter-Trummer, S.D. Pastrama, M.A.P. Vaz, P.M.S.T. de Castro, 'Methodology for in-situ stress intensity factor determination on cracked structures by digital image correlation', I Encontro de Jovens Investigadores do LAETA, Instituto Superior Técnico, Lisbon, **Nov, 15-16, 2010**.

### **Project meetings**

- FCT project PTDC/EME-PME/100204/2008 'Railways – rolling contact fatigue':
  - meeting FEUP-IST, at IST Lisbon during visit of Prof. D. Socie (University of Illinois, USA), **April 14, 2010**
  - kick-off, Coimbra FEUP, IST, FCTUC, **April 16, 2010**
- MIT-Portugal FSW:
  - presentation by Sérgio M.O. Tavares - annual progress meeting with OGMA (Eng. Almeida Santos) and TAP-ME (Eng. João Carvalho) at IST, **June 30, 2010**
- FCT project PTDC/ECM/69697/2006 'Advanced methodologies for the assessment of the dynamic behaviour of high speed railway bridges':
  - seminar presentations; sala Nobre do DEC; presentation of Roberto M.C. Miranda; **March 15, 2010**
  - presentation of MIEM thesis of Roberto Miranda; (progress report of DEMec contribution to FCT project PTDC/ECM/69697/2006) **July 27, 2010**
  - **Nov. 5, 2010**, among others
- WEG, on characterization of mechanical behavior of Cu and Cu brazed connections:
  - preliminary meeting **Feb. 10, 2010**
  - kick-off **Apr. 20, 2010**
- CaetanoBus, on experimental behavior of structural connections and sandwich panels:
  - preliminary meeting at LET - DEMec – FEUP, **Nov. 24, 2009**
  - progress meeting at CaetanoBus, **May 26, 2010**
  - progress and theses presentation at FEUP, **July 14, 2010**

### **Industry and other projects**

#### M.A.V. de Figueiredo

- AMTROL, (i) on experimental stress analysis of pressure vessels; (ii) on exploration of the use of FSW for steel
- CaetanoBus, on experimental behavior of structural connections and sandwich panels
- WEG, on characterization of mechanical behavior of Cu and Cu brazed connections

#### P.M.G.P. Moreira

- AMTROL, (i) on experimental stress analysis of pressure vessels; (ii) on exploration of the use of FSW for steel
- CaetanoBus, on experimental behavior of structural connections and sandwich panels
- FP7 Clean Sky project 'InflightFOS', project leader Fibersensing
- Iberoeleva, on design of crane bridges
- UP, Concurso Projectos Pluridisciplinares 2010, proposal 142 'Nova metodologia para medir tensões residuais usando sensores de Bragg' (undergraduates R&D, on FBG application in stress analysis), awarded Oct 19, 2010
- WEG, on characterization of mechanical behavior of Cu and Cu brazed connections

#### P.M.S.T de Castro

- Siemens SA Medical Solutions (meeting at FEUP, Feb 23, 2010; working visit to Hospital de Viseu, March 26, 2010; progress note, May 1, 2010)

### Project reports

- Ricardo A.S. Castro, 'Experimental characterization of residual stress fields in T-joints welded by friction stir welding', report submitted in conformity with the requirements for the FVT Research Integration Program, supervised by Dr. P.M.G.P. Moreira, **Oct. 2009**
- Valentin Richter-Trummer (rapporteur), projecto 'WELDING - Fiber Bragg grating sensors for modeling of friction stir welding (FSW) and laser beam welding (LBW)', PTDC/EME-TME/66362/2006, **Jan. 31, 2010**, main chapter of the project final report.
- FCT project 'WELDING - Fiber Bragg grating sensors for modeling of friction stir welding (FSW) and laser beam welding (LBW)', contract FCT PTDC/EME-TME/66362/2006, final report, annex 3 - papers, **Jan. 31, 2010**, (up-dated with Measur. Sci. and Tech. paper in July 1, 2010).
- Roberto M.C. Miranda, 'Study of fatigue crack propagation in metallic structures', Master in Mechanical Engineering, FEUP, **July 2010** (this constitutes the progress report of DEMec contribution to project FCT PTDC/ECM/69697/2006 'Advanced methodologies for the assessment of the dynamic behaviour of high speed railway bridges' coordinated by Prof Rui Calçada, DECivil-FEUP.
- Pedro M.G.P. Moreira, Miguel A.V. de Figueiredo, Paulo M.S. Tavares de Castro, report LOME\DEMEC-LET\_WEG 0210, Porto, **Oct 14, 2010**.
- V. Richter-Trummer, R.M.C.Miranda, P.M.S.T. de Castro, 'Análise das superfícies de fractura de provetes CT de aço usados para medição de velocidades de propagação defendas de fadiga', **Oct. 18, 2010**, contribution to project FCT PTDC/ECM/69697/2006 'Advanced methodologies for the assessment of the dynamic behaviour of high speed railway bridges', coordinated by Prof Rui Calçada, DECivil-FEUP.
- Roberto M.C. Miranda, 'Medição do tamanho de grão de um aço usando a técnica da intersecção do segmento linear', contribution to project FCT PTDC/ECM/69697/2006 'Advanced methodologies for the assessment of the dynamic behaviour of high speed railway bridges', coordinated by Prof Rui Calçada, DECivil-FEUP, Porto, **Oct 14, 2010**.
- P.M.G.P. Moreira, R.A.M. da Silva, M.A.V. Figueiredo, P.M.S.T. de Castro, 'Relatório dos ensaios de dobragem da ligação do tejadilho de autocarros da CAETANOBUS S.A.', INEGI report, **Dec. 13, 2010**
- Roberto M.C. Miranda, V. Richter-Trummer, 'Determinação das constantes da lei de Paris em ensaios de provetes CT de aço ', contribution to project FCT PTDC/ECM/69697/2006 'Advanced methodologies for the assessment of the dynamic behaviour of high speed railway bridges', coordinated by Prof Rui Calçada, DECivil-FEUP, Porto, **Dec. 28, 2010**.

### Equipment obtained

- FBG interrogator Fibersensing, in the context of INEGI's participation in FP7 Clean Sky project 'InflightFOS', project leader Fibersensing, INEGI coord.: Dr. P.M.G.P. Moreira
- Two travelling microscopes, for the existing 100kN servo-hydraulic testing machine, designed by V. Richter-Trummer and partially manufactured at the DEMec-FEUP / INEGI workshop; costs covered by FCT project PTDC/EME-PME/100204/2008.
- Workstation INTEL XEON 8 cores and 16 GB RAM for scientific computation; acquired through FCT project PTDC/EME-PME/100204/2008.

### Organization of events

- 2010 - CIFIE 2010 – Iberian Conference on Fracture and Structural Integrity, FEUP, Portugal, March 17-19, 2010; EGF site; papers in EGF site; e-book vol.I; e-book vol.II
- 2012 – IJSI 2012 – 1st International Conference of the International Journal of Structural Integrity, FEUP, Portugal, June 25-28, 2012.

## **Scientific committees of conferences (invitations accepted)**

### P.M.S.T. de Castro

- 12th International Congress on Mesomechanics, National Taiwan University of Science and Technology, Taipei, Taiwan, June 21-25, 2010, (member of the International Scientific Committee).
- 2nd International Conference of Engineering against Fracture ICEAF II, Patras, Greece, June 22-24, 2011 (member of the Scientific Committee).
- 13th International Congress on Mesomechanics, University of Padova, Vicenza, Italy, July 2011 (member of scientific committee)
- VI International Materials Symposium MATERIAIS 2011 - XV meeting of SPM - Sociedade Portuguesa de Materiais, Guimarães, Portugal, April 18-20, 2011
- 5th International Conference on Advanced Computational Engineering and Experimenting, ACE-X 2011, Algarve, Portugal, July 3-6, 2011 (member of scientific committee)

## **Missions**

### C.M.C. Albuquerque

- Lisboa, Portugal, VII Congresso de Construção Metálica e Mista, Nov-19-20, 2009
- Alcácer do Sal, Portugal, field work - instrumentation - on the new REFER bridge, during 2010

### D.F.C. Peixoto

- Zaragoza, Spain, CTF2010 – First International Congress on Rail Transport Technology, April 12-14, 2010
- Coimbra, Portugal, kick-off FCT project PTDC/EME-PME/100204/2008 ‘Railways – rolling contact fatigue’, Univ Coimbra April 16, 2010.

### P.M.S.T. de Castro

- Brussels, Belgium, evaluation of research proposals, call FP7 - AERONAUTICS and AIR TRANSPORT (AAT) - 2010 - RTD-1, Feb 28 – March 5, 2010
- Lisbon, Portugal, meeting of FCT project PTDC/EME-PME/100204/2008 ‘Railways – rolling contact fatigue’ at IST Lisbon, during visit of Prof. D. Socie (University of Illinois, USA), April 14, 2010
- Coimbra, Portugal, kick-off of FCT project PTDC/EME-PME/100204/2008 ‘Railways – rolling contact fatigue’, Univ. Coimbra April 16, 2010
- Guimarães, Portugal, CNME 2010 - 8º Congresso Nacional de Mecânica Experimental, April 21-23, 2010
- Brussels, Belgium, evaluation of the ERASMUS MUNDUS call EAC/29/09, June 20-24, 2010
- Lisboa, Portugal, Ciência 2010 – Encontro com a Ciência e Tecnologia em Portugal, July 5-7, 2010
- Hamburg, Bergedorf, Geestacht, Germany, VI-IPSUS Summer School 2010, GKSS, Aug. 30-Sept. 3, 2010
- Suresnes, Paris, France, 2nd General Assembly of the EASN Association combined with the 1st EASN Association Workshop on Aerostructures, EADS-Suresnes, Oct. 7-8, 2010

### P.M.G.P. Moreira

- Guimarães, Portugal, CNME 2010 - 8º Congresso Nacional de Mecânica Experimental, April 21-23, 2010
- Lisboa, Portugal, I Encontro de Jovens Investigadores do LAETA, Instituto Superior Técnico, Nov, 15-16, 2010

### Ricardo A.S. Castro

- Guimarães, Portugal, CNME 2010 - 8º Congresso Nacional de Mecânica Experimental, April 21-23, 2010

### S.M.O. Tavares

- Hamburg, Bremen, Germany, AIRBUS, Oct. 2009 – March 2010
- Lisboa, Portugal, Ciência 2010 – Encontro com a Ciência e Tecnologia em Portugal, July 5-7, 2010
- Boston, MA, USA, stay at Massachusetts Institute of Technology - MIT, Aug, 2010

- Nottingham, UK, ADM 2010 - 3rd International Conference on Advanced Design and Manufacture, University of Nottingham, Sept. 8-10, 2010
- Guimarães, Portugal, Third-annual EDAM All-Faculty Meeting, Universidade do Minho, Sept. 24-25, 2010
- Suresnes, Paris, France, 2nd General Assembly of the EASN Association combined with the 1st EASN Association Workshop on Aerostructures, EADS-Suresnes, Oct. 7-8, 2010
- London, UK, 2nd Aircraft Structural Design Conference, Royal Aeronautical Society, Oct. 26-28, 2010

#### Valentin Richter-Trummer

- Guimarães, Portugal, CNME 2010 - 8º Congresso Nacional de Mecânica Experimental, April 21-23, 2010
- Riva del Garda, Trento, Italy, ECRS 8 8th European Conference on Residual Stresses, June 26-28, 2010
- Geesthacht, Germany, stay at GKSS, Nov. 2010

### **Evaluations**

#### P.M.S.T. de Castro

- Evaluation of the research proposals submitted to the Aeronautics calls for proposals **FP7-AAT-2010** (call FP7 - AERONAUTICS and AIR TRANSPORT (AAT) - 2010 - RTD-1), Brussels, Belgium, **Feb 28 – March 5, 2010**.
- **ERASMUS MUNDUS** call EAC/29/09, Brussels, Belgium, **June 20-24, 2010**.
- **FCT** projects final reports; scholarships contestations; India-Portugal programme – on-line work.
- **FCT** – final evaluation of R&D project reports EME 2006, **Nov 2010** – on-line work.
- Researcher evaluation, for **South Africa National Research Foundation** – on-line evaluation.
- Project evaluation, for **Agencia Nacional de Promoción Científica y Técnica (ANPCyT)** de la República Argentina – on-line evaluation, with the collaboration of V. Richter-Trummer.

### **Refereeing**

#### S.M.O. Tavares

- Advances in Engineering Software

#### P.M.S.T. de Castro

- Composite Structures
- Indian Journal of Engineering and Materials Sciences
- International Journal of Structural Integrity
- Journal of Materials Processing Technology
- Measurement Science and Technology (Institute of Physics UK), with the collaboration of V Richter-Trummer
- Proceedings of the Institution of Mechanical Engineers, Part B, Journal of Engineering Manufacture
- Strain
- Structural Engineering and Mechanics, an International Journal

#### P.M.G.P. Moreira

- Engineering Fracture Mechanics
- International Journal of Fatigue
- International Journal of Mechanical Sciences
- International Journal of Precision Engineering and Manufacturing
- International Journal of Structural Integrity
- Materials and Design

#### V. Richter-Trummer

- Sensors



### Editorial boards

P.M.S.T. de Castro:

- **Ciência e Tecnologia dos Materiais** (SPM), ISSN 0870-8312, founder and member of editorial board 1989-1991; editorial board member since 2010.
- **Fatigue and Fracture of Engineering Materials and Structures**, (J Wiley-Blackwell), ISSN 8756-758X, since 2001.
- **International Journal of Structural Integrity**, (EMERALD), ISSN 1757-9864, since 2008.
- **Mecânica Experimental** (APAET), ISSN 1646-7078, since issue #1, 1996.
- **Mechanika**, (Kaunas University of Technology), ISSN 1392-1207 6, since 2004.
- **UPB Scientific Bulletin, Series D: Mechanical Engineering**, (Universitatea Politehnica Bucuresti), ISSN 14542358, since 2008.

### Special issues of journals (guest editor)

P.M.S.T. de Castro

- guest editor, **Ciência e Tecnologia dos Materiais**, vol.22, (3/4), 2010, editorial
- with G. Guinea (Universidad Politecnica de Madrid), guest-editors, **International Journal of Structural Integrity**, vol. 1 (4), 2010, editorial
- with G. Guinea, editors of the 2010 issue, **Anales de Mecanica de la Fractura**, GEF, editorial

### Networks

- A.A. Fernandes, P.M.S.T. de Castro, European Rail Research Network of Excellence EURNEX, since 2004.
- P.M.S.T. de Castro, EASN - European Aeronautics Science Network, since 2005.

### Visitors to Porto, among others

- Claudemiro Bolfarini, UFSCar, Brasil, Jan. 22, 2010
- Emilio Garcia Garcia, TALGO, Madrid, Spain, April 12, 2010
- João Constantino Meireles, TALGO, Madrid, Spain, April 12, 2010
- João P. Gonçalves, IBM Watson Research Center, NY, USA, August 13, 2010
- Wieslaw Ostachowicz, Polish Academy of Sciences, Gdansk, Poland, Feb .3, 2010

### Teaching duties

M.A.V. de Figueiredo

- Processos de Fabrico II (Fabrication Processes Part II), 1st semester 2010/2011 MIEM-FEUP
- Fadiga and Mecânica da Fractura (Fatigue and Fracture Mechanics), 1st sem. 2010/2011 MIEM-FEUP, presentation on LET lab. equipment and activities, Dec. 10, 2010

P.M.G.P. Moreira

Mecânica I (Mechanics Part I), 2nd semester 2009/2010 MIEM-FEUP

- Resistência de Materiais, (Strength of Materials), 1st semester 2010/2011 Licenciatura em Ciências de Engenharia - Engenharia de Minas e Geo-Ambiente da FEUP
- Práticas de Engenharia Química III, 1st semester 2010/2011 MIEQ-FEUP

P.M.S.T. de Castro

- Órgãos de Máquinas (Design of Machine Elements), 1st semester 2010/2011 MIEM-FEUP
- Fadiga and Mecânica da Fractura (Fatigue and Fracture Mechanics), 1st semester 2010/2011MIEM-FEUP

R.M.C. Miranda

- Fadiga and Mecânica da Fractura (Fatigue and Fracture Mechanics), 1st sem. 2010/2011 MIEM-FEUP, presentation on fatigue crack growth tests, Dec. 10, 2010

#### S.M.O. Tavares

- Órgãos de Máquinas (Design of Machine Elements), 1st semester 2010/2011 MIEM-FEUP
- Mecânica I (Mechanics Part I), 1st semester 2010/2011 MIEG-FEUP
- two lectures/tutorials in the Fadiga e Mecânica da Fractura (Fatigue and Fracture Mechanics) course, (i) SIF using ANSYS, (ii) VCCT, 1st semester 2010/2011 MIEM-FEUP

#### V. Richter-Trummer

- Órgãos de Máquinas (Design of Machine Elements), 1st semester 2010/2011 MIEM-FEUP
- Fadiga and Mecânica da Fractura (Fatigue and Fracture Mechanics), 1st sem. 2010/2011 MIEM-FEUP, presentation on 'contour' method for residual stress measurement, Dec. 10, 2010
- Mecânica I (Mechanics Part I), 1st semester 2010/2011 MIEG-FEUP

### **Other duties**

#### P.M.S.T. de Castro

- Director of Doctoral Programme in Mechanical Engineering (PRODEM), FEUP
- Scientific Council of FEUP, member elected by academic staff of FEUP, and on behalf of IDMEC

### **Academic panels**

#### P.M.S.T. de Castro

- Concurso documental para provimento de duas vagas de Professor Associado para o Departamento de Engenharia Mecânica da Faculdade de Ciências e Tecnologia da Universidade de Coimbra, Diário da República 2ª série nº 52, de 16 de Março de 2009, edital nº 268/2009 da Reitoria da Universidade, decisão em 2010;
- Concurso de provas públicas para uma vaga de Professor Coordenador do ISEP, área científica de Engenharia Mecânica, grupo de disciplinas de Construções Mecânicas, 2010;
- Agregação do Doutor Pedro P. Camanho, FEUP, Porto, Dec.2010;
- Agregação do Doutor Marcelo F.S.F. de Moura, FEUP, Porto, 2011;
- Júri de concurso para professor associado, área disciplinar de Engenharia Electromecânica (Engenharia Mecânica), convite aceite em 2010.

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#### **Scholarships**

- Carlos M.C. Albuquerque, FCT doctoral scholarship SFRH/BD/47545/2008
- Daniel F.C. Peixoto, Calouste Gulbenkian Foundation doctoral scholarship 104047-B
- Ricardo A.S. Castro, scholarship BII (integration into research) FCT, Oct. 2008-Oct. 2009, supervisor: P.M.G.P. Moreira
- Roberto M.C. Miranda, FCT project PTDC/ECM/69697/2006 BI scholarship, Feb.-Dec. 2010
- Rui F. R. Lopes, FCT project PTDC/EME-PME/100204/2008 BIC scholarship, since mid Sept 2010
- Sérgio M.O. Tavares, FCT doctoral scholarship SFRH /BD/ 35143/2007
- Valentin Richter-Trummer, FCT doctoral scholarship SFRH/BD/41061/2007

#### **FCT projects**

- PTDC/ECM/69697/2006 'Advanced methodologies for the assessment of the dynamic behaviour of high speed railway bridges', coordinated by Prof. Rui Calçada of DEC – FEUP
- PTDC/EME-PME/100204/2008 'RAILWAYS – rolling contact fatigue'
- PTDC/EME-TME/66362/2006 WELDING - Fiber Bragg grating sensors for modelling of Friction Stir Welding (FSW) and Laser Beam Welding (LBW), concluded Dec. 31, 2009

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