Latin American Journal of Solids and Structures
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Preface to the special issue of the International Symposium on Solid Mechanics (MecSol 2017)

Abstract
The *International Symposium on Solid Mechanics* (*MecSol*) is a biennial conference which aims to provide a forum to discuss relevant issues associated with solid mechanics. The *MecSol* 2017 edition was held in the city of Joinville, Brazil, on 26-28 April 2017. Plenary lectures were delivered by researchers from five different countries. The main topics discussed in the conference are as follows: composite materials, optimization, constitutive modelling, fatigue, impact, nonlinear analyses, structural reliability, X-FEM, G-FEM, and BEM numerical methods. The participants were invited to submit full papers, which, after peer review, compound this special issue of the *Latin American Journal of Solids and Structures*. This article highlights the main topics addressed in the conference.

Keywords
Solid mechanics, composite materials, optimization, constitutive modelling, fatigue, impact, nonlinear analyses, structural reliability, numerical methods.

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http://dx.doi.org/10.1590/1679-78255177

1 INTRODUCTION

A steady growth has been observed in the research field of solid mechanics in Brazil during the last 25 years. Amongst many reasons, the substantial increase of post-graduate programs and number of research students are the most important. Furthermore, the growing maturity of many research groups can also be perceived, not only by the quality of research papers published in relevant journals, but also by the noteworthy cooperation of Brazilian and overseas research teams. Within this framework, the biannual conference series "*International Symposium on Solid Mechanics – MecSol*" was born in the year 2007 under the auspices of the *Brazilian Association for Mechanical Sciences – ABCM*. The 6th edition of the *MecSol* congress was held in the city of Joinville (southern Brazil) on 26-28 April 2017. The international character was expressed by use of the English language throughout of the conference and participation of researchers from abroad. The plenary lectures were delivered by professors *E. A. de Souza Neto* (Swansea University, UK), *D. Karagiosova* (Bulgarian Academy of Sciences, Bulgaria) *H.-J. Altenbach* (Otto-von-Guericke Universität Magdeburg, Germany), *A. J. Mendes Ferreira* (Porto University, Portugal), *H. S. da Costa Mattos* (Catholic University of Rio de Janeiro, Brazil) and *M. Alves* (University of São Paulo, Brazil).

2 MAIN TOPICS AND ARTICLES ACCEPTED TO THE SPECIAL ISSUE

Participants of the *MecSol-Joinville* were invited to submit full papers to a special issue of the *Latin American Journal of Solids and Structures*. The accepted articles to this special issue represent a cross-section of research topics discussed at the *MecSol-Joinville* conference. The main topics and authors are listed as follows:

- *Composite Materials:* distortions in composite wing structures (Makinde et al., 2018), failure in composite pressure vessels (Vignoli and Savi, 2018), and dynamic analysis (Marques et al., 2018).
- *X-FEM, G-FEM, and BEM:* crack propagation and X-FEM modelling (Angelo et al., 2018); G-FEM modelling (Sato et al., 2018) and dynamic analysis (Weinhardt et al., 2018); BEM analysis of buckling of anisotropic plates (Monteiro and Daros, 2018), and 3D frictional contact (Ubessi and Marczak, 2018).
- *Structural Reliability Methods and Reliability-Based Design Optimization:* Multi-objective optimization (Passos and Luersen, 2018) and experimental crack identification (Oliveira Filho et al., 2018).
- *Multiaxial and Fretting Fatigue:* identification of fatigue limits and continuum damage mechanics (Castro and Bemfica, 2018), stress-life curves for alloy steels (Duran et al., 2018) and assessment of fatigue limits (Bandeira et al., 2018).

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- *Nonlinear Analyses:* analysis of large offshore structures (Rizzo and Caire, 2018).
- *Constitutive Models:* peridynamics and finite elasticity (Aguiar et al., 2018).
- *Impact Engineering:* perforation tests at high temperatures (Klosak et al., 2018).
- *New Developments and Applications:* beam-column (Hortencio and Falcón, 2018) and bolted (Vilela et al., 2018) connection design, assessment of flexible fixtures (Negri et al., 2018), and hydride formation and growth in metals (Souza et al., 2018).

It is important to mention that all manuscripts were evaluated by referees, who were selected based on their expertise and international recognition. A total of 92 (ninety-two) reviewers from 29 (twenty-nine) different countries were involved in the process. The high quality of the works presented in the *MecSol-Joinville* and submitted to the *Journal* can be translated by the recommendation for publication of almost 70% of the submitted manuscripts. The guest editors would also like to use the opportunity to thank all reviewers for their work.

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