

2018
FEUP Group Report
Paulo M. S. T. de Castro

Contributors

among others:

- Alexandre Eusébio (master thesis, at REIMAN, Portugal)
- Ehsan Shahabi (PRODEM FMF course student)
- Filipe Giesteira (master thesis, at HZG, Germany)
- José Carlos Enes Baganha Rodrigues Marques (master thesis)
- Maria Inês da Rocha Barros (master thesis, at Continental Mabor, Portugal)
- Paulo M.S.T. de Castro
- Sérgio Alexandre Gonçalves Pereira (master thesis)
- Sérgio M.O. Tavares ¹

Theses

- José Baganha Marques, ‘Analysis of mode II and mixed mode I-II in fracture and fatigue: a numerical and experimental study’, Mechanical Engineering master degree dissertation, FEUP, advisors: Prof. Sérgio M. O. Tavares, Prof. Paulo M. S. T. de Castro; Feb. 2018.
- Maria Inês da Rocha Barros, ‘Projetos de melhoria das secções de inspeção final e de manutenção de moldes no departamento de produção de pneus agrícolas’, Mechanical Engineering master degree dissertation, FEUP, advisors: Eng. José Conde Martin de la Vega (Continental Mabor), Prof. José Luís Esteves, Prof. Paulo M. S. T. de Castro, July 2018.
- Sérgio Alexandre Gonçalves Pereira, ‘Mecânica da fratura em modo misto: Modelação numérica e validação experimental’, Mechanical Engineering master degree dissertation, FEUP, advisors: Prof. Sérgio M. O. Tavares, Prof. Paulo M. S. T. de Castro; July 2018.
- Alexandre Duarte Ribeiro Eusébio, ‘Projeto de um transportador modular’, Mechanical Engineering master degree dissertation, FEUP, advisors: at REIMAN: Eng. Tiago Dias de Sousa; at FEUP: Prof. José Luís Esteves, Prof. Paulo M. S. T. de Castro; 2018.
- Filipe Amorim Gonçalves Giesteira, ‘Refill Friction Stir Spot Welding of Casting AM50A Mg Alloy to Zn Coated DP600 Steel Dissimilar Joints’, Mechanical Engineering master degree dissertation, FEUP; advisors: at HZG: Mr. Banglong Fu, co-advisor at HZG: Dr. Jorge dos Santos; co-advisor at FEUP: Prof. Paulo M.S. Tavares de Castro, Oct. 2018

¹ invited auxiliary professor FEUP; (and FEUP post-doc. researcher Oct. 2016 – Aug. 2017).

Books

- Sérgio M. O. Tavares, Paulo M. S. T. de Castro, ‘Damage Tolerance of Metallic Aircraft Structures’, Springer, 2019.

Papers

- S.M.O. Tavares, S.J. Moreira, P.M.S.T. de Castro, P.V. Gamboa, ‘Morphing aeronautical structures: A review focused on UAVs and durability assessment’, presented at 4th Int. Conf. Actual Problems of Unmanned Aerial Vehicles Development (APUAVD-2017), October 17-19, 2017, National Aviation University, Kyiv, Ukraine - Proceedings published on-line by IEEE in 2018.
- H.M.E. Ramos, S.M.O. Tavares, P.M.S.T. de Castro, ‘Numerical modelling of welded T-joint configurations using SYSWELD’, *Science and Technology of Materials*, vol.30, Supplement 1, Dec. 2018, pp.6-15
- R.G. Citarella, F. Berto, P.M.S.T. de Castro, ‘Modelling and optimizing structural behavior of advanced materials for aerospace’, Editorial, *International Journal of Aerospace Engineering*, vol. 2018, Article ID 6296145, 2 pages
<https://doi.org/10.1155/2018/6296145>

Presentations at conferences

- P.M.S.T. de Castro, ‘Fadiga em Estruturas de Aviões’, VI Encontro Nacional de Estudantes de Engenharia Mecânica - **VI-ENEEM**, FEUP, 27-30 Março 2018
- at the XVI Portuguese Conference on Fracture 2018, **PCF 2018**, Covilhã, April 23-24, 2018:
 - Ehsan Shahabi, Paulo M.S.T. de Castro, ‘The semi-circular bend (SCB) specimen: FEM analysis’ (oral presentation); extended abstract in: P.N.B. dos Reis, A.M.P. da Silva, I.J.S. Correia, P.V. Gamboa, R.M.S. Simões, eds, Proceedings PCF 2018, UBI, ISBN 978-989-654-454-6, pp.135-137.
 - J. Baganha Marques, Sérgio M.O. Tavares, P.M.S.T.de Castro, ‘Analysis of mode II and mixed mode I-II in fracture and fatigue: a numerical and experimental study’ (poster presentation); extended abstract in: P.N.B. dos Reis, A.M.P. da Silva, I.J.S. Correia, P.V. Gamboa, R.M.S. Simões, eds, Proceedings PCF 2018, UBI, ISBN 978-989-654-454-6, pp.139-142.
- at the 2nd International Conference on Materials Design and Applications, **MDA 2018**, FEUP, Porto, Portugal, July 5-6, 2018
 - E. Shahabi, P.M.S.T.de Castro, ‘Analysis of the semi-circular bend (SCB) specimen: finite element method determination of T -stress, K_I and K_{II} ’; abstract in: Book of abstracts of the 2nd International Conference on

Materials Design and Applications 2018, Publindústria, ISBN 978-989-8927-09-5, p.120.

- J. Baganha Marques, Sérgio M.O. Tavares, P.M.S.T.de Castro, ‘Four-point bending mixed mode I-II Tests: experiments and simulation’; abstract in: Book of abstracts of the 2nd International Conference on Materials Design and Applications 2018, Publindústria, ISBN 978-989-8927-09-5, p.119.

- at the 18th International Conference on New Trends in Fatigue and Fracture **NT2F18**, Hotel Holiday Inn Lisbon, July 17-20, 2018
 - Sérgio M.O. Tavares, Luís G. Reis, Manuel de Freitas, Paulo M.S.T. de Castro, ‘Mixed mode fatigue and fracture in planar geometries: a brief review’; extended abstract in: L. Reis, M. Freitas, V. Anes, ‘18th International Conference on New Trends in Fatigue and Fracture’, IDMEC, IST, ISBN: 978-989-20-8548-7, pp.153-156.
 - Sérgio A.G. Pereira, Sérgio M.O. Tavares, Paulo M.S.T. de Castro, ‘Mixed mode fracture: numerical evaluation and experimental validation using PMMA specimens’; extended abstract in: L. Reis, M. Freitas, V. Anes, ‘18th International Conference on New Trends in Fatigue and Fracture’, IDMEC, IST, ISBN: 978-989-20-8548-7, pp.253-256.
 - Paulo M. S. T. de Castro, ‘Fatigue of aircraft’²; extended abstract in: L. Reis, M. Freitas, V. Anes, ‘18th International Conference on New Trends in Fatigue and Fracture’, IDMEC, IST, ISBN: 978-989-20-8548-7, pp.1-4.

- C. Castro, P. Bastardo, S. Tavares, P. T. de Castro, ‘Printed circuit boards experimental and numerical characterization’, **EUROMECH Colloquium 603: Dynamics of micro and nano systems**, Porto, Portugal, September 5–7, 2018. In: P. Ribeiro, S. Lenci, S. Adhikari, eds., Proceedings of EUROMECH Colloquium 603, Dynamics of micro and nano electromechanical systems: multi-field modelling and analysis. Publisher: Universidade do Porto. Reitoria. ISBN 978-989-746-185-9: pp.21-24.

- Paulo M. S. T. de Castro, ‘Fadiga de materiais e estruturas – com enfoque na aeronáutica’, Academia das Ciências de Lisboa, Oct. 4, 2018

- Paulo M. S. T. de Castro, ‘Fatigue of metallic structures, with a focus on the case of airframes’³, **CNME2018 & TEMM2018: 11º Congresso Nacional de Mecânica Experimental em conjunto com 1ª Conferência Ibérica de Mecânica Teórica e Experimental e Materiais**, Porto, Portugal), November 4-7, 2018. Published in: J. F. Silva Gomes, ed., ‘CNME2018 - Proceedings of the 1st Iberic Conference on Theoretical and Experimental Mechanics and Materials & 11th National Congress on Experimental Mechanics, Porto, Portugal, 4-7 November 2018, FEUP-INEGI, 2018, ISBN: 978-989-20-8771-9; pp.1057-1060.

² invited plenary lecture.

³ invited plenary lecture.

Projects

Proposal ‘AddStrength’, principal investigator Sérgio M.O. Tavares, ‘Enhanced mechanical properties in additive manufactured components’ / ‘Melhoria de propriedades mecânicas em componentes obtidos por fabrico aditivo’, project 31307 for AVISO N° 02/SAICT/2017, investment 240 kEuros; incentive 204 kEuros. Conditioned **favorable decision** of the funding agency on April 5, 2018. (P de Castro cancelled participation in this project).

Organization of seminars and the like

Simpósio ‘Tendências Actuais da Mecânica Computacional’, em celebração dos setenta anos da Professora Lúcia Dinis, Faculdade de Engenharia da Universidade do Porto, 26 de Março de 2018.

Seminário ‘A integração de rolamentos em projetos mecânicos’, por João Rego, Schaeffler, at FEUP on April 24, 2018.

Awards 2018

P M S T de Castro,

- *Prémio de reconhecimento pedagógico*, **January 15, 2018**, (Dia da FEUP);
- Honour Medal of the Spanish Fracture Group. Gala Dinner of 35th Conf., Málaga, **March 15, 2018**. (email of the President of the Spanish Fracture Group, Prof. Antonio Martín-Meizoso, of Jan. 26, 2018).

Service

- Membership of the Scientific Committee of EU ‘Clean Sky 2’ program⁴
<http://noticias.up.pt/docente-da-feup-integra-comissao-cientifica-de-programa-europeu-de-aeronautica/>
 - SciCom meeting #1, Brussels **Feb. 27, 2018**
 - SciCom meeting #2, Brussels **May 2, 2018**
 - expert reviewer, Clean Sky 2 ‘REG’ IADP annual review, Naples, **June 12-14**, organized by LEONARDO AIRCRAFT.
 - SciCom meeting #3, Brussels, **June 26, 2018**
 - SciCom meeting #4, Brussels, **Sept. 25, 2018**
 - expert reviewer, Clean Sky 2 ‘AIR’ ITD interim progress review, Brussels, **Oct. 18, 2018**
 - CS3 Technology Roadmap Workshop, Brussels, **Nov. 29, 2018**

⁴ <http://cleansky.eu/scientific-committee-2018-2020>

- SciCom meeting #5, Brussels, **Nov. 30, 2018**
- expert reviewer, Clean Sky 2 ‘REG’ IADP, intermediate progress review (IPR), Brussels, **Dec. 12, 2018**.
- Evaluation of a PhD thesis for the Clean Sky Academy Award for Best PhD Thesis in Applied Sciences and Engineering for Aeronautics
- EASN National Contact Point Portugal (since Feb 28, 2018)
- Scientific committees of conferences
 - member of scientific editorial committee of 22nd International Scientific Conference Transport Means 2018, Kaunas University of Technology, 3-5 October 2018
 - member of int. sci. committee of the First International Symposium on Risk Analysis and Safety of Complex Structures and Components (IRAS2019), FEUP, Porto, Portugal, 1-2 July 2019
 - member of international scientific committee 9th EASN Int. Conf., Athens, Greece, Sept. 3-6, 2019
 - member of scientific committee 19th International Conference on New Trends in Fatigue and Fracture - NT2F19, Tucson, Arizona, USA, Oct. 8-10, 2019
- Representante do DEMec no ‘Museu da FEUP’ (indicação do Dir. Depart. Eng. Mec. em 6 Set. 2018)
- Reviewer Certificate, Paulo de Castro, *Fatigue & Fracture of Engineering Materials & Structures*. Youshi Hong, Editor-in-Chief, April 10, 2018.
- Certificate of outstanding contribution in reviewing
 - *Engineering Structures*, July 2018
 - *Journal of Constructional Steel Research*, March 2018

Other

- Solar de Lamas, Prof. M. Matos Fernandes, 12 Dez. 2017; **12 Jan. 2018**
EMAF2018, EXPONOR, **23 Nov. 2018**
- CELOPLAS, Eng. J. Cortez, **22 Nov. 2018**

Visitors

- Luís Montelobo, JUNCOR, Feb. 6, 2018
- Pedro Bastardo, Bosch Ovar, Feb. 6, 2018
- Carlos Castro, Bosch Ovar, Feb. 6, 2018, Mar.1, 2018; July 12, 2018
- Tiago Dias de Sousa, REIMAN, Mar 2, 2018
- Bianka Venturelli, Esc. Polit. da USP, April 11, 2018
- Iva Petříková, Tech. Univ. Liberec, April 17, 2018
- Soňa Jandová, Tech. Univ. Liberec, April 17, 2018

- Sérgio Moreira, Rolls Royce, April 23, 2018, Dec. 19, 2018
- António Pinheiro, JUNCOR, April 24, 2018
- João Rêgo, Schaeffler, April 24, 2018
- Miguel Sá Fernandes, JUNCOR, April 24, 2018
- Fernando Estevão, Air Liquide, May 3, 2018
- Sónia Baptista, Kirchoff, May 3, 2018
- Jean-Paul Chemla, Polytech' Tours, June 21, 2018
- P. Kumar, IIT Patna, Sept. 6, 2018
- L. Alexandre, Consoveyo, Dec. 3, 2018
- R. Fazenda, Gislotica, Dec. 3, 2018
- Daniel Peixoto, BorgWarner, Dec. 13, 2018

Juries/panels/evaluations

MIEM FEUP

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|-------------------------------------|-----------|
| • Paulo David Pereira Nunes | 16-2-2018 |
| • André Martinho | 20-2-2018 |
| • João Monge | 02-3-2018 |
| • Paulo Sousa | 09-4-2018 |
| • Rafael Maia Machado | 18-4-2018 |
| • Paulino Ferreira Vieira | 11-7-2018 |
| • João Camacho | 12-7-2018 |
| • Luís Pedreira Alves | 12-7-2018 |
| • João Fonseca | 16-7-2018 |
| • Mário Cunha | 16-7-2018 |
| • João Santos | 17-7-2018 |
| • Ana Catarina Pereira | 17-7-2018 |
| • Pedro Freitas Abreu | 25-7-2018 |
| • João Duarte Marques Marafona | 25-7-2018 |
| • Rafael Rui Tenreiro Vieira | 19-9-2018 |
| • Alexandre Duarte Ribeiro Eusébio | 21-9-2018 |
| • Carlos Joel Vieira Fernandes | 21-9-2018 |
| • João Marcelo Fernandes Lima | 27-9-2018 |
| • Miguel Ângelo Moura Rodrigues | 27-9-2018 |
| • Luís Filipe Gomes Pereira | 28-9-2018 |
| • Filipe Amorim Gonçalves Giesteira | 28-9-2018 |
| • Luís Rodrigues de Castro | 28-9-2018 |
| • João Filipe Seabra da Costa | 28-9-2018 |

Mestrado em Eng. Mecânica ISEP

Henrique Leal de Oliveira 23-11-2018

Jury / public discussion of research thesis project, area Structures PRODEC,

- | | |
|---------------------------------|-----------|
| • Cláudio Carlos da Silva Horas | 12-1-2018 |
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Doctorate FEUP

- Guilherme M. S. de Oliveira Viana (Mech. Engng.) 19-3-2018
- Victor Hugo Granados Fernandez (Engng. Physics) 20-4-2018

Doctorate IST (Naval Engineering)

- Marzieh Hashemzadeh Khamaneh 14-12-2018

Selection / evaluation of academic staff

- One post of associate professor, **Univ. Beira Interior**, edital nº420/2017, *Diário da República*, 2.^a série, nº114 of 14-6-2017;
4 candidates 5-1-2018
- One post of full professor for the **Dep. of Mech. Engng. of FEUP**, edital n.º367/2017, *Diário da República*, 2.^a série, n.º107 of 2-6-2017
6 candidates 20-2-2018
- One post of associate professor for the **Dep. of Engng. Physics of FEUP**, edital n.º489/2017, *Diário da República*, 2.^a série, n.º134 of 13-7-2017
22 candidates 28-3-2018
- One post of auxiliary professor for the area of Mech. Engng. of **FCTUCoimbra**, emphasis mechanical design, edital n.º183/2018, *Diário da República*, 2.^a série, n.º36 of 20-2-2018
10 candidates 16-4-2018; 26-4-2018; 8-5-2018
- One post of auxiliary professor for the area of Mech. and Industrial Engng. of **Universidade Nova de Lisboa - UNL**, with an emphasis on industrial technology, edital n.º17/2018, *Diário da República*, 2.^a série, n.º4 of 5-1-2018
7 candidates 10-5-2018; 26-7-2018
- One post of auxiliary professor for the area of Mechanical and Industrial Engng. of **Universidade Nova de Lisboa - UNL**, emphasis machine design, edital n.º33/2018, *Diário da República*, 2.^a série, n.º6 of 9-1-2018
8 candidates 10-5-2018; 26-7-2018
- CD-CTTI-50-ARH/2018 - Concurso documental de âmbito internacional para recrutamento de 1 (um) posto de trabalho de Professor Auxiliar, para a área disciplinar de Engenharia Mecânica, subárea de Projeto Mecânico, **Universidade de Aveiro**, *Público*, 26-03-2018
15 candidates 26-6-2018; 14-9-2018
- Provas públicas para avaliação da competência pedagógica e técnico-científica requeridas por João Augusto de Sousa Bastos, nos termos do n.º 1 do artigo 6.º do Decreto-Lei n.º 45/2016, de 17 de Agosto, com as alterações introduzidas pela Lei n.º 65/2017, de 9 de Agosto, e do Despacho ISEP/P/28/2018, de 3 de Maio, da Presidente do **ISEP**. 16-7-2018

- Provas públicas para avaliação da competência pedagógica e técnico-científica requeridas por João Manuel Pinho Ribeiro, nos termos do n.º 1 do artigo 6.º do Decreto-Lei n.º 45/2016, de 17 de Agosto, com as alterações introduzidas pela Lei n.º 65/2017, de 9 de Agosto, e do Despacho ISEP/P/28/2018, de 3 de Maio, da Presidente do **ISEP**. 24-7-2018

Evaluation of applicants to Fulbright grants for students

Evaluation of two applications

3-5-2018

Evaluation of a PhD thesis for the Clean Sky Academy Award for Best PhD Thesis in Applied Sciences and Engineering for Aeronautics

2018